PTO-1390 (03-13)
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A SUBMISSION UNDER 35 U.S.C. 371

		Attorney Docket No. NA002US
		U.S. Application No. (If known, see 37 CFR 1.5)
International Application No. PCT/KR2012/004695	International Filing Date 6/14/2012	Priority Date Claimed 6/14/2011

Title of Invention ELECTRICALLY BASED MEDICAL TREATMENT DEVICE AND METHOD

First Named Inventor
Na, Jong ju

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information.

1. [X] This is an express request to begin national examination procedures (35 U.S.C. 371(f)). NOTE: The express request under 35 U.S.C. 371(f) will not be effective unless the requirements under 35 U.S.C. 371(c)(1), (2), and (4) for payment of the basic national fee, copy of the International Application and English translation thereof (if required), and the oath or declaration of the inventor(s) have been received.

2. [X] A copy of the International Application (35 U.S.C. 371(c)(2)) is attached hereto (not required if the International Application was previously communicated by the International Bureau or was filed in the United States Receiving Office (RO/US)).

3. An English language translation of the International Application (35 U.S.C. 371(c)(2))
   a. [X] is attached hereto.
   b. [ ] has been previously submitted under 35 U.S.C. 154(d)(4).

4. An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4))
   a. [X] is attached.
   b. [ ] was previously filed in the international phase under PCT Rule 4.17(iv).

Items 5 to 8 below concern amendments made in the international phase.

PCT Article 19 and 34 amendments

5. [ ] Amendments to the claims under PCT Article 19 are attached (not required if communicated by the International Bureau) (35 U.S.C. 371(c)(3)).
6. [ ] English translation of the PCT Article 19 amendment is attached (35 U.S.C. 371(c)(3)).
7. [ ] English translation of annexes (Article 19 and/or 34 amendments only) of the International Preliminary Examination Report is attached (35 U.S.C. 371(c)(5)).

Cancellation of amendments made in the international phase

8a. [ ] Do not enter the amendment made in the international phase under PCT Article 19.

8b. [ ] Do not enter the amendment made in the international phase under PCT Article 34.

NOTE: A proper amendment made in English under Article 19 or 34 will be entered in the U.S. national phase application absent a clear instruction from applicant not to enter the amendment(s).

The following items 9 to 17 concern a document(s) or information included.

9. [ ] An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
10. [X] A preliminary amendment.
11. [X] An application Data Sheet under 37 CFR 1.76.
12. [X] A substitute specification. NOTE: A substitute specification cannot include claims. See 37 CFR 1.125(b).
13. [ ] A power of attorney and/or change of address letter.
14. [ ] A computer-readable form of the sequence listing in accordance with PCT Rule 13*ter*.3 and 37 CFR 1.821-1.825.
15. [ ] Assignment papers *(cover sheet and document(s))*. Name of Assignee: _____
16. [ ] 37 CFR 3.73 Statement *(when there is an Assignee)*.

This collection of information is required by 37 CFR 1.414 and 1.491–1.492. The information is required to obtain or retain a benefit by the public, which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 15 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Mail Stop PCT, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

ENDYMED EXHIBIT 1002 - 1/509
EndyMed v Serendia
IPR2024-00842

U.S. APPLN. No. (if known – see 37 CFR 1.5)	INTERNATIONAL APPLICATION No. PCT/KR2012/004695	ATTORNEY DOCKET No. NA002US

17. ☐ Other items or information:

The following fees have been submitted.	CALCULATIONS	PTO USE ONLY
18. ☒ Basic national fee (37 CRF 1.492(a)) **$280**	$ 280	
19. ☒ Examination fee (37 CFR 1.492(c)) If the written opinion prepared by ISA/US or the international preliminary examination report prepared by IPEA/US indicates all claims satisfy provisions of PCT Article 33(1)-(4) . . . . . **$0** All other situations **$720**	$ 720	
20. ☒ Search fee (37 CFR 1.492(b)) If the written opinion prepared by ISA/US or the international preliminary examination report prepared by IPEA/US indicates all claims satisfy provisions of PCT Article 33(1)-(4) . . . . . **$0** Search fee (37 CFR 1.445(a)(2)) has been paid on the international application to the USPTO as an International Searching Authority . . . . . **$120** International Search Report prepared by an ISA other than the US and provided to the Office or previously communicated to the US by the IB . . . . . **$480** All other situations **$600**	$ 480	
TOTAL OF 18, 19, and 20 =	$1,480	
☐ Additional fee for specification and drawings filed in paper over 100 sheets (excluding sequence listing in compliance with 37 CFR 1.821(c) or (e) in an electronic medium or computer program listing in an electronic medium) (37 CFR 1.492(j)). Fee for each additional 50 sheets of paper or fraction thereof **$400**		

Total Sheets	Extra Sheets	Number of each addition 50 or fraction thereof (round **up** to a whole number)	RATE	
26 - 100 =	0 / 50 =	0	x **$400**	$ 0
Surcharge of **$140.00** for furnishing any of the search fee, examination fee, or the oath or declaration after the date of commencement of the national stage (37 CFR 1.492(h)).				$ 0

CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE		
Total claims	26 - 20 =	6	x **$80**	$ 480	
Independent claims	1 - 3 =	0	x **$420**	$ 0	
MULTIPLE DEPENDENT CLAIM(S) (if applicable)			+ **$780**	$ 0	
Processing fee of $**140**.00 for furnishing the English translation later than 30 months from the earliest claimed priority date (37 CFR 1.492(i)).			+	$ 0	
TOTAL OF ABOVE CALCULATIONS =				$1,960	
☒ **Applicant asserts small entity status**. See 37 CFR 1.27. Fees above are reduced by ½.				$ 980	
☐ **Applicant certifies micro entity status.** See 37 CFR 1.29. Fees above are reduced by 3/4. Applicant must attach form PTO/SB15A or B or equivalent.				$ 980	
TOTAL NATIONAL FEE =				$ 980	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). **$40.00** per property.			+	$ 0	
TOTAL FEES ENCLOSED =				$ 980	
				Amount to be refunded:	$
				Amount to be charged:	$

ENDYMED EXHIBIT 1002 - 2/509

a. [X] Payment via www.uspto.gov of $980.00 to cover the above fees is enclosed.

b. [ ] Please charge my Deposit Account No. _____ in the amount of $_____ to cover the above fees.

c. [X] The Director is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 50-5630 as follows:

i. [X] any required fee.

ii. [ ] any required fee except for excess claims fees required under 37 CFR 1.492(d) and (e) and multiple dependent claim fee required under 37 CFR 1.492(f).

d. [ ] Fees are to be charged to a credit card. **WARNING:** Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038. The PTO-2038 should only be mailed or faxed to the USPTO. However, when paying the basic national fee, the PTO-2038 may NOT be faxed to the USPTO.

ADVISORY: If filing by EFS-Web, do **NOT** attach the PTO-2038 form as a PDF along with your EFS-Web submission. Please be advised that this is **not** recommended and by doing so your **credit card information may be displayed via PAIR**. To protect your information, it is recommended to pay fees online by using the electronic payment method.

NOTE: Where an appropriate time limit under 37 CFR 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the International Application to pending status.

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

[ ] This application (1) claims priority to or the benefit of an application filed before March 16, 2013, and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.

NOTE: A U.S. national stage application may not claim priority to the international application of which it is the national phase. The filing date of a U.S. national stage application is the international filing date. See 35 U.S.C. 363.

Correspondence Address

[X] The address associated with Customer Number: 26338 **OR** [ ] Correspondence address below

Name					
Address					
City		State		Zip Code	
Country			Telephone		
Email					

Signature	/mwresq/	Date	9/23/2013
Name (Print/Type)	Merle W. Richman	Registration No. (Attorney/Agent)	38,282

ENDYMED EXHIBIT 1002 - 3/509

PTO-1390 (03-13)
Approved for use through 4/30/2013. OMB 0651-0021
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ENDYMED EXHIBIT 1002 - 5/509

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Correspondence Address

[X] The address associated with Customer Number: 26338 **OR** [ ] Correspondence address below

Name					
Address					
City		State		Zip Code	
Country			Telephone		
Email					

Signature	/mwresq/	Date	9/23/2013
Name (Print/Type)	Merle W. Richman	Registration No. (Attorney/Agent)	38,282

ENDYMED EXHIBIT 1002 - 6/509

Electronic Patent Application Fee Transmittal

Application Number:	
Filing Date:	
Title of Invention:	ELECTRICALLY BASED MEDICAL TREATMENT DEVICE AND METHOD
First Named Inventor/Applicant Name:	Jong Ju Na
Filer:	Merle W. Richman
Attorney Docket Number:	NA002US

Filed as Small Entity

U.S. National Stage under 35 USC 371 Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Basic National Stage Fee	2631	1	140	140
Natl Stage Search Fee - all other cases	2632	1	300	300
Natl Stage Exam Fee - all other cases	2633	1	360	360
Pages:				
Claims:				
Claims in excess of 20	2615	6	40	240
Miscellaneous-Filing:				
Petition:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**1040**

Electronic Acknowledgement Receipt

EFS ID:	16930656
Application Number:	14006930
International Application Number:	PCT/KR12/04695
Confirmation Number:	2283
Title of Invention:	ELECTRICALLY BASED MEDICAL TREATMENT DEVICE AND METHOD
First Named Inventor/Applicant Name:	Jong Ju Na
Customer Number:	26338
Filer:	Merle W. Richman
Filer Authorized By:	
Attorney Docket Number:	NA002US
Receipt Date:	23-SEP-2013
Filing Date:	
Time Stamp:	18:48:47
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$1040
RAM confirmation Number	5587
Deposit Account	
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1	Drawings-only black and white line drawings	na002us-drawings-translated.pdf	4475789 2ee3db372452c20a018f0f99a5af7f8e9055a02c	no	7
Warnings:					
Information:					
2	Oath or Declaration filed	na002us-declaration.pdf	84761 322088e1bd30c18f9d5a91e24add733f57063f04	no	1
Warnings:					
Information:					
3	Specification	na002us-translated-application.pdf	128555 f82f4d7653fecc8fbec3277dfd5d8138a8f1da10	no	17
Warnings:					
Information:					
4	Application Data Sheet	na002us-ADS.pdf	1502923 94e63b6bf98fb8aed119fc5cf2f19ce33ba48efa	no	6
Warnings:					
Information:					
5	Preliminary Amendment	na002us-preliminary-amendment.pdf	84155 f2613d3f0dd814115d59866940c038a0be9c4a51	no	9
Warnings:					
Information:					
6	Drawings-only black and white line drawings	na002us-replacement-page-sheet6-7.pdf	2043543 12a3dc6ab3d14d7036c420c50454f262878a083a	no	1
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Information:					
7	Specification	na002us-subsitute-specification.pdf	140244 df1e248a6ab64eaf74b449f2d9d365cafe267f2f	no	18
Warnings:					
Information:					
8	Transmittal of New Application	na002us-rule371-transmittal.pdf	140467 e835e48eb6aa8c982723da50644fd5bc35d322c2	no	3
Warnings:					
Information:					
9	Fee Worksheet (SB06)	fee-info.pdf	36346 1e4fb8ff7781f504e83c2ae6322ac8fdc77bb0e6	no	2
Warnings:					
Information:					

Total Files Size (in bytes):	8636783

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

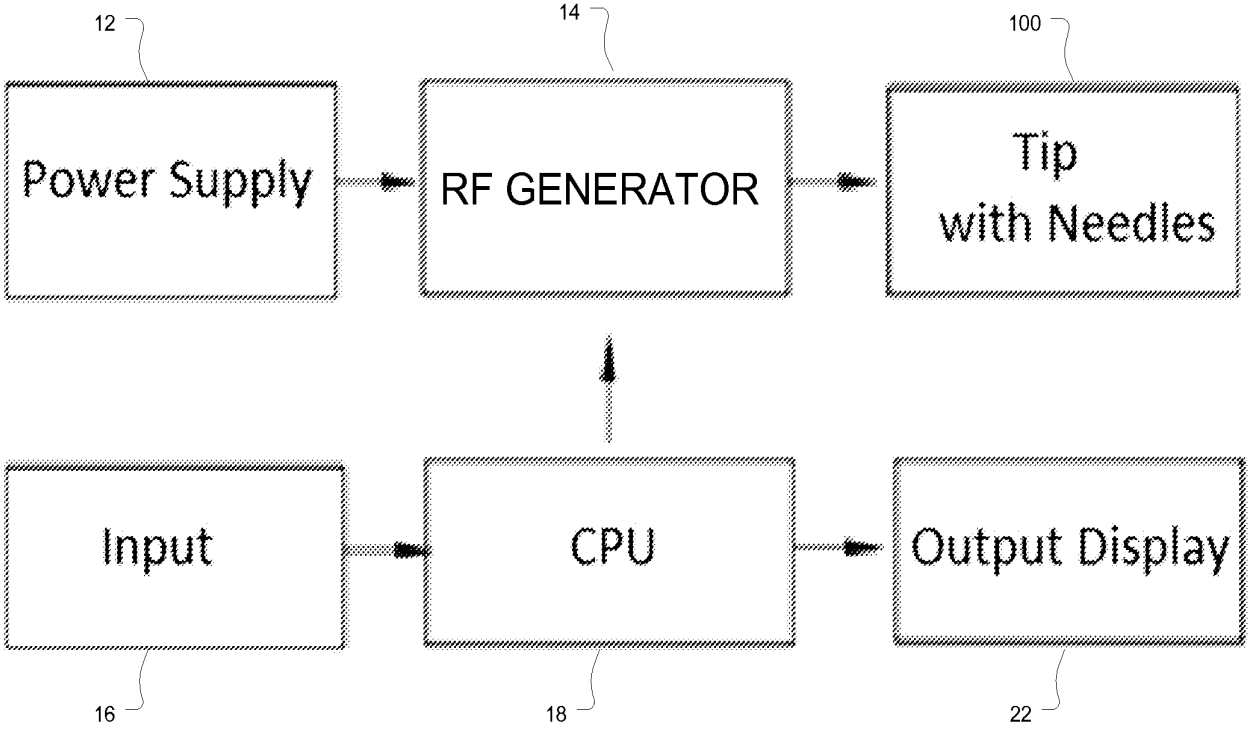

12
14
100
Power Supply
RF GENERATOR
Tip
with Needles
Input
CPU
Output Display
16
18
22

FIGURE 1 10

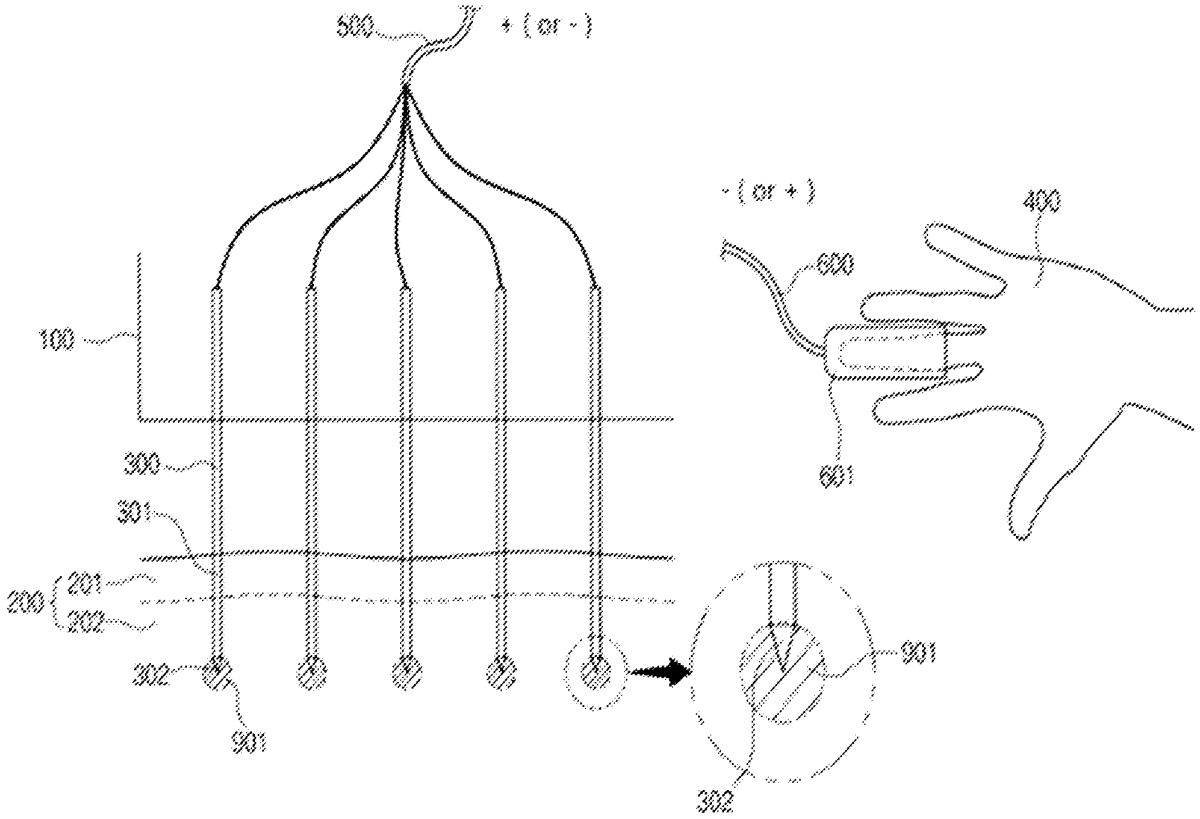


FIGURE 2

ENDYMED EXHIBIT 1002 - 13/509

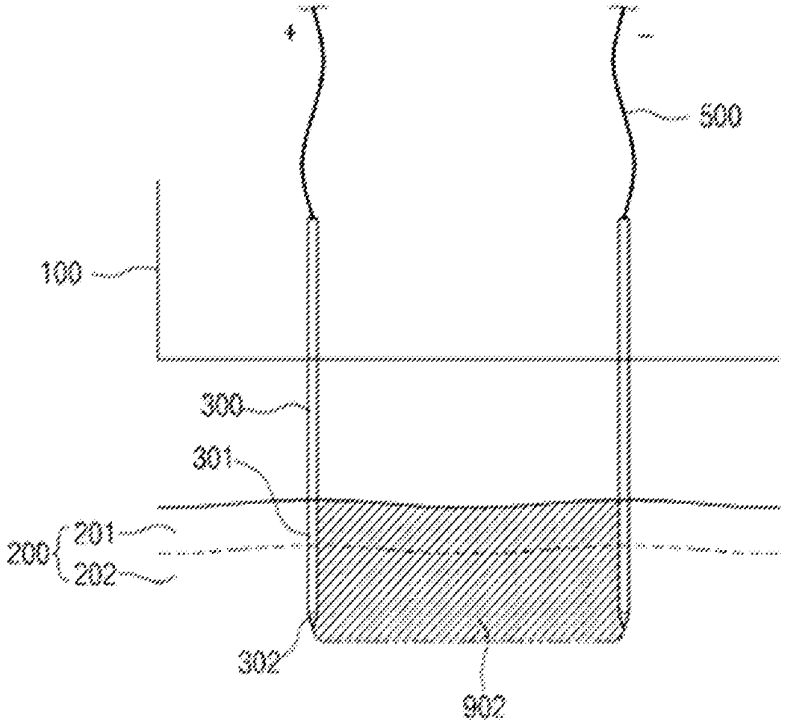


FIGURE 3

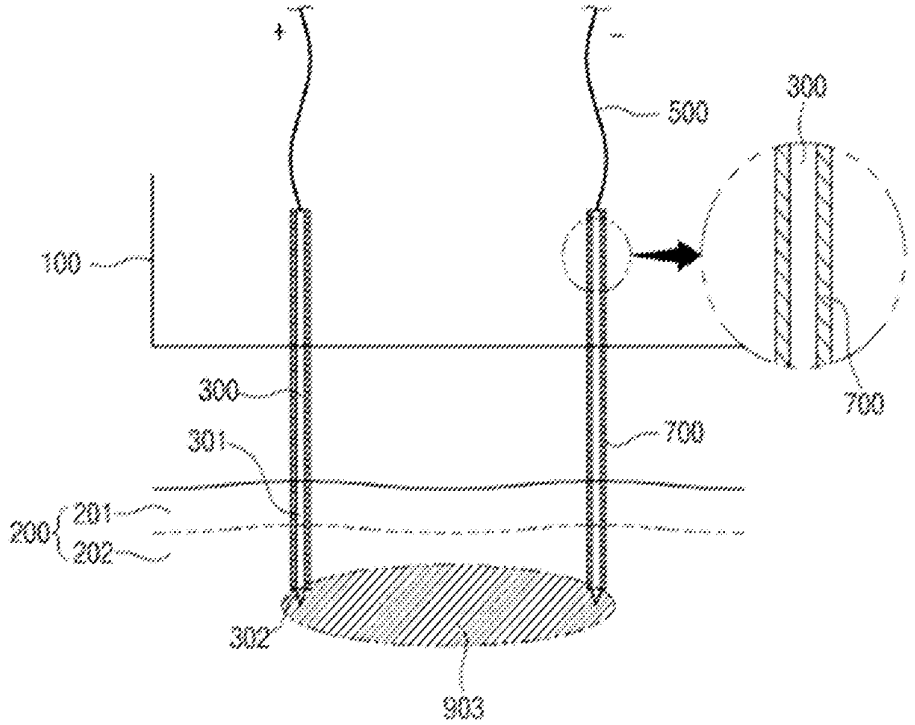


FIGURE 4

ENDYMED EXHIBIT 1002 - 14/509

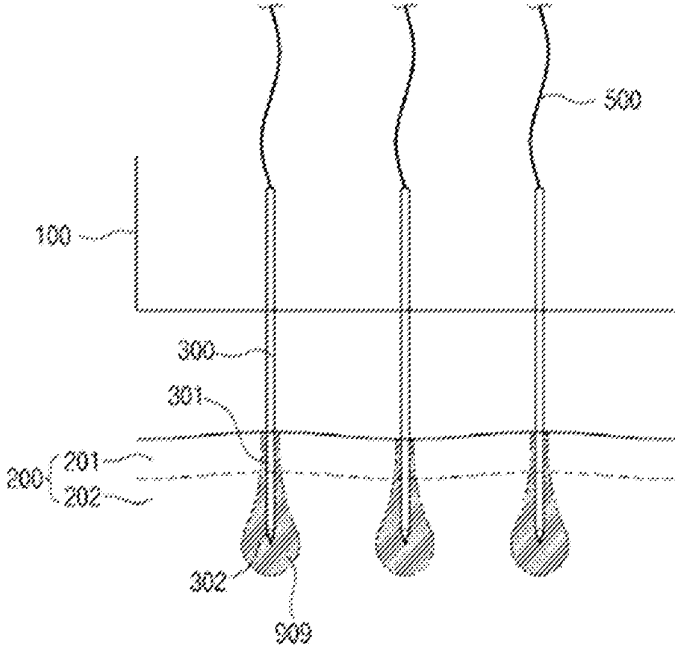


FIGURE 5

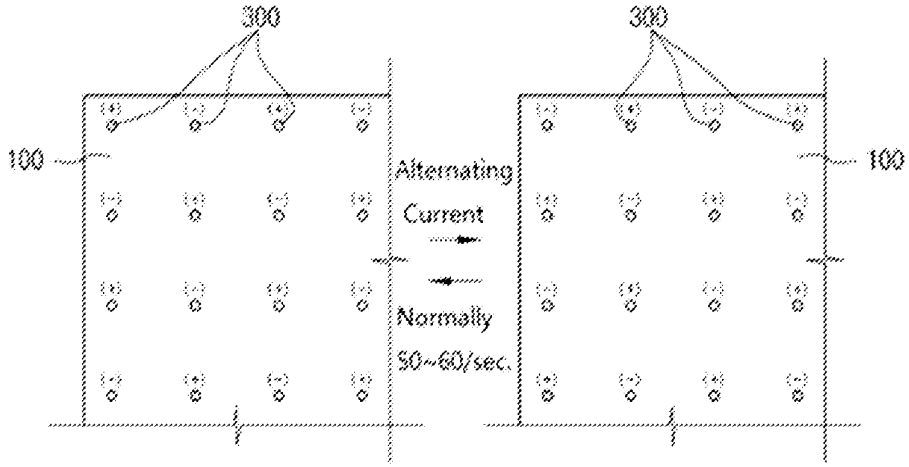


FIGURE 6

ENDYMED EXHIBIT 1002 - 15/509

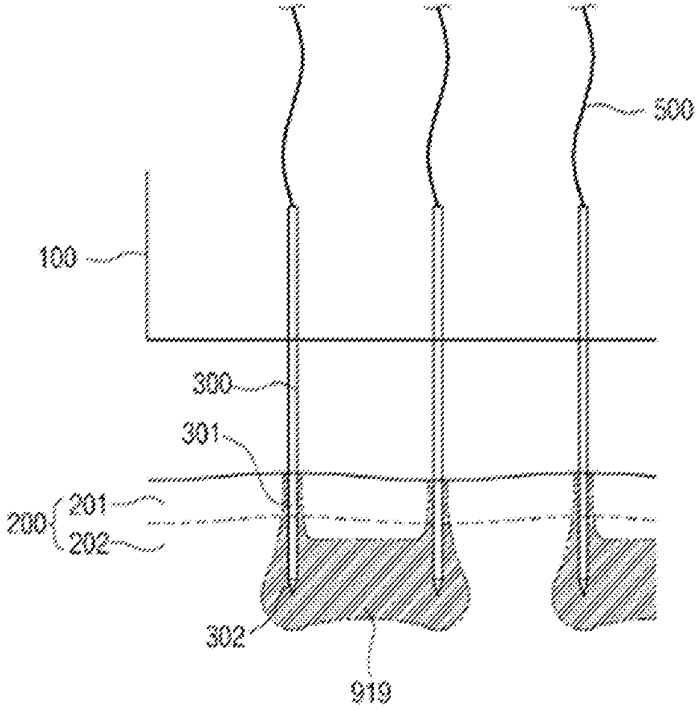


FIGURE 7

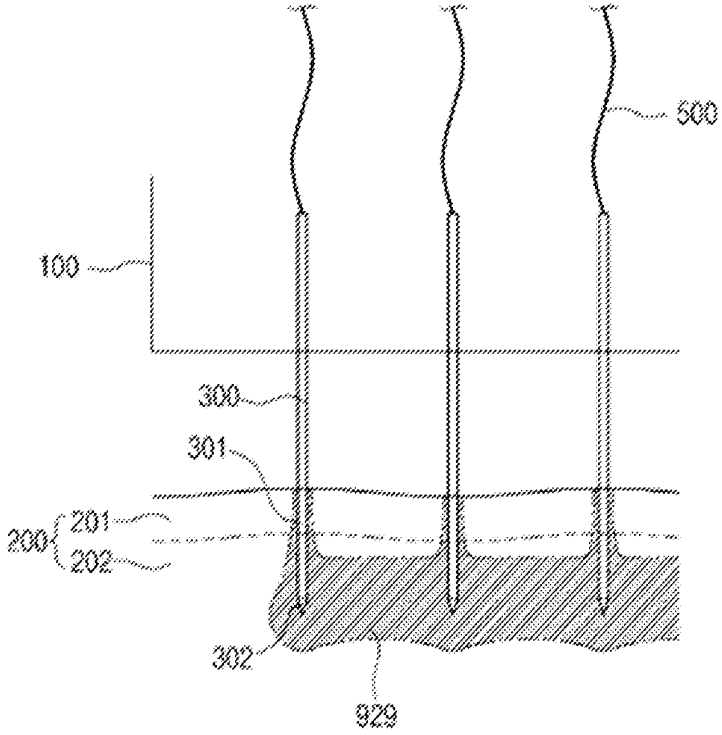


FIGURE 8

ENDYMED EXHIBIT 1002 - 16/509

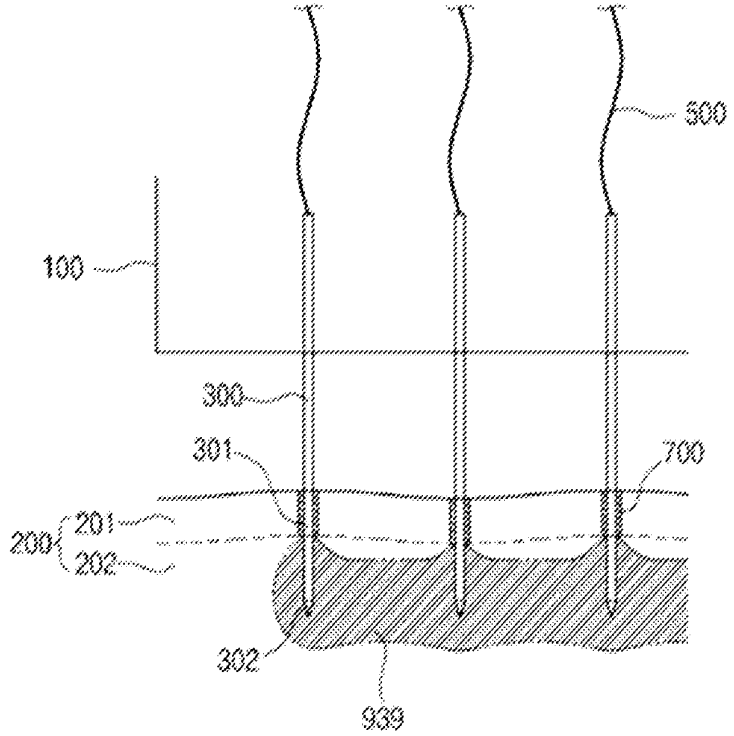


FIGURE 9

ENDYMED EXHIBIT 1002 - 17/509

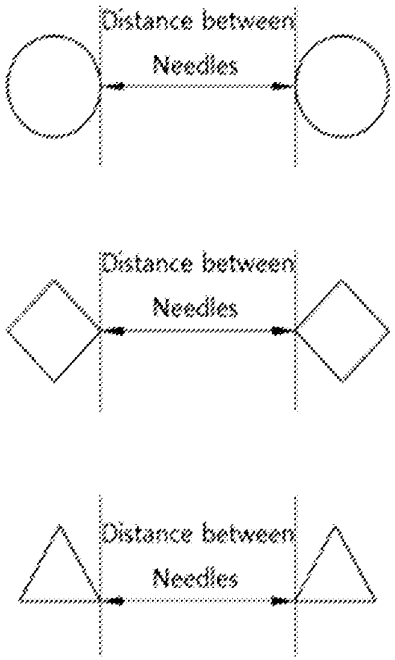


FIGURE 11

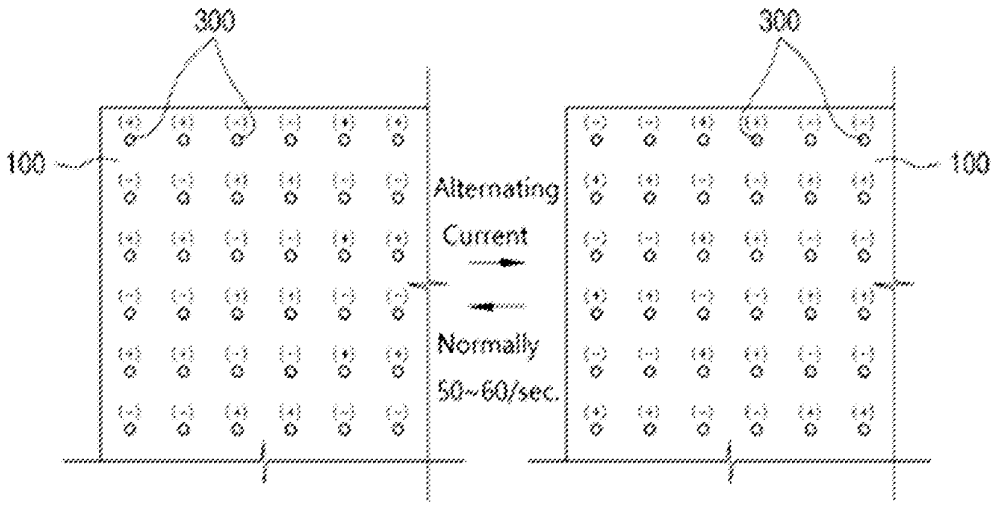


FIGURE 10

PTO/SB/01A (09-12)
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DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of Invention	Skin Improvement Device and Method by Na Effect or Na plus Effect

As the below named inventor(s), I/we declare that:

This declaration is directed to:

- [X] The attached application, or
- [ ] United States Application or PCT international application number PCT/KR2012/004695 filed on June 14, 2012
  - [ ] As amended herewith (if applicable);

I/we believe that I/we am/are the original and first inventor(s) of the subject matter which is claimed and for which a patent is sought;

I/we have reviewed and understand the contents of the above-identified application, including the claims, as amended by any amendment specifically referred to above;

I/we acknowledge the duty to disclose to the United States Patent and Trademark Office all information known to me/us to be material to patentability as defined in 37 CFR 1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the national or PCT International filing date of the continuation-in-part application. The above-identified application was made or authorized to be made by me/us.

WARNING:

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All statements made herein of my/own knowledge are true, all statements made herein on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001, and may jeopardize the validity of the application or any patent issuing thereon. I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5), or both.

FULL NAME OF INVENTOR(S)

Inventor one: Jong ju Na Date: _____

Signature: _____ Citizen of: KR

Inventor two: _____ Date: _____

Signature: _____ Citizen of: _____

[ ] Additional inventors or a legal representative are being named on _____ additional form(s) attached hereto.

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 1 minute to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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Specifications

Title of the Invention: Skin Improvement Device and Method by Na-Effect or Na-Plus Effect

Technical Field

[1] This invention is for skin treatment using electrical energy, especially with the primary purpose for skin treatment for aesthetics, and in some cases, can be used as a direct instrument or supplement for skin cosmetic surgery.

[2] In detail, this invention is to provide skin treatment using method and device using high frequency, which minimizes skin aging by directly stimulating dermis between epidermis and subcutaneous layer.

Background Technology

[3] Generally, skin is the largest protective organ that covers the entire body and maintains homeostasis on surface of the body with three layers consisting of epidermis, dermis, and subcutaneous layer.

[4] Dermis is the layer beneath epidermis, directly connected to basal layer. Skin is made up of dermis that consists of protein, glycoside, glycosaminoglycan, mineral, inorganic salt in gelatinous form. In Dermis there are two layers; papillary and reticular layer. Papillary layer is consisted of capillary and lymphatics. Capillary provides nutrition to skin and circulates blood. Lymphatics carry lymph. Reticular layer is consisted of collagen, elastin and the substrate. Collagen is a fiber related to skin wrinkle, elastin is an elastic fiber that gives elasticity to skin and elastin, and the substrate is mostly made of water. Subcutaneous layer lies below dermis, contains plenty of fat, and attaches the skin to underlying muscle and bone at the bottom of the skin.

[5] One of the most popular treatments to prevent skin aging is massaging with nutritious substance. Although this type of skin treatment of massaging provides nutrition to epidermis and make the skin glow, it does not last for long and rarely shows improvement instantaneously.

[6] A new way was presented by using a syringe to inject serum into the skin, but this treatment method was costly, caused side effects individual skin characteristics, resulting in adverse effect on skin.

[7] After that, a new method developed that delivers high frequency indirectly from the skin surface to dermis. Even with a high voltage, this method was not effective for high frequency to enter dermis from the skin surface. Also, this method was costly because patients needed to receive multiple treatments to obtain results.

[8] We invented a method and device that provide electric stimulation directly in dermis by needles. This method revitalizes regeneration of collagen by wounding dermis.

[9] Taking a detailed look at this, dermis is composed of protein called collagen. Collagen is a triple helical structure including fibroblast and polypeptide and when collagen tissue is heated, physical transformation of protein matrix part occurs at its shrinkage temperature. Soft tissue remodeling is a transformation and is a phenomenon happening at cellular and molecular level, and the triple helical binding is disassembled by partial denaturalization of collagen or shrinkage caused by artificial heat, resulting in destruction of molecular bindings of matrix. When the cell shrinkage occurs, collagen lies on lower part and it supports the matrix within tightened soft tissue. The initial deposition and subsequent remodeling of scar matrix offers a way to modify the shape and consistency of soft tissue for aesthetic purpose. Soft tissue remodeling is an immediate process compared to the shrinkage appearing as a result of movement of fibroblast cell or natural healing. Ultimately, the treatment with the purpose of improving skin or wrinkle can be considered to begin by applying various energy sources to selected area and solidify the tissue.

[10] When energy is applied to dermis, the form of effects on dermis differs depending on the amount of applied energy, and it is generally divided into three phenomena: carbonization, vaporization, and coagulation. Na-Effect of this device improves skin condition by forming coagulation condition in principle, and it can also be expressed with such phrases as “to burn”, “ to apply heat”, “to raise temperature”, even though none of these may be exact and typical description. However, for this invention, “to raise temperature” would be the most suitable description conveying this invention’s feature by applying energy to achieve coagulation so “to raise temperature” could be used to express a way to achieve coagulation.

[11] The term “to raise temperature” can be perceived as applying energy, but the meaning

of "to raise temperature" written on the claims for this invention was used as "to apply energy to achieve coagulation"

[12]

[13] One of the existing technologies related to this is the patent 2000-0058346. This device was invented to restore the skin from wrinkles by verifying wrinkles' thickness, length and shape. It sets the pulse, time, elevation current and wattage to magnify the cell tissue. Then in the hand piece, the needle length can be determined according to the length and depth of wrinkle to remove the wrinkle.

[14] The patent 2000-0058346 used a single needle and although it demonstrated the principle, it was not sufficient for treatment. However, this became a baseline formula for various patents, and one of those is the patent 10-0856736 by the inventor of this invention. This invention is a milestone for increasing the effectiveness of skin treatment by using multiple needles penetrating skin simultaneously.

[15] One of similar technologies is the Korean patent 10-2009-23494. Examining this closely, it is about using a high frequency to provide skin treatment. In detail, it revitalizes cell tissues to maintain elasticity in skin and minimizes skin aging by directly delivering a high frequency into dermis between epidermis and subcutaneous layer. This skin treatment device has a pair of electrodes in the main body case that contacts the mating pair of fixed electrodes where the current is flowing. It delivers a high frequency into the reticular layer via electrodes.

[16] Although this treatment method was effective compared to massage or non-invasive radio frequency treatments, there were many side effects.

[17] The biggest side effect was burned both epidermis and dermis between the needles.

[18] When epidermis is burned by the treatment above (Korean patent 10-2009-23494), the treated area forms a scar.

[19] This phenomenon that burns both dermis and epidermis between needles was inevitable based on electrical engineering concepts (See Figure 3).

[20] Another problem of above treatment is difficulty of finite control.

[21] To avoid burning of epidermis, another technology was developed using insulated needles except the end of tip portion (See Figure 4), but it caused a new set of problems.

[22] First, the needle became thicker with insulation and it caused some problems. The major problems were bigger penetration mark, more pain and possible allergic reaction of patients.

[23] Second, there always was a high possibility of the insulating material coming off. Continuous penetration caused the insulating material to come off and that caused heating of unintended areas.

[24] Third, to compensate for lost temperature due to insulation of needles, the device had to generate a high temperature around needles and increased a possibility of burning.

[25] Another example of danger among existing technologies is device using monopole (See Figure 2). Monopole is a technology that uses an electrode on the target area and the other on any other parts of body. A serious flaw of this technology is that in order to generate desired heat, applying a high voltage was required. This could cause a voltage to impact the unintended parts of body including heart, possibly causing death.

[26] My invention was created to resolve above mentioned problems.

Detailed Explanation of the Invention

Technical Challenge

[27] The purpose of this skin improvement device and method is to resolve above mentioned problems.

Principle of Technology

[28] This invention is a byproduct of newly found effects. It is named "Na-Effect" (See Figure 5). In addition to the Na-Effect, an additional set of effects are found (See Figure 7, 8 and 9) and these effects are named Na-Plus effect.

[29] Usually, Na-Effect and Na-Plus effect use non insulated needles, especially in area where the needles come in contact with dermis.

[30] Heated areas of Na-Effect are different from those of existing bipolar electrodes employing system. The temperature is raised and the heat is concentrated at the area in dermis for coagulations. The heat minimally affects the epidermis area. Also, the heated area around the end of tip of needles is shaped like an oval. Also, Na-Effect is different from the existing technology that the heat is concentrated between needles. In Na-Effect, the heated area is around each needle. In addition, Na effect is invented based on countless trials and the results definitely improve existing problems.

[31] According to Na-Effect, the temperature is raised is around the tip of each needle, not between needles. It is a significantly different method, possible by controlling electrical factors or distance between needles. This method enables users to determine number of treatments in target areas by controlling the dissipated energy.

[32] According to Na-Effect, a higher temperature is concentrated in dermis, not epidermis, enabling the use of non-insulated needles. This technology is a definite advantage over the existing technology by solving problems caused by using insulated needles. Na-Effect does not require insulated needles except for special cases. Applying Na-Effect even in extreme treatment cases, insulating the needle area where it comes in contact with epidermis may be necessary, but it is not required.

[33] The required components for both Na-Effect and Na-Plus effect are bipolarity of needles, alternating current (AC), and high frequency. The distance between electrodes is important for Na-Effect because if the distance between electrodes is too close, the heated area around the tip of each needle may overlap, preventing Na-Effect. However, Na-Plus effect is not interfered by the close distance between needles.

[34] Another required component of Na-Effect and Na-Plus effect is the use of non-insulated needles. This is an important differentiator from the existing technologies. The existing technologies require the use of insulated needles, decreasing the effectiveness of treatments significantly.

[35] A recommended component to Na-Effect and Na-Plus effect is for needles to form a net shape when linked at the tip of needles. Theoretically, it requires the number of needles is to be four and more. However, assuming needles are on a rectangular plane, it is recommended to have at least four needles on each quadrant.

[36] Another required component of Na-Effect and Na-Plus effect is to establish an opposite polarity of (+) and (-) of neighboring needles as shown in Figure 6.

The Effect of the Invention

[37] The most significant effect of this invention is that it resolves the problems of the existing technologies.

[38] The most serious side effect of the existing technology is the burning of both dermis and epidermis between needles, causing a permanent damage to skin and this can be resolved by using any device applying Na-Effect and Na-Plus effect.

[39] Unlike the existing technology that raises temperature between needles, in Na-Effect, the oval shaped heated area is around the end of tip of needles in dermis. The temperature is minimally raised in epidermis as shown in Figure 5. This method is significantly different, possible by controlling electrical factors or distance between needles. Both Na-Effect and Na-Plus effect are breakthroughs in medical treatment.

[40] A danger of the existing technology is scars created by burned epidermis and a further damage caused by more treatments trying to improve the scars. A rare burning of epidermis in Na-Effect and Na-Plus effect is a significant improvement as shown in the drawings.

[41] Compared to the most of existing technologies require insulation of needles except at

the tip area in dermis, insulated needles prevent Na-Effect and Na-Plus effect to take place. Insulation causes needles to be thicker, causing more pain and leaving insertion marks. More seriously, if insulation comes off the needles, that could cause serious side effects.

Brief Explanations of the Drawings

[42] FIG. 1 is a functional diagram of the device according to Na-Effect and Na-Plus Effect application.
[43] FIG. 2 is a diagram of treatment using monopole needles.
[44] FIG. 3 is a diagram of treatment using non-insulated bipolar needles.
[45] FIG. 4 is a diagram of treatment using insulated bipolar needles, except at the tip of the needles.
[46] FIG. 5 is a diagram of treatment using non insulated needles according to Na-Effect.
[47] FIG. 6 is a diagram of illustrating a polarity change of needles according to Na-Effect.
[48] FIG. 7 is a diagram of treatment according to Na-Plus Effect.
[49] FIG. 8 is a diagram of treatment according to Na-Plus Effect.
[50] FIG. 9 is a diagram of treatment according to Na-Plus Effect.
[51] FIG. 10 is another diagram of illustrating a polarity change of needles according to Na-Effect.
[52] FIG. 11 is a simplified diagram illustrating distance between two needles.
[53]
[54] <Detailed Explanation of the Drawings>
[55] 100: fixture holding needles 200: skin
[56] 201: epidermis 202: dermis
[57] 300: pin/needle/electrode 301: needle area penetrating skin
[58] 302: end of needle area penetrating into dermis
[59] 400: patient's hand receiving treatment using monopole method
[60] 500, 600: electrical wire
[61] 700: insulated area of needle
[62] 901: the picture of area where the temperature is raised when using monopole electrode
[63] 902: the picture of area where the temperature is raised when using non-insulated bipolar needles for the existing technology

[64] 903: the picture of area where the temperature is raised using insulated needles except at the tip for the existing technology
[65] 909, 919, 929: the picture of area where the temperature is raised using non-insulated needles in Na-Effect or Na-Plus effect.
[66] 939: the picture of area where the temperature is raised using partially insulated needles in epidermis in Na-effect or Na-Plus effect.

Configuration for Practicing the Invention

[67] The following is to explain an embodiment of this invention in detail.

[68] This invention pursues Na-Effect and Na-Plus effect. Na-Effect and Na-Plus effect are related, Na-Effect being the foundation. Technological components of Na-effect and Na-Plus effect are similar. Na-Plus effect appears as the properties of Na-Effect based on voltage, current, application time, needle thickness, resistance, AC frequency, high frequency, conductivity, and needle penetration depth expand.

[69] The required components for Na-Effect and Na-Plus effect are bipolarity, AC and high frequency. The distance between needles is important for Na-Effect and Na-Plus effect. For Na-Effect, it is not desired to have needles in proximity to each other because if the distance between electrodes is too close, the heated area of each needle will be connected. However, it does not affect the Na-Plus effect. Na-Plus effect happens when the heated areas of Na-Effect in dermis expand and are connected in dermis, not in epidermis as shown in Figure 7 and 8.

[70] Alternating current (AC) is the current that changes magnitude and direction periodically. Sine wave is a typical waveform and it can be modified to triangular or square wave. It has many different characteristics from direct current (DC) that flows in one direction. AC is used at either 50Hz or 60 Hz worldwide.

[71] AC is the most critical factor for generate Na-Effect and Na-Plus effect. Unless the frequency is extremely high as in hundreds of Hz, it is considered not problematic. In case of high frequency, decreasing the distance between needles can compensate the impact of high frequency. Low frequency can cause a problem to realize Na-Effect. However, at a frequency higher than 20Hz (including 20Hz), Na-Effect can be realized by

controlling other factors in Na-Effect. Those control factors will be discussed later in the text.

[72] Based on research, Na-Effect and Na-Plus effect are not realized without high frequency. Na-Effect and Na-Plus effect were not realized with low and medium frequencies, ultrasonic waves, and ion.

[73] Na-Effect and Na-Plus effect are realized at above 0.5MHz. The ideal frequency was found to be at around 2MHz. The working frequency range of Na-Effect and Na-Plus effect is 0.5 to 10MHz, more precise and ideal working range being 1 to 4MHz and 1.5 – 2.5MHz, respectively. The frequency range may vary depending on the factors affecting Na-Effect and Na-Plus effect.

[74] To explain this in depth, if you do perform electricity conductivity experiment for dry skin and wet skin with 2 MHz and 1 MHz, dry skin has 0.037102 at 2 MHz and 0.013237 at 1 MHz, wet skin has 0.26649 at 2MHz and 0.2214 at 1 MHz. Consequently, flow of RF energy is smoother at 2 MHz, and the same energy is applied on dry skin, the probability for spark at 1MHz can be varied by other variables, but when comparing arithmetical electricity conductivity, it is three times higher.

[75] To describe this in detail, when electric current flows, a high frequency creates an energy field closer to electrode. In case of the energy field at a low frequency with the same electrical current, the energy field created around the electrode is large.

[76] For example, when below 0.5MHz (including 0.5MHz), even with the electrodes spaced far from each other, the impacted area created by energy is broad and it could result in scars in epidermis due to burning. Also, for areas where a precise treatment is required such as around eyelid, the broad energy field can have a harmful impact on an eye. Conversely, when above 10MHz (including 10MHz), the energy field is too narrow and it causes an increase in treatment time. It is also difficult to create an energy field for most effective treatment.

[77] Na-Effect and Na-Plus effect are greatly related to the distance between needles. The distance between needles is related to all the other components of Na-Effect and Na-Plus effect as well. For example, the distance between needles decreased as the

value of frequency increased and conversely, the distance between needles increased as the value of frequency decreased. At 2MHz, it was found that the ideal distance between needles was 2mm.

[78] Insulation of needles is an important factor that affects Na-Effect and Na-Plus effect. Insulation of needles is not necessary for Na-effect and Na-Plus effect to occur where the temperature is raised around the tip of needles in an oval shape in dermis, and minimally raised in epidermis, as shown in Figure 5, 7, 8 and 9. However, unless the coating of needles is for electrical insulation, it is not expected the coating prevents Na-Effect and Na-Plus effect to take place. Needles can be plated with other precious metals or heat-treated to achieve higher conductivity and hardness and that does not affect Na-Effect and Na-Plus effect.

[79] To maximize the effect of Na-Effect and Na-Plus effect, it is ideal not to insulate needles. If insulation is required, it is ideal not to insulate the area of needle that comes in contact with dermis. It is to note that needle insulation does not entirely prevent Na-Effect and Na-Plus effect to occur. For example, using the monopole method with insulated needle (except at the tip), one can achieve a similar shape of raised temperature area. However, it is important to note that the similarity is only in shape, the effect is different based on a different application process.

[80] Another component closely related to Na-Effect and Na-Plus effect is the arrangement of needles. In Na-Effect and Na-Plus effect, neighboring needles exhibit an opposite polarity as shown in Figure 6. This arrangement is made up of squares with a needle on each corner exhibiting an opposite polarity to the neighboring needle. Because of AC, the polarity of each needle changes 50-60 times per second and enables the neighboring needle to have an opposite polarity as shown in Figure 6. It is an important principle of this invention that each needle exhibits an opposite polarity to the closest neighboring needles as in (+) and (-) to each direction.

[81] It was verified that the square is ideal, but Na-Effect and Na-Plus effect can also take place in shapes like rhombus, rectangle, or quadrangle as long as the neighboring needles exhibit an opposite polarity.

[82] In some cases, non-conductive needles can be placed or needles can be removed in

particular positions to achieve Na-Effect and Na-Plus effect. In Na-Effect and Na-Plus effect, the closest neighboring needles have an opposite polarity, crossing in each direction as in (+) and (-). In terms of placement, shape and corresponding polarity, all above mentioned examples are required for Na-Effect and Na-Plus effect to take place.

[83] Another example of an arrangement allowing Na-Effect and Na-Plus effect to take place is shown in Figure 10. As shown in Figure 10, if one of the closest needles in any direction has a different polarity, Na-Effect and Na-Plus effect can be realized.

[84] A variety of combination of needle placement and needle fixture shape can be used in designing a device that employs Na-Effect and Na-Plus effect if the polarity setting shown in Figure 6 and Figure 10 are followed.

[85] To achieve Na-Effect and Na-Plus effect, a minimum number of needles is 4, but it is recommended to have a minimum of 9 needles with identical arrangement mentioned above for Na-Effect and Na-Plus effect to take place.

[86] To avoid infringement of this technology, others apply different arrangements of needles but it is not a different technology as needles can be arranged in a certain pattern to realize Na-effect and Na-Plus effect.

[87] Another important component is voltage. Voltage is an important factor determining the distance between needles and it is also directly related to safety of this device. Applied voltage to skin is measured in this invention.

[88] Another important component is voltage. Voltage is an important factor determining the distance between needles and it is also directly related to safety of this device. Applied voltage to skin is recommended to be measured in this invention.

[89] The meaning of "the applied voltage to skin" and the possibility of measurement are as follows:

[90] The actual voltage applied to skin is the voltage between the surface of a needle and the skin the needle comes in contact with. The value of the actual voltage can vary depending on device resistance, needle resistance and skin resistance. It could also vary

on different positions of needle due to possible difference in skin resistance. The applied voltage to needle is constant, but due to resistance of skin, the measured voltage can be different.

[91] The resistance value varies under skin, but negligible. This invention measured the voltage of needle surface while penetrated.

[92] The voltage applied is directly related to the amount of energy created. The voltage applied should not exceed 100V. A recommended range of operating voltage is between 10 to 60V, ideal being 20 to 40V. Na-effect and Na-Plus effect can be realized with operating voltage higher than 100V. In a rare circumstance, 100V could be used in Na-effect and Na=Plus effect, but there is a risk of burning the skin so it is not recommended to use the operating voltage higher than 100V (including 100V) in skin treatment.

[93] The actual voltage on skin and the operating voltage of the device can be controlled by modifying the electronics of the device.

[94] Another variable is the electric current. It varies depending on voltage and resistance, but it is possible to compute the value of the electric current when device resistance, needle resistance, and skin resistance values are determined.

[95] V=I*R

[96] The value of resistance is largely identified as three types; device resistance, needles resistance and skin resistance.

[97] Another important component is energy delivery time. It takes a minimum of 0.02 second for high frequency energy to reach its stability so if the duration of energy is less than 0.02 second, the effect cannot be measured. It was found that the retention time should be more than 0.05 second (including 0.05). A major advantage of this invention is a relatively short energy retention time; the longest retention time measured was 0.8 second. It is possible to extend the energy retention time by increasing the distance between needles and lowering the voltage, but under the ideal condition, the energy retention time was between 0.05 to 0.8 second.

[98] The acceptable energy delivery time is between 0.1 to 0.4 second, the ideal range being 0.1 to 0.2 second. It was after a discovery of Na-Effect that using high frequency and low voltage, it is possible to generate energy for effective skin treatment. However, desirable time lies between 0.1 - 0.4 seconds, and optimal time is measured as 0.1 - 0.2 seconds. It was much more difficult to find the time than expected, and required countless trials and errors with insight. Because only after Na-Effect was invented, it was possible to imagine having this short overload time using this high frequency and alternating currency with low voltage.

[99] Comparing to the existing devices (like Polaris) that apply energy onto skin via electrodes at a high voltage for longer than 0.5 second, this invention generates energy in a short period of time.

[100] The length and thickness of needle are important features as well. The thickness of needle affects the distance between needles. A needle should have strength to withstand a repetitive penetration into skin. It is note that thicker the needle, it may involve more pain and bigger scars.

[101] Sizes of needle currently in use for this invention are 0.25mm and 0.30mm. Needle thickness could vary and have a minimal impact to realizing Na-Effect and Na-Plus effect.

[102] The length of a needle can vary depending on design of the device. It can also depend on the thickness of the skin and the purpose of treatment.

[103] In general, the depth of epidermis is between 0.2mm and 1mm, and the depth of dermis is between 1mm and 4mm. Therefore, the length of a needle to reach the top of dermis must be at least 0.2mm and the maximum length to reach the bottom of dermis is 5mm. Considering safety, it can be said that the ideal depth for treatment is 1mm - 5mm. Total length of a needle can vary depending on the type on type of devices, but the length of a needle penetrating the skin should be between 1mm to 4mm.

[104] Using Na-Effect, epidermis consists of stratum corneum, stratum granulosum, stratum spinosum, stratum basale with different resistance level, can be treated under

the depth of 1mm (including 1mm). Also, there is a case of needles reaching the depth of 6mm into subcutaneous layer. Therefore, it is conceivable to design a device with the needle penetration depth between 1mm to 6mm.

[105] As mentioned before, one of the most critical requirements in designing a device based on Na-Effect and NA-Plus effect is the distance between needles. The definition of the distance between needles for this invention is shown in figure 11.

[106] Na-Effect and Na-Plus effect can be realized with a minimum distance between needles of 1.3mm. The ideal distance between needles is observed to be between 1.3 - 3.0mm, and by controlling the amount of current or by decreasing the resistance, it is possible to realize Na-Effect and Na-Plus effect with greater distance between needles.

[107] To explain this in more detail, there is a risk of scar or burn from unexpected excessive heat if the distance between closest neighboring needles is shorter than 1.3mm. If the distance is greater than 3.0mm, the treatment time increases as the treatment efficiency decreases significantly.

[108] However, the distance between needles are subjected to change depending on multiple variables.

[109] Under the premise of gaining proper Na-Effect and Na-Plus effect, factors that affect the distance between needles are as follows:

[110] As energy increases or the needle's thickness increases, the distance between needles should be expanded. Energy is voltage multiplied by current and time. Therefore, the distance between needles must be expanded if any combination of voltage, current, needle thickness, and conductivity increases.

[111] Na-Effect and Na-Plus effect can be realized by shortening the distance between needles if the value of resistance, AC frequency, high frequency, and penetrated depth of needle increases in any combination.

[112] Mathematically, the distance between needles can be explained as follows:

[113] $$\text{Distance} = N * \frac{(\text{Power = energy}) * (\text{Needle Thickness}) * (\text{Conductivity})}{(\text{Resistance}) * (\text{AC Frequency}) * (\text{High Frequency}) * (\text{Penetrated Needle Depth})}$$

[114] N: Proportional constant

[115] Resistance: Device resistance, needle resistance, skin resistance

[116] Energy (Joule) = W * t (W = Watt, t = time)

[117] Energy (Joule) = V * I * t (W = V * I)

[118] Energy (Joule) = I^2 * R * t (V = I * R)

[119] So,

[120] $$\text{Distance} = N * \frac{V * I * t * (\text{Needle Thickness}) * (\text{Conductivity})}{(\text{Resistance}) * (\text{AC Frequency}) * (\text{High Frequency}) * (\text{Penetrated Needle Depth})}$$

[121] Could be another equation to calculate the distance between needles.

[122] Needle fixture mentioned for this invention prevents needles to move freely; it does not mean it prevents any movement within the confined space of the fixture.

Claims

What is claimed is:

1. Each heated area is separated around each needle both in epidermis and dermis.
    a. Each heated area is separated around each needle in both epidermis and dermis.
    b. The heat is concentrated in the dermis area, the heat minimally affects the epidermis area and each heated area is separated around each needle in both epidermis and dermis.

c. This device uses the Na-Effect. In the Na-Effect, the heat is concentrated in the areas of dermis, the heat minimally affects the epidermis area, the heat around the end of the tip of needles is shaped like an oval, and the heated are is around each needle.

2. Each heated area is separated around each needle in epidermis, not in dermis.

   a. Each heated area is separated around each needle in epidermis, not in dermis.

   b. The heat is concentrated in the dermis area, the heat minimally affects the epidermis area and each heated area is separated around each needle in epidermis, not in dermis.

   c. This device and method use the Na-Plus effect. The Na-plus effect happens when the heated area of the Na-Effect around each needles in dermis expand and are connected in dermis, not in epidermis.

3. The penetration depth of needle into skin is 1.0mm – 5.0mm.

4. The penetration depth of needle into skin is 0.1mm – 1.0mm.

5. The device and method have the high frequency delivery time of between 0.05 and 0.8 seconds.

6. The device and method have the high frequency delivery time of between 0.1 and 0.4 seconds.

7. The device and method have the high frequency delivery time of between 0.1 and 0.2 seconds.

8. The device and method have the high frequency range of 0.5 – 10MHz.

9. The device and method have the high frequency range of 1 – 4MHz.

10. The device and method have the high frequency range of 1.5 – 2.5MHz.

11. The closest distance between neighboring needles is 1.32mm – 3.0mm.

12. Needles in the dermis area are not insulated.

13. The voltage applied to needles is below 100V, including 100V.

14. The device and method have the applied voltage of 10 – 60V.

15. The device and method have the applied voltage of 20 – 40V.

16. The frequency of the alternating current is higher than 20Hz, including 20Hz.

17. The device and method have needles with the maximum diameter of 0.25mm – 0.3mm

18. The polarity of neighboring needles (minimum of 4) is different, alternating between (+) and (-).

19. The polarity of neighboring needles (minimum of 9) is different, alternating between (+) and (-).

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	NA002US
	Application Number	
Title of Invention	ELECTRICALLY BASED MEDICAL TREATMENT DEVICE AND METHOD	

The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.
This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.

Secrecy Order 37 CFR 5.2

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Inventor Information:

Inventor 1 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
Mr	Jong	ju	Na	

Residence Information (Select One) ○ US Residency ◉ Non US Residency ○ Active US Military Service

City	Songpa-Gu	Country of Residence i	KR

Mailing Address of Inventor:

Address 1	1-901 Hanyang Apt., 1089, Yangjae-daero		
Address 2			
City	Songpa-Gu	State/Province	Se
Postal Code	138-836	Country i	KR

All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the **Add** button. Add

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below.
For further information see 37 CFR 1.33(a).

☐ **An Address is being provided for the correspondence Information of this application.**

Customer Number	26338		
Email Address	patent@san.rr.com	Add Email	Remove Email

Application Information:

Title of the Invention	ELECTRICALLY BASED MEDICAL TREATMENT DEVICE AND METHOD		
Attorney Docket Number	NA002US	Small Entity Status Claimed	☒
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)		Suggested Figure for Publication (if any)	

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	NA002US
	Application Number	
Title of Invention	ELECTRICALLY BASED MEDICAL TREATMENT DEVICE AND METHOD	

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

☐ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32).
Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

Please Select One:	◉ Customer Number	○ US Patent Practitioner	○ Limited Recognition (37 CFR 11.9)
Customer Number	26338		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, or 365(c) or indicate National Stage entry from a PCT application. Providing this information in the application data sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.

Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
	a 371 of international	PCTKR2012004695	

Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button. Add

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55(d). When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX) [i] the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(h)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

Remove

Application Number	Country [i]	Filing Date (YYYY-MM-DD)	Access Code [i] (if applicable)
10-2011-0057691	KR	2011-06-14	

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	NA002US
	Application Number	
Title of Invention	ELECTRICALLY BASED MEDICAL TREATMENT DEVICE AND METHOD	

Application Number	Country [i]	Filing Date (YYYY-MM-DD)	Access Code [i] (if applicable)
10-2011-0057692	KR	2011-06-14	

Remove

Additional Foreign Priority Data may be generated within this form by selecting the **Add** button. Add

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.

Authorization to Permit Access:

☐ Authorization to Permit Access to the Instant Application by the Participating Offices

If checked, the undersigned hereby grants the USPTO authority to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the World Intellectual Property Office (WIPO), and any other intellectual property offices in which a foreign application claiming priority to the instant patent application is filed access to the instant patent application. See 37 CFR 1.14(c) and (h). This box should not be checked if the applicant does not wish the EPO, JPO, KIPO, WIPO, or other intellectual property office in which a foreign application claiming priority to the instant patent application is filed to have access to the instant patent application.

In accordance with 37 CFR 1.14(h)(3), access will be provided to a copy of the instant patent application with respect to: 1) the instant patent application-as-filed; 2) any foreign application to which the instant patent application claims priority under 35 U.S.C. 119(a)-(d) if a copy of the foreign application that satisfies the certified copy requirement of 37 CFR 1.55 has been filed in the instant patent application; and 3) any U.S. application-as-filed from which benefit is sought in the instant patent application.

In accordance with 37 CFR 1.14(c), access may be provided to information concerning the date of filing this Authorization.

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	NA002US
	Application Number	
Title of Invention	ELECTRICALLY BASED MEDICAL TREATMENT DEVICE AND METHOD	

Applicant 1 Remove

If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.

Clear

◯ Assignee	◯ Legal Representative under 35 U.S.C. 117	◯ Joint Inventor
◯ Person to whom the inventor is obligated to assign.	◯ Person who shows sufficient proprietary interest	

If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:

Name of the Deceased or Legally Incapacitated Inventor :

If the Applicant is an Organization check here. ☐

Prefix	**Given Name**	Middle Name	**Family Name**	Suffix

Mailing Address Information:

Address 1			
Address 2			
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Country [i]		Postal Code	
Phone Number		Fax Number	
Email Address			

Additional Applicant Data may be generated within this form by selecting the Add button. Add

Non-Applicant Assignee Information:

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Assignee 1

Complete this section only if non-applicant assignee information is desired to be included on the patent application publication in accordance with 37 CFR 1.215(b). Do not include in this section an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest), as the patent application publication will include the name of the applicant(s).

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	NA002US
	Application Number	
Title of Invention	ELECTRICALLY BASED MEDICAL TREATMENT DEVICE AND METHOD	

If the Assignee is an Organization check here. ☐

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Address 2			
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Signature:

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NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications

Signature	/mwresq/			Date (YYYY-MM-DD)	2013-09-23
First Name	Merle	Last Name	Richman	Registration Number	38282

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The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Na Application No.: Filed Herewith Filed: Herewith Title: ELECTRICALLY BASED MEDICAL TREATMENT DEVICE AND METHOD Attorney Docket No.: NA002US	Art Unit: Examiner:

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

PRELIMINARY AMENDMENT

Dear Sir:

Please amend the application as filed herewith:

In the Title:

~~Skin Improvement Device and Method by Na-Effect or Na-Plus Effect~~ Electrically Based Medical Treatment Device and Method

In the Specification:

A substitute specification has been submitted herewith under the Rule 371 filing and noted in the Rule 371 transmittal.

In the claims:

Please cancel claims 1-19.

1. (Canceled)
2. (Canceled)
3. (Canceled)
4. (Canceled)
5. (Canceled)
6. (Canceled)
7. (Canceled)
8. (Canceled)
9. (Canceled)
10. (Canceled)
11. (Canceled)
12. (Canceled)
13. (Canceled)
14. (Canceled)
15. (Canceled)
16. (Canceled)
17. (Canceled)
18. (Canceled)
19. (Canceled)

Please add claims 20-45:

20. (Newly Added) A medical treatment apparatus, comprising:

a plurality of needles; the needles not coupled to a body ground, separated by a distance, and having a length sufficient to reach a desired region of a human body when inserted into a human body; and

a signal generation module, the signal generation module electrically coupled to the plurality of needles and providing electrical energy signals to the plurality of needles to form an independent, substantially non-intersecting energy field about two or more of the needle tips.

21. (Newly Added) The medical treatment apparatus of claim 1, further comprising a drive module to controllably move one or more of the plurality of needles along their length from a first human body region to second human body region.

22. (Newly Added) The medical treatment apparatus of claim 1, wherein the signal generation module applies a first alternating current electrical energy signal with a first polarity to a first subset of needles and applies a second alternating current electrical energy signal with a second, opposite polarity to a second subset of needles.

23. (Newly Added) The medical treatment apparatus of claim 3, wherein energy field formed about the two or more needle tips is substantially oval in shape.

24. (Newly Added) The medical treatment apparatus of claim 3, wherein the signal generation module provides electrical energy signals to the plurality of needles to form an independent, substantially non-intersecting, substantially oval shaped energy fields about the plurality of needles tips.

25. (Newly Added) The medical treatment apparatus of claim 1, wherein the medical treatment apparatus is a skin treatment apparatus and each of the plurality of needles has a length sufficient to reach dermis of a human body when inserted into the skin of a human body region.

26. (Newly Added) The medical treatment apparatus of claim 1, further comprising a drive module to controllably move one or more of the plurality of needles along their length from an epidermis region to an adjacent dermis region of a human body region.

27. (Newly Added) The medical treatment apparatus of claim 3, wherein the first subset and second subset of needles comprise the plurality of needles and the first subset of needles are evenly interspersed between the second subset of needles.

28. (Newly Added) The medical treatment apparatus of claim 3, wherein the first subset of needles are singly interspersed between the second subset of needles.

29. (Newly Added) The medical treatment apparatus of claim 3, wherein the first and the second alternating current electrical signals have a frequency from 0.5 to 10 Mhz.

30. (Newly Added) The medical treatment apparatus of claim 3, wherein the first and the second alternating current electrical signals have a frequency from 1.5 to 2.5 Mhz.

31. (Newly Added) The medical treatment apparatus of claim 1, wherein each of the plurality of needles has a cross sectional shape of one of a square, rhombus, and rectangle.

32. (Newly Added) The medical treatment apparatus of claim 3, wherein the first and the second alternating current electrical signals have a voltage level below 100 volts.

33. (Newly Added) The medical treatment apparatus of claim 3, wherein the first and the second alternating current electrical signals have a voltage level from 20 to 40 volts.

34. (Newly Added) The medical treatment apparatus of claim 3, wherein the signal generation module applies a first alternating current electrical energy signal with a first polarity to a first subset of needles for 0.05 to 0.8 seconds and applies a second alternating current electrical energy signal with a second, opposite polarity to a second subset of needles for 0.05 to 0.8 seconds.

35. (Newly Added) The medical treatment apparatus of claim 3, wherein the signal generation module applies a first alternating current electrical energy signal with a first polarity to a first subset of needles for 0.1 to 0.2 seconds and applies a second alternating current electrical energy signal with a second, opposite polarity to a second subset of needles for 0.1 to 0.2 seconds.

36. (Newly Added) The medical treatment apparatus of claim 3, wherein the signal generation module delays applies a first alternating current electrical energy signal with a first polarity to a first subset of needles for a time interval after an off interval from 0.1 to 0.4 seconds and applies a second alternating current electrical energy signal with a second, opposite polarity to a second subset of needles for a time interval after an off interval from 0.1 to 0.4 seconds.

37. (Newly Added) The medical treatment apparatus of claim 1, wherein the needles have a length from 0.1mm to 5.0mm and a separation between adjacent needles from about 1.0mm to 3.0mm.

38. (Newly Added) The medical treatment apparatus of claim 1, wherein each of the plurality of needles has a cross sectional diameter of about 0.20mm to 0.40mm.

39. (Newly Added) The medical treatment apparatus of claim 1, wherein each of the plurality of needles has a cross sectional diameter of about 0.25mm to 0.30mm.

40. (Newly Added) The medical treatment apparatus of claim 1, wherein each of the plurality of needles is substantially non-insulated.

41. (Newly Added) The medical treatment apparatus of claim 1, wherein each of the plurality of needles includes an insulated section and non-insulated section.

42. (Newly Added) The medical treatment apparatus of claim 22, wherein the insulated section is longer than the non-insulated section along the needle length.

43. (Newly Added) The medical treatment apparatus of claim 22, wherein the plurality of needles form a rectangular pattern.

44. (Newly Added) The medical treatment apparatus of claim 3, further comprising a user interface to enable a user to select one the voltage level, alternating frequency, on time, and off time of the first and the second alternating current electrical signals.

45. (Newly Added) The medical treatment apparatus of claim 2, further comprising a user interface to enable a user to select the needle depths that the drive module controllably moves one or more of the plurality of needles along their length.

In the Drawings:

Please replace drawing sheet 6 of 7 via the attached replacement sheet. Figure 9 is being deleted and Figures 9A and 9B are being added where Figure 9A is identical to the originally filed Figure 9 and support for Figure 9B exists in the application as filed.

REMARKS

The newly filed application included 19 claims as filed as a PCT application. Applicants have cancelled claims 1-19 and added claims 20-45. Upon entry of the preliminary amendment claims 20-45 will be pending. Entry of the amendment is respectfully requested.

Applicant has also amended the Title of the PCT application was filed. Applicant has also replaced drawing sheet 6 of 7. Figure 9 is being deleted and Figures 9A and 9B are being added where Figure 9A is identical to the originally filed Figure 9 and support for Figure 9B exists in the application as filed. Entry of the Title change and drawing replacement sheet is respectfully requested.

Respectfully Submitted,

9/23/2013__ _/mwresq/_____
Date Merle Richman
Attorney/Agent for Applicant(s)
Reg. No. 38282

Merle Richman
Patent Attorney
Customer ID - 26338
PO Box 3333
La Jolla, CA 92038-3333
Tel. 858 320-2030

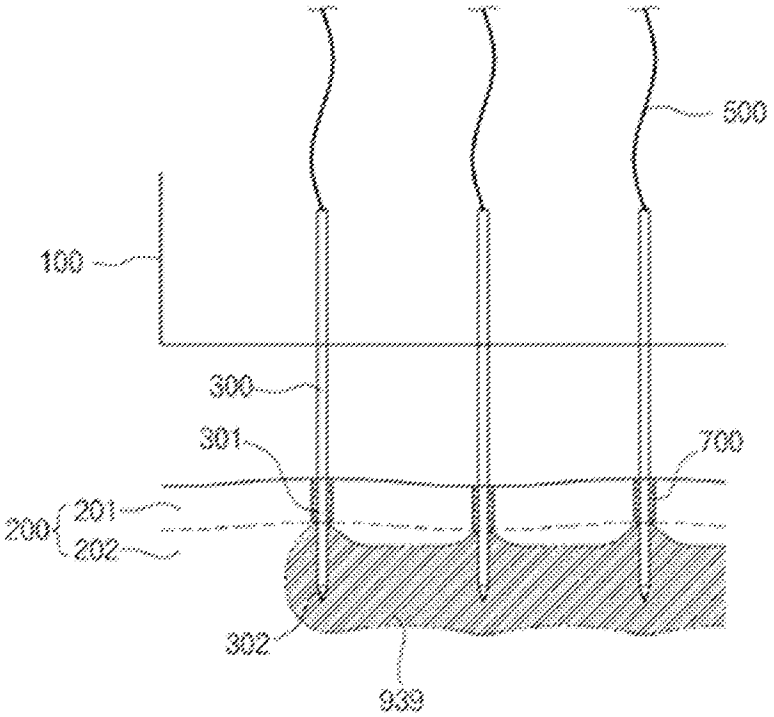


FIGURE 9A

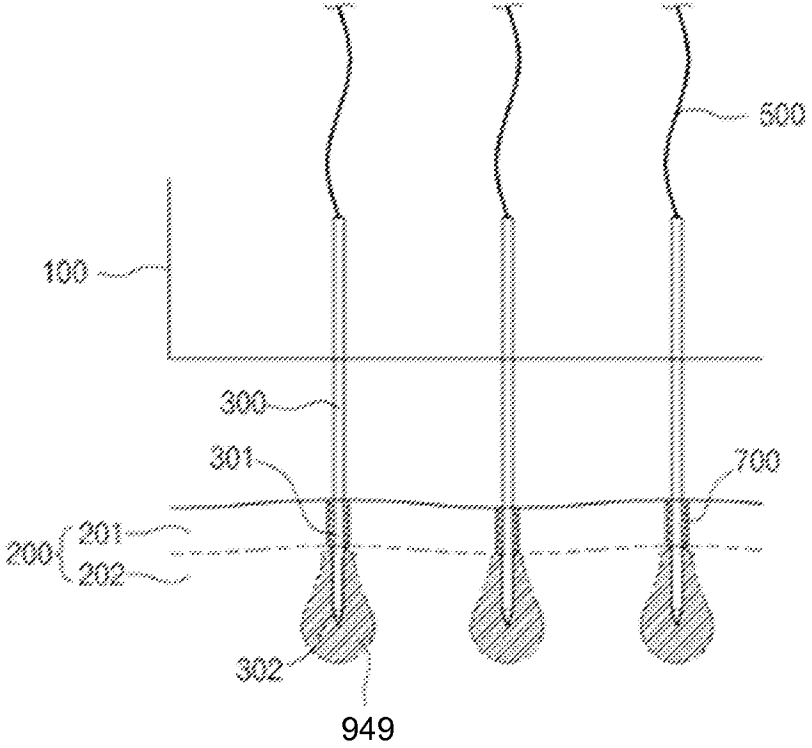


FIGURE 9B

ENDYMED EXHIBIT 1002 - 52/509

SUBSTITUTE SPECIFICATION

UNITED STATES PATENT APPLICATION

ELECTRICALLY BASED MEDICAL TREATMENT DEVICE AND METHOD

INVENTOR

Jongju Na of Republic of Korea

Prepared by:

Merle W. Richman, Esq.
P.O. Box 3333
La Jolla, CA 92038-3333
ATTORNEY DOCKET NA002US

SUBSTITUTE SPECIFICATION

ELECTRICALLY BASED MEDICAL TREATMENT DEVICE AND METHOD

Cross Reference to Related Applications

[0001] The present application claims the benefit of priority to Republic of Korea Application Number 10-2011-0057691, entitled " APPARATUS AND METHOD FOR IMPROVING SK1N US1NG A NA-EFFECT OR NA PLUS-EFFECT," filed on June 14, 2011, Republic of Korea Application Number 10-2011-0057692, entitled " APPARATUS AND METHOD FOR IMPROVING SK1N US1NG A NA-EFFECT OR NA PLUS-EFFECT," filed on June 14, 2011, and PCT Application Number PCT/KR2012/004695, entitled "APPARATUS AND METHOD FOR IMPROVING SK1N US1NG A NA-EFFECT OR NA PLUS-EFFECT", filed on June 14, 2012, the entirety of each is incorporated by reference.

Technical Field

[0002] This invention is for medical treatment including skin treatment using electrical energy, especially with the primary purpose for skin treatment for aesthetics, and in some cases, can be used as a direct instrument or supplement for skin cosmetic surgery.
In detail, this invention is to provide skin treatment using method and device using high frequency, which minimizes skin aging by directly stimulating dermis between epidermis and subcutaneous layer.

Background Information

[0003] Generally, skin is the largest protective organ that covers the entire body and maintains homeostasis on surface of the body with three layers consisting of epidermis, dermis, and subcutaneous layer.

[0004] Dermis is the layer beneath epidermis, directly connected to a basal layer. Skin is made up of dermis that includes protein, glycoside, glycosaminoglycan, mineral, and inorganic salt in gelatinous form. In Dermis there are two layers: papillary and reticular layer. The Papillary layer includes of capillaries and lymphatics. Capillaries provide nutrition to skin and circulate blood. Lymphatics carry lymph. The Reticular layer includes collagen, elastin and a

ENDYMED EXHIBIT 1002 - 54/509

substrate. Collagen is a fiber related to skin wrinkle, elastin is an elastic fiber that gives elasticity to skin, and the substrate is mostly made of water. The Subcutaneous layer lies below dermis, contains plenty of fat, and attaches the skin to underlying muscle and bone.

[0005] One of the most popular treatments to prevent skin aging is massaging with a nutritious substance. Although this type of skin treatment provides nutrition to epidermis and may make skin glow, it does not last for long and rarely shows improvement instantaneously.

[0006] Another treatment uses a syringe to inject serum into the skin, but this treatment method is costly and causes side effects based on individual skin characteristics that result adversely affecting the skin.

[0007] A further treatment delivers high frequency energy indirectly to the dermis via the skin surface. Even with a high energy signal, this treatment does not effectively transmit high frequency energy to the dermis via the skin surface. Also, this treatment is costly because patients may need to receive multiple treatments to obtain measurable results.

[0008] Korean patent 2000-0058346 describes a device to reduce skin wrinkles by verifying wrinkle thickness, length and shape and setting pulse, time, elevation current and wattage to magnify the cell tissue. Via a hand piece, the needle length may be selected based on the length and depth of wrinkle to be reduced. The device uses a single needle that may not be sufficient for treatment. Korean patent 10-2009-23494 describes employing high frequency to treat skin. In detail, it attempts to revitalize cell tissue and maintain elasticity in skin, and minimizing skin aging by directly delivering high frequency energy into skin dermis (between epidermis and subcutaneous layer). The skin treatment device includes a pair of electrodes in a main body that deliver high frequency energy into the dermis reticular layer. This treatment method may include side effects, not limited to burning both epidermis and dermis between the needles, which may form a scar. Another problem of the treatment is maintaining finite control.

[0009] To limit epidermis burning the needles may be insulated except at the tip portion. Insulated needles may cause bigger penetration marks, pain and possible allergic reactions in patients. The needle insulation may also fail or come off due to repeated penetration resulting in heating of unintended areas. In addition, the device may generate a high temperature around needle tip and increase the possibility of dermis burning since the needle surface area is reduced by the insulation.

ENDYMED EXHIBIT 1002 - 55/509

[0010] Another device uses a monopole configuration with a single electrode and a ground on another body location. Such a configuration may require large voltages to conduct enough energy to generate desired heat. The high voltage conduction may impact unintended body parts including the heart.

Summary of the Invention

[0011] The present invention is a method and apparatus that provides electric stimulation directly to a body region including the dermis via needles. This method revitalizes and regenerates the body region including collagen by wounding the dermis.

[0012] As noted, dermis is composed of protein called collagen. Collagen is a triple helical structure including fibroblasts and polypeptides. When collagen tissue is heated, a physical transformation of protein matrix part occurs at a shrinkage temperature. Soft tissue remodeling is a transformation and phenomenon that happens at cellular and molecular level when the triple helical binding is disassembled by partial denaturalization of collagen due to shrinkage caused by artificial heat, resulting in destruction of molecular bindings of the protein matrix. When the cell shrinkage occurs, collagen is present on lower cell part and supports the protein matrix within the resulting tightened soft tissue. The initial deposition and subsequent remodeling of scar matrix may offer a way to aesthetically modify the shape and consistency of soft tissue . Soft tissue remodeling may appear immediately compared to the shrinkage that results from the movement of fibroblast cell or natural healing. Ultimately, a treatment for improving skin or reducing wrinkles may apply various energy sources to selected areas to solidify the tissue.

[0013] When energy is applied to dermis, the effect on the dermis may differ based on the amount of energy applied and the effect is generally divided into three phenomena: carbonization, vaporization, and coagulation. The present invention improves skin condition by primarily using coagulation. The three phenomena: carbonization, vaporization, and coagulation can also be expressed as “to burn”, “to apply heat”, “to raise temperature”, although none of

ENDYMED EXHIBIT 1002 - 56/509

these phrases are exact. The invention may configured "to raise temperature" by applying energy to achieve coagulation.

[0014] In the present invention he term "to raise temperature" is used synonymously with "applying energy to achieve coagulation" where applying electrically energy to the body region may effectively raise the body region temperature. The present invention was created to resolve above mentioned problems.

[0015] An embodiment of the present invention includes a skin improvement device and method is to resolve above mentioned problems. The present invention is a byproduct of newly discovered effects. A first embodiment is shown in Figure 5. Other embodiments are shown Figures 7, 8 and 9B. Several embodiments of the present invention may employ non insulated needles, especially in areas where the needles come in contact with dermis.

[0016] In an embodiment heated areas may be different from other electrodes employing systems. In the present invention the temperature may be raised and the heat may be concentrated at an area in dermis by the needle(s) to cause coagulation. The heat generated by the present invention may minimally affect the adjacent epidermis area. Also, the heated area around the needle end tips may be oval or tear shaped as shown in FIG. 5. In an embodiment heat may not be concentrated between needles. In an embodiment, the heated area may be around each needle.

[0017] In an embodiment, the temperature is raised about the tip of each needle, not between needles. The method of the present invention may control electrical factors or distance between needles to control the energy field applied between needles. A method of the present invention may enable users to control the number of treatments in target areas by controlling the dissipated energy in needles.

[0018] In an embodiment, higher temperatures may be concentrated in dermis, not epidermis, enabling the use of non-insulated needles. The present invention may have a definite advantage over the systems that employ insulated needles. An embodiment of the present invention may not require insulated needles except for special cases. In some treatment cases, an embodiment of the present invention may employ insulating needles in an area where it comes in contact with epidermis, but insulation is not required.

ENDYMED EXHIBIT 1002 - 57/509

[0019] An embodiment of the present invention may employ bipolar needles, alternating current (AC) signals, and high frequency signals. In an embodiment the distance between electrodes or needles may be important because if the distance between electrodes is too close, heated areas about each needle tip may overlap. However, in another embodiment a close distance between needles may not be critical.

[0020] As noted the present invention may use non-insulated needles. Other embodiments may use insulated needles but may, decrease the effectiveness of treatments employing insulated needles. Because the needles are stimulated via opposite polarity, AC signals, each needle may independently form an energy field about its tip, where the energy field may raise the temperature of adjacent tissue as a function of the tissue anatomy. Thus, each needle of the plurality of needles may as if independently stimulated and grounded from the other of the plurality of needles.

[0021] In an embodiment employed needles polarities may form a net or checked shape when viewed from needle tips. In an embodiment, four or more needles may be employed. In an embodiment where the needles form a rectangular plane, four or more needles may be used on each quadrant.

[0022] In an embodiment adjacent or neighboring needles may be configured to have opposite polarities (+) and (-) such as shown in Figure 6.

[0023] Embodiments of the present invention may resolve problems of existing technologies.

[0024] A serious side effect of some existing technologies, systems, or treatments is overheating or burning of both dermis and epidermis located between needles, which may cause permanent skin damage. An embodiment of the present invention may prevent or limit overheating between needles.

[0025] As noted embodiments of the present invention may generate an oval or tear shaped, heated area in dermis about each needle tip. Embodiments of the present invention may minimally raise temperature epidermis as shown in Figure 5. Method of the present invention may control electrical factors or distance between needles to control temperature between needles.

ENDYMED EXHIBIT 1002 - 58/509

[0026] Existing technology may create scars created in overheated or burned epidermis. Further damage may be caused by trying to treat the scars. Embodiment of the present invention attempt to prevent overheating or burning of epidermis. Embodiments of the present invention may not use insulation as insulation may reduce effectiveness. Further, insulted needles may need to be thicker, causing more patient pain and leaving insertion marks. Further insulation deposited from needles may cause serious side effects.

Brief Explanations of the Drawings

[0027] FIG. 1 is a block diagram of an apparatus according to an embodiment of the present invention.

[0028] FIG. 2 is a simplified diagram of treatment architecture using monopole needles according to an embodiment of the present invention.

[0029] FIG. 3 is a simplified diagram of treatment architecture using non-insulated bipolar needles according to an embodiment of the present invention.

[0030] FIG. 4 is a simplified diagram of treatment architecture using bipolar needles that are insulated except at the needle tip according to an embodiment of the present invention.

[0031] FIG. 5 is a simplified diagram of treatment architecture using non insulated needles according to an embodiment of the present invention.

[0032] FIG. 6 is a simplified diagram of a treatment architecture illustrating a polarity change of needles according to according to an embodiment of the present invention.

[0033] FIG. 7 is a simplified diagram of a treatment architecture according to an embodiment of the present invention.

[0034] FIG. 8 is a simplified diagram of a treatment architecture according to an embodiment of the present invention.

[0035] FIG. 9A is a simplified diagram of a treatment architecture according to an embodiment of the present invention with overlapping or intersecting energy fields..

[0036] FIG. 9B is a simplified diagram of a treatment architecture according to an embodiment of the present invention with non-overlapping or non-intersecting energy fields.

ENDYMED EXHIBIT 1002 - 59/509

[0037] FIG. 10 is a simplified diagram of a treatment architecture illustrating a polarity change of needles according to according to an embodiment of the present invention.

[0038] FIG. 11 is a simplified diagram illustrating the distance between two needles according to various embodiments of the present invention.

ENDYMED EXHIBIT 1002 - 60/509

Detailed Description

[0039] The following is to explain an embodiment of this invention in detail.

Table of References

Number	Description
100:	fixture holding needles
200:	skin
201:	epidermis
202:	dermis
300:	pin/needle/electrode
301:	needle area penetrating skin
302:	end of needle area penetrating into dermis
400:	patient's hand receiving treatment using monopole method
500, 600:	electrical wire
700:	insulated area of needle
901:	area where the temperature is raised when using monopole electrode
902:	area where the temperature is raised when using non-insulated bipolar needles
903:	area where the temperature is raised using insulated needles with non-insulated tips
909, 919, 929:	area where the temperature is raised using non-insulated needles.
939, 949:	area where the temperature is raised using partially insulated needles in epidermis.

[0040] This invention pursues multiple embodiments, where the embodiments may be related. Technological components of various embodiments may be similar. Embodiments may vary based on voltage, current, application time, needle thickness, resistance, AC frequency, high frequency, conductivity, and needle penetration depth. Fig. 1 is a block diagram a system 10 according to various embodiments. As shown in FIG. 1, the system 10 may include a power supply 12, an RF generator 14, a user input 16, a central processing unit 18, a user detectable output display 22, and a device (tip) 100 with a plurality of needles 300. The power supply 12 may provide required energy to the radio frequency (RF) generator 14. A user input device 16 may enable a user to set several parameters that control the energy field 909 generated about needles 300 in the tip or device 100 including the voltage, current, and frequency applied to the needles 300, the on time and off time of the RF signal during the cycles, the deployed depth of the needles (to treat a body region including epidermis, dermis, and subcutaneous sections of

ENDYMED EXHIBIT 1002 - 61/509

skin). The input device may be any device enabling a user to select various parameters including a keyboard, touch screen, or other user input device.

[0041] The system 10 output device 22 may be any user detectable output device including a user readable screen, light(s), and audio generation devices. The CPU 18 may receive the user selected parameters for the device 100 operation and control the operation of the RF generator 14 based on the user selected parameters. The CPU 18 may also provide a signal to generate an output signal displayable by the output device 22, the output signal indicating the operational state of the system 100 according to various embodiments. The RF generator 14 may generate signal or signal(s) having a desired voltage, current, energy, resistance, RF frequency, on cycle, off cycle, and other parameters according to various embodiments.

[0042] Some embodiments may employ bipolar needles, AC and high frequency signals. The distance between needles may vary for different embodiments. In an embodiment needles 301 (FIG. 2) may not be located close proximity because if the distance between electrodes or needles is too close, the energy field and the heated area generated by the applied energy field about each needle may be connected or intersect. In another embodiment the energy fields (generating heated areas in dermis) may be expanded and connected in dermis, but not in epidermis as shown in Figures 7 and 8.

[0043] In an embodiment, alternating current (AC) is the current that changes magnitude and direction periodically and may be a known waveform including a sine wave, triangular, or square wave. AC has characteristics that differ from direct current (DC), which flows in one direction and has a constant polarity. On-grid AC provided by power companies commonly alternates polarity about either at 50Hz or 60 Hz worldwide.

[0044] In an embodiment, actuating needles with AC may be a factor to generate a desired effect or energy field about the each needle. In an embodiment, the AC frequency may be be hundreds of Hz to achieve the desired effect. For high frequency AC sources, the distance between needles may be decreased to compensate for the effect of the high frequency AC source. Low frequency AC sources may affect operation in an embodiment. AC sources having a frequency of 20Hz or higher may not create a desired operation in an embodiment by controlling other factors. Those control factors are discussed below. In an embodiment, high frequency

ENDYMED EXHIBIT 1002 - 62/509

AC sources may be employed versus low and medium frequencies, and ultrasonic waves or sources.

[0045] In an embodiment the AC source may have a frequency above 0.5MHz and about 2MHz in another embodiment. Other embodiments may employ an AC signal having a frequency from 0.5 to 10MHz, 1 to 4MHz, and 1.5 – 2.5MHz where the AC frequency selected range may vary depending on other operating factors that affect desired performance.

[0046] During electricity conductivity tests for dry skin and wet skin with AC signals having frequencies of 2 MHz and 1 MHz, it was noted that dry skin had a conductance of about 0.037102 at 2 MHz and about 0.013237 at 1 MHz and wet skin had a conductance of about 0.26649 at 2MHz and about 0.2214 at 1 MHz. Consequently, RF energy flow or conductance may be smoother or less resistive when applied to wet skin at 2 MHz. Based on the lower conductance the probability for sparking for energy applied at 1MHz (ignoring other variables) may be three times higher than 2MHz energy.

[0047] In an embodiment a high frequency applied current may create an energy field closer to an electrode or needle than an equivalent energy low frequency current.

[0048] For example, when AC signals having a frequency below 0.5MHz are applied to a needle or electrode the area impacted by the resultant, broad energy field may cause scaring in adjacent epidermis due to overheating regardless of electrode or needle spacing. Accordingly, for areas where a precise treatment is required such as around eyelid, the source frequency may be selected to prevent a broad energy field formation about the needles or electrodes to prevent a harmful impact on an eye. It is noted that when the source energy frequency is 10MHz or above, the energy field formed about the needles or electrodes may be too narrow and thereby increase treatment time to achieve a desired therapy

[0049] In various embodiments, achieving a desired therapy may be related to the distance between deployed needles. For example, as the distance between needles decreases the source frequency value may be increased and conversely, as the distance between needles increases, the source frequency value may be decreased to achieve or limit the energy field formation about energized needles or electrodes. In an embodiment, adjacent needles are spaced about 2mm apart when the needle energizing signal has a frequency of about 2MHz.

ENDYMED EXHIBIT 1002 - 63/509

[0050] In an embodiment, energized needles may be completely electrically insulated, un-insulated, and only insulated near its tip. Needle insulation may not be necessary fin an embodiment to achieve a desired energy field about the needle, in particular so the temperature is raised about the needle tip and the energy field forms an oval or tear shape in the adjacent dermis while the temperature is minimally raised in the epidermis, as shown in Figures 5, 7, 8 and 9B. However, non-electrical insulation coating may not affect energy field formation in about embodiment as shown in FIG. 9B. In an embodiment, needles may be plated with other precious metals or heat-treated to modify needle or electrode conductivity and hardness.

[0051] In an embodiment, the needles may not be insulated. In embodiments where at least a portion of the needle is insulated, the segment or area of needle that is configured to contact the dermis may not be insulated. In an embodiment, the entire needle to be energized may be insulated while generating a desired energy field about the needle in the dermis. In an embodiment, a monopole needle insulated except for its tip may be employed to achieve an energy field with a desired shape and temperature. It is important to note that the similarity in energy field shape may have a different effect depending the method applied.

[0052] In an embodiment, different needle arrangements may be employed. In one embodiment, neighboring or adjacent needles 300 may be configured to have opposite polarities as shown in Figure 6. As shown in FIG. 6, a needle configuration 100 may include needles 300 arranged in a rectangular shape where needles on each corner are configured to have a polarity opposite its adjacent or neighboring needles. In an embodiment, different AC signals having opposite polarities may be applied to needles 300 designated (+) and (-). Because of AC signal characteristics, the polarity of each needle may change many times per second (up to 10MhZ in an embodiment) and cause a needle 300 polarity to change as shown in Figure 6 at applied AC signal rate. In an embodiment, each needle is configured to have a polarity that is opposite to its closest neighboring needles, polarity shown as in (+) and (-) in FIG. 6 due to the signals applied to the needles 300 via the RF signal generator 14 (FIG. 1).

[0053] In an embodiment, a needle 300 cross-section may be configured in a square shape 100 (see FIG. 11). In other embodiments, the needles 300 may be configured in the shape of a rhombus, rectangle, circle, oval, or quadrangle (see FIG. 11). In an embodiment, regardless

ENDYMED EXHIBIT 1002 - 64/509

of shape, the neighboring needles may be configured to have opposite polarities when signals are applied by the RF signal generator 14 (FIG. 1).

[0054] In an embodiment, one or more needles 100 may be non-conductive, not energized, or physically removed from particular positions and still produce desired energy fields about the needles in the desired anatomy. In an embodiment, each, closest neighboring needles have opposite polarities, crossing in each direction as in (+) and (-), and a form a square shape 100 having sixteen needles 300.

[0055] Figure 10 is a simplified diagram 100 of another needle 300 arrangement 100 according to various embodiments. In an embodiment, the polarity of needles 300 may be configured to change with every two, adjacent needles to form a pattern of (-) (-) (+) (+). In another embodiment, two or more needles may have the same polarity and then next set has an opposite polarity based on the signals applied to the needles 300. A variety of needle 300 polarity combinations, placements, and needle shapes 100 may be used in designing a device that generates a desired energy field about a needle 300 including the configurations shown in Figure 6 and Figure 10.

[0056] In an embodiment, a device or needle configuration 100 may have a minimum number of needles is 4. In another embodiment, a device or needle configuration may have a minimum of 9 needles with the polarity arrangement shown in FIG. 6 or FIG. 10.

[0057] As noted above other needle arrangements can be configured according to various embodiments where the needles produce a desired energy field about the needle.

[0058] In order to generate a desired energy field 909 (Fig. 5), 949 (Fig. 9B) about one or more needle 300 tips 302, an embodiment of the present invention may regulate voltage to be applied to a needle in addition to polarity, pattern, shape, adjacent distance, and frequency. In an embodiment, the voltage level applied to one or more needles 300 may determine or be a factor in setting the distance between needles 300 and ensuring safety of a device including the needles 300. In an embodiment, the voltage applied to skin may be measured.

[0059] In an embodiment he meaning of "the applied voltage to skin" may be the actual voltage applied to skin between the surface of a needle and the skin the needle contacts. The actual voltage value as applied to the skin may vary on device resistance, needle resistance and

ENDYMED EXHIBIT 1002 - 65/509

skin resistance at different needle positions. The voltage applied to a needle may be different to the voltage actually applied to the skin due to the skin resistance.

[0060] Skin resistance values may vary sub-dermally, but negligibly. It is noted that the applied voltage may be directly related to the amount of energy created at a needle. In an embodiment, the voltage applied to a needle or electrode may not exceed 100V with a recommended operating range between 10 to 60V and about 20 to 40V in a particular embodiment. In an embodiment, voltages above 100V may be applied, but there may cause skin overheating or burning so such voltages may not be recommended for use as the operating voltage for skin treatment. The actual skin voltage and the device operating voltage may be controlled by in an embodiment of the present invention. Given a relatively constant skin resistance, controlling the voltage applied to a needle 300 or group of needles 100 may also control the current flowing in the needle and the skin adjacent to the needle. In particular, the electric current may vary depending on voltage and resistance, but it is possible to compute the value of the electric current when device resistance, needle resistance, and skin resistance values are determined based on the equation:

[0061] $V=I*R$

[0062] A systems resistance may be related to device resistance 100, needle resistance 300, and and skin 200 resistance in an embodiment.

[0063] In order to generate a desired energy field 909, 949 about one or more needle 300 tips 302, an embodiment of the present invention may regulate the energy duty cycle. In an embodiment a system 100 may take a minimum of 0.02 seconds for high frequency energy to reach its stability so a desired energy field 909, 949 is achieved about a needle 302. If the energy duration or cycle is less than 0.02 seconds, a desired energy field 909, 949 may not be achieved in an embodiment. In an embodiment, the minimum duty cycle was set to be 0.5 seconds or greater. A major advantage of this embodiment is the relatively short energy retention or duty cycle with a longest retention time about 0.8 seconds. In another embodiment the energy retention time or duty cycle may be increased by increasing the distance between needles 300

ENDYMED EXHIBIT 1002 - 66/509

and lowering the applied voltage. In an embodiment the energy retention time or duty cycle is between 0.05 to 0.8 seconds.

[0064] An optimal duty cycle, on time, or retention time or delay between cycles is not intuitive given it is relatively short. In an embodiment an acceptable energy delivery delay may be between 0.1 to 0.4 seconds, with a range from 0.1 to 0.2 seconds in another embodiment. It was discovered that using high frequency and low voltage signals applied to needles 300 having a desired spacing created an energy field that enables effective skin treatment. In an embodiment a desirable delay time may be between 0.1 - 0.4 seconds and as about 0.1 - 0.2 seconds in a particular embodiment. Determining the parameters to enable the desired energy field according the present invention required countless trials and errors with insight. After developing the embodiments to form the desired energy field, it is possible to use a short load time in conjunction with a high frequency, low voltage, and alternating current signal.

[0065] Some existing systems may apply high voltage signals with an on time greater 0.5 seconds to skin via electrodes versus embodiments of the present invention that generate signals having a shorter on time.

[0066] In order to generate a desired energy field 909, 949 about one or more needle 300 tips 302, an embodiment of the present invention may employ needles with particular lengths and thicknesses. Needle thickness may vary with needle distance in an embodiment. In an embodiment a needle should be thick enough and made of a material strong enough to withstand repetitive penetrations into a body region, skin in an embodiment. An embodiment may need to balance thickness with possible patient pain and scars.

[0067] In an embodiment, a needle may have a diameter or outer profile of about 0.25mm and 0.30mmbut is not critical to achieve desired energy fields 909, 949. The needle length may also vary depending on the thickness of the body region (skin in embodiment) to be treated and the type of treatment. In general, epidermis depth may be between 0.2mm and 1mm and dermis depth may be between 1mm and 4mm (from the skin boundary). In an embodiment a needle may configured to reach at least the top of the dermis, at least 0.2mm in length in an embodiment and have a maximum length of about 5mm to reach or penetrate to the dermis center or bottom. To ensure safe use in an embodiment a needle length may enable an ideal

ENDYMED EXHIBIT 1002 - 67/509

treatment depth from 1mm - 5mm. In an embodiment, a needle total length may vary on the device 100, with a range between 1mm to 4mm.

[0068] Epidermis consists of stratum corneum, stratum granulosum, stratum spinosum, stratum basale, each with a potentially different resistance level. Epidermis may be treated with a device 100 having needles 300 with a length of about 1mm. Another device 100 according to various embodiments may employ needles have a length of about 6mm to treat skin's subcutaneous layer. Accordingly in an embodiment a device 100 may employ a needle that penetrates to a depth between 1mm to 6mm.

[0069] In order to generate a desired energy field 909, 949 about one or more needle 300 tips 302, an embodiment of the present invention may employ needles having a desired distance and shape including the shapes shown in figure 11. In an embodiment, the minimum distance between adjacent needles may be about 1.3mm. In another embodiment, the distance between adjacent needles may be between 1.3 - 3.0mm where the needle signal current or needle resistance may be varied based on needle distance while enabling a desired energy field to be formed about the needles.

[0070] In an embodiment where the distance between closest neighboring needles is shorter than 1.3mm, there may be a risk of overheating or scaring. In an embodiment, where the distance between adjacent needles is greater than 3.0mm, needle activation times may increases in order to achieve the same desired results as the treatment efficiency may decrease significantly. It is noted that the distance between adjacent needles may vary as function of the multiple variables discussed above.

[0071] In an embodiment other device operation factors that may vary as a function of the distance between needles including energy level (current, voltage), and a needle's thickness (outer diameter). For example, as the applied energy increases, the needle thickness may increases, the distance between adjacent needles may also be expanded to achieve a desired energy field about the needle(s). It is noted that applied energy is equal to voltage (V) multiplied by current (I) and time (t) (V*I*t).

[0072] In another embodiment the distance between adjacent needles may be reduced when the system resistance, AC frequency rate, high frequency rate, and needle length or needle

ENDYMED EXHIBIT 1002 - 68/509

depth increases in any combination. In an embodiment, the distance between adjacent needles may be determined as follows:

[0073] Distance= N * (Power = energy) * (Needle Thickness) * (Conductivity)/(Resistance) * (AC Frequency) * (High Frequency) * (Penetrated Needle Depth)

[0074] Where:

N: A proportional constant, Resistance: Device resistance, needle resistance, skin resistance

Energy (Joule) = W * t (W = Watt, t = time)

Energy (Joule) = V * I * t (W = V * I)

Energy (Joule) = I^2 * R * t (V = I * R)

[0075] Substituting Energy for V*I*t, the distance between adjacent needles may be determined as follows:

Distance= N *V * I * t * (Needle Thickness) * (Conductivity)/

(Resistance) * (AC Frequency) * (High Frequency) * (Penetrated Needle Depth)

[0076] Other distance calculations are possible according to various embodiments. In an embodiment, a device's 100 needles 300 may fixed (distance between adjacent needles) but may move freely axially to enable movement within a confined space of the device 100.

[0077]

ENDYMED EXHIBIT 1002 - 69/509

ELECTRICALLY BASED MEDICAL TREATMENT DEVICE AND METHOD

Abstract of the Disclosure

Embodiments of medical treatment including skin treatment using electrical energy, especially with the primary purpose for skin treatment for aesthetics are described generally herein. Other embodiments may be described and claimed.

ENDYMED EXHIBIT 1002 - 70/509

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If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/01A (09-12)
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DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of Invention	Skin Improvement Device and Method by Na Effect or Na plus Effect

As the below named inventor(s), I/we declare that:

This declaration is directed to:

- [X] The attached application, or
- [ ] United States Application or PCT international application number PCT/KR2012/004695 filed on June 14, 2012
  - [ ] As amended herewith (if applicable);

I/we believe that I/we am/are the original and first inventor(s) of the subject matter which is claimed and for which a patent is sought;

I/we have reviewed and understand the contents of the above-identified application, including the claims, as amended by any amendment specifically referred to above;

I/we acknowledge the duty to disclose to the United States Patent and Trademark Office all information known to me/us to be material to patentability as defined in 37 CFR 1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the national or PCT International filing date of the continuation-in-part application. The above-identified application was made or authorized to be made by me/us.

WARNING:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

All statements made herein of my/own knowledge are true, all statements made herein on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001, and may jeopardize the validity of the application or any patent issuing thereon. I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5), or both.

FULL NAME OF INVENTOR(S)

Inventor one: Jong iu Na Date: 9/23/2013

Signature: _____ Citizen of: KR

Inventor two: _____ Date: _____

Signature: _____ Citizen of: _____

[ ] Additional inventors or a legal representative are being named on _____ additional form(s) attached hereto.

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 1 minute to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

[redacted]



별첨 사본은 아래 출원의 원본과 동일함을 증명함.

This is to certify that the following application annexed hereto is a true copy from the records of the Korean Intellectual Property Office

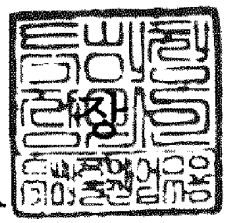
출 원 번 호 : 10-2011-0057691
Application Number

출 원 년 월 일 : 2011년 06월 14일
Filing Date JUN 14, 2011

출 원 인 : 곽정구 외 1 명
Applicant(s) GWAK, Jeong Gu, et al

2012 년 06 월 18 일

특 허 청
COMMISSIONER



[redacted]

2011-06-14

【서지사항】

【서류명】 특허출원서

【출원구분】 특허출원

【출원인】

【성명】 곽정구

【출원인코드】 4-2011-026653-9

【대리인】

【성명】 이윤원

【대리인코드】 9-2008-000501-2

【포괄위임등록번호】 2011-044432-1

【발명의 국문명칭】 라-효과에 의한 피부 개선 장치 및 방법

【발명의 영문명칭】 The apparatus and mathod for improving human skin by Na-Effect

【발명자】

【성명】 곽정구

【출원인코드】 4-2011-026653-9

【발명자】

【성명】 라종주

【출원인코드】 4-2007-017445-9

【심사청구】 청구

【취지】 위와 같이 특허청장에게 제출합니다.

대리인 이윤원 (서명 또는 인)

【수수료】

【출원료】 0 면 38,000 원

ENDYMED EXHIBIT 1002 - 76/509

2011-06-14

【가산출원료】	35 면	0 원
【우선권주장료】	0 건	0 원
【심사청구료】	15 항	730,000 원
【합계】	768,000 원	
【감면사유】	개인(70%감면)	
【감면후 수수료】	230,400 원	

ENDYMED EXHIBIT 1002 - 77/509

【명세서】

【발명의 명칭】

라-효과에 의한 피부 개선 장치 및 방법{The apparatus and mathod for improving human skin by Na-Effect}

【기술분야】

<1> 본 발명은 전기 에너지를 이용한 피부 치료에 관한 것으로서, 특히 미용을 위한 피부 치료를 우선적인 목적으로 한 경우에 따라서는 피부성형의 직접적 및 보조적 수단으로도 활용될 수 있다.

<2> 더 상세하게는 본 발명은 고주파를 이용하여 피부를 탄력 있게 시술하는 것에 관한 것으로, 피부의 표피층과 피하지방층 사이의 진피층에 고주파 전류가 직접 전달되도록 하여 피부노화를 최소화하는 등 피부 개선을 직접적이고 확실하게 할 수 있는 고주파를 이용한 피부 시술방법 및 장치에 관한 것이다.

【배경기술】

<3> 일반적으로 피부는 우리 몸 전체를 덮고 있는 인체의 가장 큰 보호기관으로서, 이렇게, 몸 전체를 덮고 있는 피부는 크게 표피층, 진피층, 피하지방층의 3개의 층으로 이루어져 표면의 항상성(恒常性)을 유지하게 된다.

<4> 상기 진피층은 표피층의 아래에 위치하고 있으며 기저층에 바로 연결되어 있고 피부의 대부분이 진피로 이루어져 있으며, 수분을 비롯하여 단백질, 당질, 무코

ENDYMED EXHIBIT 1002 - 78/509

ENDYMED EXHIBIT 1002 - 79/509

다당류, 무기질, 무기염류 등이 젤리상태로 되어 있고, 이러한 진피층은 표피층에 영양을 제공하면서 혈액순환과 관련 있는 모세혈관과 림프를 운반하는 림프관이 위치하는 유두층과, 피부의 주름과 관련 있는 교원섬유인 콜라겐과 피부의 탄력성을 부여하는 탄력섬유인 엘라스틴과 기질(물의 저장고)로 구성되는 망상층으로 구성된다. 상기 피하지방층은 진피와 근육, 뼈 사이에 위치하고 있으며 지방을 다량 함유하고 있으며 피부의 가장 아래층을 구성하고 있다.

<5> 피부의 노화방지를 위해 대표적인 피부 시술 방법으로 피부에 영양성분이 포함된 이로운 물질을 사용하여 맛사지 하는 방법이 가장 널리 사용되고 있다. 그러나 이러한 맛사지 형태의 피부 시술 방식은 피부의 표피층으로 영양분을 공급하여 표피층을 윤택하게는 하지만 그리 오랜 시간을 지속하지 못하고 그 개선효과도 단시간에 나타나는 경우는 드물다.

<6> 그래서 새롭게 나타난 방법이 주사기 등을 사용하여 피부에 미용액을 주입하는 방식이었으나 이와 같은 방식은 시술에 따른 많은 비용이 소요될 뿐만 아니라 사람들의 체질적인 특성에 따라 부작용도 많이 발생하여 오히려 피부에 역효과가 발생하는 문제점이 초래되었다.

<7> 이후 나타난 방법이 고주파 등을 피부의 표피층에서 진피층으로 간접적으로 전달하는 방식이다. 하지만 이는 표피층을 거쳐 진피층으로 전달됨에 따라 높은 전압을 사용함에도 불구하고 그리 큰 효과를 가질 수 없을 뿐만 아니라 효과를 얻기 위해서는 지속적으로 시술을 받아야 하는 번거로움과 많은 비용이 소요되는 문제점을 가지고 있었다.

<8> 이후 진피층에 상처를 주어 콜라겐의 재생작용을 활성화시키는 방법을 피부 개선 방법으로 강구하게 되었고 그런 방법의 하나로 바늘(본 발명에서는 이를 침이라고도 표현하고 있는데 이는 원칙적으로 같은 의미를 가진다)을 진피층까지 삽입하여 전기적 자극을 주는 것이 강구되어 왔다.

<9> 이를 좀 더 상세하게 살펴보면 진피층은 콜라겐으로 불리는 단백질로 이루어지는데 콜라겐은 섬유모세포 및 폴리펩타이드를 포함한 삼중 나선구조로서, 콜라겐 조직이 가열되면 수축(shrinkage)되는 온도에서 단백질 매트릭스(matrix) 부분의 물리적 변이가 일어나게 된다. 이러한 변이의 하나인 연조직(soft tissue) 리모델링은 세포 및 분자 수준에서 일어나는 현상으로, 인위적인 열에 의해 발생된 수축 또는 콜라겐의 부분 변성(denaturization)으로 인해 삼중 나선결합이 분해되어 매트릭스의 분자간 결합이 파괴되게 된다. 세포 수축이 일어나면, 콜라겐은 팽팽해진 연조직 구조 내의 정적 지지 매트릭스로서 하부에 위치한다. 초기 흉터 매트릭스의 증착 및 후속 리모델링은 미용 목적을 위한 연조직의 일관성 및 모양을 변경시키는 수단을 제공한다. 상처 내로 섬유모세포의 이동 및 자연적인 상처 치유 결과로서의 나타나는 수축과 비교하면, 연조직 리모델링은 즉각적인 공정이다. 결국 피부개선 또는 주름 개선과 같은 미용상의 목적으로 처치하는 방법은, 해당 부위에 다양한 에너지원을 가하여 조직을 응고시킴으로서 시작된다고 할 수 있다.

<10> 피부의 진피층에 에너지를 가하게 되면 주입되는 에너지의 양에 따라 진피에 영향을 주는 형태가 달라지게 되는데 일반적으로 카보니제이션(carbonization), 베이포리제인션(vaporization), 응고(coagulation) 등의 단계로 나누어 진다. 본 발

ENDYMED EXHIBIT 1002 - 80/509

명의 라-효과는 이중 응고(coagulation) 상태를 원칙적으로 형성하여서 피부를 개선하는 방법으로 이는 "태운다", "열을 가한다", "익힌다" 등과 같이 표현할 수 있겠으나 어느 것도 정확한 일반적인 표현이라 할 수 없는 측면이 있다. 하지만 본 발명에서는 "익힌다"는 표현이 그래도 '에너지를 가하여 원칙적으로 응고의 상태로 만든다'는 의미를 비교적 잘 나타내는 것으로 생각하여 "익힌다"는 표현을 '에너지를 가하여 원칙적으로 응고의 상태로 만든다'는 의미로 사용하기로 한다.

<11> 상세한 설명에 기재된 "익힌다"는 의미는 에너지를 가한다는 의미가 보다 강한 경우가 있으나 본 발명의 특허 청구항에 기재된 "익힌다"는 의미는 특히 '에너지를 가하여 원칙적으로 응고의 상태로 만든다'는 의미로 사용되었다.

<12> 이와 관련하여 특허출원 2000-0058346호를 들 수 있다. 본 발명은 주름을 피부의 원래 모양인 평편한 상태로 복원시키는 것을 목적으로 하여 제작된 것으로 그 방법으로 주름의 굵기, 패인 정도, 주름의 길이, 모양 등을 확인 한 다음 콘트롤 기계 상자인 주름 치료기에서 세포 조직이 확대되는 엘러베이션 커런트(elevation current)의 와트(watt)를 설정하고, 펄스와 시간을 지정한 후, 주름의 길이와 패인 정도에 따라 니들의 길이를 결정하고 핸드피스에 니들을 장착하여 주름을 제거할 수 있게 구성되어 있다.

<13> 상기 특허 기술은 침이 하나로서 원리도 충분히 나타내지 못했지만 특히 실제 인체에 적용하기에는 대단히 위험한 초보적인 단계였다. 따라서 이것이 진일보하여 다양한 특허가 나오게 되는데 그 대표적인 것이 본 발명의 발명자가 출원하여

ENDYMED EXHIBIT 1002 - 81/509

등록받은 등록특허 10-0856736호 이다. 특히 이 발명은 수십개에 이르는 다수의 침을 동시에 피부 속으로 침투시킴으로서 일종의 다수의 침이 동시에 피부에 닿게하는 것 자체가 면접촉을 하는 형상을 이루게 되어 피부시술에 있어서 실효성을 높이는 중요한 계기가 되기도 했다.

<14> 이와 또 다른 최근의 유사한 기술로서 국내 특허출원 10-2009-23494호를 들 수 있다. 이를 좀 더 상세히 살펴보면 고주파를 이용하여 피부를 탄력있게 시술하는 것에 관한 것으로, 더 상세하게는 피부의 표피층과 피하지방층 사이의 진피층에 고주파가 직접 전달되어 세포조직을 활성화시켜 탄력적인 피부를 유지하여 피부 노화를 최소화할 수 있도록 하기 위한 것이다. 상기 피부 시술장치는 한쌍의 전극봉이 삽입되는 본체케이스에 상기 전극봉과 접촉되어 고주파 전류가 통전되는 접속부가 삽입 고정되며, 상기 접속부의 하부로 삽입 접촉되어 통전된 고주파 전류를 피부의 진피층을 구성하는 망상층으로 삽입되어 고주파 전류를 발생하는 수개의 고주파 발생단자로 구성되는 것을 특징으로 하는 고주파를 이용한 피부 시술방법 및 장치에 관한 것이다.

<15> 그러나 이러한 피부시술 방법은 종전의 맛사지나 레이저를 이용하는 방법 또는 고주파를 이용한다고 해도 침을 피부로 침투시키지 않는 방법에 비해서는 직접 진피층에 에너지를 투입하여 시술하는 것이므로 짧은 시간 내에 효과를 거둘 수 있다는 측면에서는 효과가 있었다. 하지만 그로 인한 부작용도 많이 있었다.

<16> 가장 큰 부작용으로 바늘 사이의 진피층은 물론 표피층도 모두 익혀버려 표피층이 상하게 되는 점과 과다하게 피부를 익혀 피부가 되돌릴 수 없도록 손상되어

ENDYMED EXHIBIT 1002 - 82/509

버리는 경우가 다반사로 일어나는 점을 들 수 있다.

<17> 진피층만을 적절히 익히는 경우에는 응고(coagulation)현상으로 나타나 콜라겐의 재생을 촉진하는 역할을 하지만 상기 시술방법에 의해 표피층이 익혀진 경우 그 부위가 바로 흉터가 되어 피부개선을 위한 조치가 더 큰 피부손상을 불러오는 경향이 있었다.

<18> 상기 바늘 사이의 진피층과 표피층을 모두 익혀버리는 이러한 현상은 전기공학적 측면에서 지금까지 당업자 입장에서 보면 당연한 현상으로 전극 역할을 하는 침 사이를 전기에너지가 통과하고 그 사이의 피부는 공기보다는 훨씬 낮은 저항치를 가지지만 일정한 저항치를 가지게 되므로 그러한 저항치에 의해 그 침 사이의 피부 부분에서 모두 열이 발생하는 것으로 받아 드려졌고 실제로도 그렇게 현상들이 나타났다.(도 4 참조)

<19> 또 하나의 문제점은 상기 시술방법은 미세조정이 대단히 어렵다는 점이었다. 왜냐하면 위에서 기술된 바와 같이 침과 침사이가 모두 익어버리는 경우 익혀지는 형태 또한 상당히 급격하기 때문이다. 따라서 피부조직의 상황에 맞추어서 여러 번 나누어 시술하는 것이 상당히 어려웠는데 이는 의료장비라는 측면에서 보면 안전성 측면에서 사용상의 많은 제한을 가져오는 심각한 문제라고도 볼 수 있다.

<20> 그래서 이후 대부분의 기술에서는 진피에 도달하는 침들의 끝단을 제외하고는 모두 절연성 코팅을 하여 시술하기에 이르렀다. 그러나 이 또한 많은 문제를 발생시켰다.

ENDYMED EXHIBIT 1002 - 83/509

<21> 첫째 코팅을 하게 되면 침의 굵기가 당연히 다소 굵어지게 되어 문제점을 낳게 되었다. 대표적인 문제점만 들게 되면, 투침한 흔적이 크게 남게 되는 점과 투침시 더 많은 통증을 유발할 수 있고 더욱이 절연 코팅제가 인체와 조화를 이루지 못하는 부작용의 발생가능성 등을 들 수 있다.

<22> 두 번째 문제점은 코팅한 부분이 언제나 벗겨질 가능성이 높다는 점이다. 왜냐하면 고주파를 인가시키고 투침이 지속적으로 이루어지는 장비라는 점을 고려하면 지극히 당연한 것이라 할 것이다. 코팅이 벗겨질 경우 애초 코팅을 하지 않고 조심하여 사용하는 경우에 비해 오히려 더 큰 부작용을 불러일으킬 우려가 높았다.

<23> 세 번째 여전히 절연되지 않은 침과 침 사이를 모두 익혀버리는 과격한 장치이므로 미세조정이 어렵고 과다하게 익혀져 버릴 가능성이 존재한다는 점이다.

<24> 또 다른 종래 기술로서 모노폴라를 투침하여 전기적 자극을 주는 장치를 들 수 있다. 모노폴라는 치료하고자 하는 피부에 닿는 기구에 하나의 극성을 부여하고 반대극성은 치료와 관계없는 다른 부위에 인가하는 형태이다. 하지만 이 방법으로 유효한 효과를 내기 위해서는 열을 발생시키기 위해 고전압의 전기를 흘려보내야 하는 치명적인 약점이 있었다. 이로 인해 화상의 위험이 있는 것은 물론 인가 전류가 항상 심장 등과 같은 기관에 영향을 미칠 가능성이 있어서 심한 경우 사망에 이르는 경우까지 있어서 대단히 제한적으로 사용될 수밖에 없었다.

<25> 본 발명은 이러한 문제점을 수년간 다각적으로 고민하고 연구하는 과정에서 이루어진 것이다.

ENDYMED EXHIBIT 1002 - 84/509

ENDYMED EXHIBIT 1002 - 85/509

【발명의 내용】

【해결하려는 과제】

<26> 본 발명이 추구하는 해결하려는 과제는 상기 종래기술에서 언급한 여러 문제점 들이다.

【과제의 해결 수단】

<27> 본 발명은 종래 기술에서는 전혀 생각하지 못했던 구성요소를 도입하여 종래에는 전혀 없었던 획기적인 새로운 효과를 창작함으로써 발명하게 되었고 이를 근거로 완성하게 되었다. 이러한 창작된 새로운 효과를 본 발명의 명세서에서는 "라-효과(Na-Effect)"라 명명하였다.

<28> 라-효과는 바이폴라(bipolar) 전극에서 당업자가 종래 인지하던 피부가 익는 형태와는 전혀 달리 도면과 같이 표피는 거의 익혀지지 않고 침의 끝단을 중심으로 대부분 진피부근에서만 전구 형태로 익혀지는 형태를 말한다. 그리고 종래 기술과는 달리 절연코팅을 하지 아니한 침사이의 모든 영역을 익히지 않고 각 침별로 독립적으로 익히는 공간을 가지고 있다는 점에서 종래기술과는 현저히 다른 기술이다. 그에 더하여 이는 수년간 수많은 시행착오와 실험을 근거로 발명한 것으로 이로 인한 효과는 종래 기술의 문제점을 현저히 개선하는 효과가 있다.

<29> 먼저 라-효과는 앞서 간단히 설명한 바와 같이 전극간의 영역을 익히는 것이 아니라 개별 전극의 끝단을 중심으로 각기 구별되게 익히는 방법이므로 전기의 여러 가지 요소를 조정하거나 간격을 조정하는 등의 방법으로 미세하게 나누어 시술

할 수 있는 획기적인 방법이다. 다시 말하면 전체적으로 그 세기를 조정하여 시술이 좀 더 필요한 부분은 다수 시술하고 그렇지 않는 부분은 작은 회수를 시술하여 의사가 상황을 보아 적절히 조절하기가 종전의 기술에 비해 현저히 향상되었다고 할 수 있다.

<30> 또한 라-효과는 표피는 거의 익지 않고 목적으로 하는 진피부분만 집중하여 익힐 수 있으므로 침을 절연코팅하지 않는 것을 원칙으로 한다는 점에서 종래기술과 현저한 차이가 있을 뿐만 아니라 이로 인해 종래기술의 가장 치명적인 문제점이던 절연코팅의 문제점을 완전히 해소할 수 있게 되었다. 본 발명의 시술방법은 원칙적으로 피부에 침투하는 침 부분은 절연 코팅을 특별한 경우를 제외하고는 할 필요가 없는 것으로 판단된다.

<31> 간혹 라-효과를 응용하여 다소 가혹한 조건으로 작업을 한다고 해도 표피부분과 닿는 아주 좁은 침의 부분만 코팅을 하면 되는 것으로 이러한 경우도 만일을 위한 것이지 일반적으로는 그럴 필요가 없다.

<32> 라-효과를 위해 채택해야할 필수구성요소는 먼저 바이폴라와 교류전류이되 고주파형태로 에너지를 전달하는 전류일 것을 요구하고 있다. 그리고 라-효과를 위해서는 전극간의 간격이 중요하다. 왜냐하면 전극간의 간격이 너무 좁으면 전극 끝단에 집중된 익는 부위가 서로 붙어 라-효과를 나타내는데 지장을 줄 수 있기 때문이다.

<33> 또 다른 라-효과의 구성요소는 바늘이 코팅되어 있지 않아야 한다는 것으로 이는 종래기술의 경향과는 다른 구성요소이다. 이는 코팅을 전혀 할 수 없다는 것

ENDYMED EXHIBIT 1002 - 86/509

이 아니라 종래기술에서는 할 필요가 있던 것이 할 필요가 없어졌다는 것으로 이 경우에는 특히 코팅을 하면 제품의 기능이 오히려 저하된다는 점에서 종래기술과는 현저한 차이가 있다고 할 수 있다.

<34> 또 다른 라-효과에 관계되는 구성요소는 바늘의 수가 바늘의 끝단을 이었을 경우 그물 형태의 면을 형성하는 것이 바람직하다는 점이다. 이론적으로는 바늘의 수가 4개 이상이면 되지만 바람직하기로는 적어도 사각형이라고 가정할 경우 한 측면의 바늘의 수가 4개 이상인 것이 바람직하다고 할 수 있다.

<35> 또 다른 라-효과의 구성요소는 바늘에 교류를 인가하되 이웃하는 바늘간의 +와 -의 극성이 서로 다르도록 도 7과 같이 배치한다는 점이다.

【발명의 효과】

<36> 본 발명의 가장 큰 효과는 종래기술의 치명적인 문제점을 해소할 수 있다는 점이다.

<37> 먼저 종래기술의 가장 큰 부작용으로 바늘 사이의 진피층과 표피층을 모두 익혀버리는 점과 과다하게 피부를 익혀 피부가 되돌릴 수 없도록 손상되어 버리는 경우가 다반사로 일어나는 점들이 라-효과가 적용된 기기를 사용할 경우 모두 해결될 수 있다.

<38> 라-효과는 종래 인지하던 바이폴라(bipolar) 전극에서 피부가 익는 형태와는 전혀 달리 도 6과 같이 표피는 거의 익혀지지 않고 침의 끝단을 중심으로 대부분 진피부근에서만 전구 형태로 익혀지는 형태를 말한다. 따라서 전기의 여러 가지 요

ENDYMED EXHIBIT 1002 - 87/509

소들의 세기를 조정하거나 간격을 조정하는 등의 방법으로 미세하게 조정하여 시술할 수도 있고 처음부터 그 세기를 약하게 하여 나누어 시술할 수 있는 획기적인 방법이다. 다시 말하면 전체적으로 그 세기를 조정하여 시술이 좀 더 필요한 부분은 다수(多數) 시술하고 그렇지 않는 부분은 작은 회수를 시술하여 의사가 상황을 보아 적절히 조절하기가 종전의 기술에 비해 현저히 향상되었다고 할 수 있다. 이는 의학적 측면에서 보면 획기적 변화라 하지 않을 수 없다.

<39> 또한 종래기술에서 표피층이 익어서 익혀진 부위가 바로 흉터가 되어 피부개선을 위한 조치가 더 큰 피부손상을 불러오는 경향이 있었는데 도 6에서 보는 바와 같이 표피층이 익는 현상이 거의 일어나지 않아 이 또한 중요한 효과 중의 하나이다.

<40> 그래서 이후 대부분의 기술에서는 단지 진피에 도달하는 침들의 끝단을 제외하고는 모두 절연성 코팅을 하여 시술하기에 이르렀는데 본 발명은 오히려 코팅을 하면 라-효과를 제대로 활용할 수 없다는 측면이 있으므로 절연 코팅을 할 경우 발생할 수 있는 침의 굵기가 당연히 굵어지게 되어 투침한 흔적이 크게 남게 되고 통증을 증가시키고 코팅한 부분이 언제나 벗겨질 가능성이 높아 더 큰 부작용을 불러일으킬 우려가 높다는 문제점을 현저히 해소할 수 있게 되었다.

【도면의 간단한 설명】

<41> 도 1은 피부의 세포구조

ENDYMED EXHIBIT 1002 - 88/509

도 2는 본 발명장치의 일실시예에 해당하는 대체적 구조도

도 3은 모노폴라전극 사용시 시술의 시술결과 표시도

도 4는 종래 침에 절연코팅을 하지 않은 바이폴라 전극 사용시 시술의 시술결과 표시도

도 5는 종래 침에 절연코팅을 하고 침의 끝단만 절연코팅을 하지 않은 바이폴라 전극 사용시 시술의 시술결과 표시도

도 6은 라-효과가 구현된 피부삽입부분이 코팅되지 않은 침이 사용된 시술의 시술결과 표시도

도 7은 라-효과가 구현된 교류상의 전극의 극성 변화 형태의 일 실시예

도 8은 침과 침사이의 간격을 나타내는 그림이다.

<도면의 주요부분에 대한 부호의 설명>

100 : 침 고정부 200 : 피부

201 : 표피 202 : 진피

300 : 침/바늘/전극 301 : 피부로 삽입되는 침 영역

302 : 진피까지 삽입되는 침의 끝단

400 : 모노폴라전극 사용시 시술받는 환자의 손

500, 600 : 전기출입선

700 : 절연코팅부분

901 : 모노폴라전극 사용시 익는 부위의 모습

ENDYMED EXHIBIT 1002 - 89/509

902 : 종래 침에 절연코팅을 하지 않은 바이폴라 전극 사용시 익는 부위의 모습

903 : 종래 침에 절연코팅을 하고 침의 끝단만 절연코팅을 하지 않은 바이폴라 전극 사용시 익는 부위의 모습

909 : 피부삽입부분이 코팅되지 않은 침이 사용되고 라-효과가 구현된 익는 부위의 모습

【발명을 실시하기 위한 구체적인 내용】

<42> 본 발명은 위에서 제시한 내용을 바탕으로 다양한 실시예를 통해 실험해 보았는데 이런 내용을 바탕으로 여기서는 그 구성요소를 중심으로 세부적으로 정리하고자 한다.

<43> 라-효과를 위해 채택해야할 필수구성요소는 먼저 바이폴라와 일상의 교류전류이되 고주파를 이용할 것을 요구하고 있다. 그리고 라-효과를 위해서는 전극간의 간격이 중요하다. 왜냐하면 전극간의 간격이 너무 좁으면 전극 끝단에 집중된 익는 부위가 서로 붙어 라-효과를 나타내는데 지장을 줄 수 있기 때문이다.

<44> 교류전류(alternating current / AC)는 통상 시간에 따라 크기와 방향이 주기적으로 변하는 전류로서 보통 AC(alternating current)로 표시한다. 사인파형이 가장 전형적이며 사각파나 삼각파 등으로 변형이 가능하다. 전류 흐름의 방향이 일정한 직류와 여러 다른 성질을 갖고 있다. 일반적으로 교류 전류는 각국에서 주파수를 50Hz 혹은 60Hz로 통일하여 사용하고 있다.

ENDYMED EXHIBIT 1002 - 90/509

<45> 교류 전류는 라-효과를 발생시키는 가장 중요 요인으로 인식되는데 주파수가 큰 것은 특별히 높은 경우 예를 들면 수백Hz와 같은 경우가 아니면 문제가 되지 않을 것으로 판단하고 있다. 주파수가 상당히 높은 경우에도 침 간격을 좁혀 줌으로서 그로 인한 영향을 상쇄할 수 있을 것으로 판단된다. 그러나 주파수가 낮은 경우는 라-효과의 구현에 문제가 될 것으로 판단된다. 이 경우에도 20Hz 이상이면 다른 요인들을 조절하여 라-효과를 구현할 수 있다. 다른 요인의 조절은 뒤에서 다시 설명하기로 한다.

<46> 또한 다각적으로 검토 및 실험하였으나 라-효과는 적어도 고주파가 아닌 경우에는 구현되지 않는 것으로 나타났다. 예를 들면 저주파는 물론이고 초음파, 중주파, 이온 등 다른 방법을 이용해서는 라-효과는 제대로 구현되지 않았다.

<47> 특히 고주파에서도 0.5 메가헤르츠(MHz)이상에서 라-효과가 잘 나타났는데 그 중에서도 가장 바람직한 경우가 2 MHz 내외라고 실험되어 현재 이를 이용하고 있다. 다시 말하면 바람직하기는 0.5 - 10 MHz 범위이고 더욱 바람직하기는 1 - 4 MHz이며, 가장 바람직하기는 1.5 - 2.5 MHz 이라 할 수 있다. 그러나 주어지는 조건에 따라 당연히 조금은 달라질 것으로 예상되나 대체적으로는 위 범위를 크게 벗어나지는 않았다.

<48> 이를 다시 상세히 설명하면 건조 피부와 젖은 피부를 2 MHz와 1 MHz를 사용하여 전기 통전도를 실험해보면 마른 피부에서는 2 MHz에서는 0.037102, 1 MHz에서는 0.013237이 나왔고, 젖은 피부에서는 2 MHz에서는 0.26649, 1 MHz에서는 0.2214가 나왔다. 결국 RF에너지흐름이 2 MHz에서 보다 원활하다는 것을 알 수 있고 이는

ENDYMED EXHIBIT 1002 - 91/509

결론적으로 건조피부에서 동일한 에너지가 가해졌을 때 1 MHz에서 스파크가 생길 확률이 다른 변수들에 의해 달라질 수는 있지만 산술적인 전기전도도 비교만으로는 약 3배가 높다고 할 수도 있다.

<49> 이를 이론적으로 보다 상세히 설명하면 고주파 주파수는 주파수가 높을수록 동일한 전류를 흘려보낼 때 상대적으로 가까운 부근까지만 에너지 영역을 형성하는 반면 주파수가 낮으면 전극으로부터 먼 부분까지 에너지 영역을 형성하게 된다.

<50> 예를 들면 0.5MHz 이하인 경우 전극간 간격을 멀리 하여도 에너지 영역이 너무 넓어 표피까지 화상을 입혀 흉터의 원인이 될 수도 있고 특히 좁은 영역을 정밀한 치료를 필요로 하는 눈꺼풀 같은 얇은 피부 치료시 안구에 영향을 줄 수도 있다.

<51> 10MHz 이상의 경우 에너지 영역이 너무 좁아 치료시간이 길어지고 최적의 치료를 위한 에너지 영역을 만들기도 어렵다.

<52> 다음으로 라-효과는 침의 간격과도 깊은 관계가 있다. 특히 침의 간격은 모든 다른 구성요소와 깊은 관계가 있는데 예를 들어 고주파수의 주파수와의 관계를 살펴보면, 고주파 주파수가 증가하는 경우 침의 간격은 감소하고 고주파 주파수가 감소하는 경우 침(혹은 "바늘"이라 표현하기도 한다)의 간격은 증가하는 것으로 실험되었다.

<53> 2 MHz의 경우는 침의 간격은 2㎜ 내외가 가장 적당한 것으로 실험되었다. 이에 대해서는 뒷부분에서 보다 상세히 설명하기로 한다.

ENDYMED EXHIBIT 1002 - 92/509

<54> 다음으로 라-효과에 영향을 미치는 중요 구성요소로 침의 절연코팅 여부를 들 수 있다. 원칙적으로 라-효과가 작동하는 한 표피부근은 거의 익지 않고 진피까지 파고 든 침 끝을 중심으로 도 6에서 나타난 바와 같이 마치 전구모양과 유사한 익는 부분이 형성되게 되므로 절연 코팅을 할 필요가 없다. 그러나 전기의 절연을 목적으로 하지 않는 한 코팅 그 자체만으로 라-효과를 저해한다고 성급하게 판단할 수는 없다. 예를 들면 침의 강도강화를 위하면서 절연에 영향을 주지 않는 금속코팅이나 열처리 등으로 인한 코팅은 라-효과에 영향을 주지 않는 경우도 당연히 있었다.

<55> 다시 말하면 라-효과를 최대한 활용하기 위해서는 절연을 하지 않는 것이 바람직하고 혹시 하더라도 최소한 진피 구간만은 절연 코팅을 하지 않는 것이 바람직하다는 것을 의미한다. 그러나 절연을 하였다고 하여 라-효과가 나타나지 않는 것은 아니다. 예를 들어 침 끝단을 제외한 부분을 절연 코팅을 하였을 경우 모노폴라를 사용한 경우와 유사한 형상의 익는 부분을 가질 수 있으나 그 형상만 동일할 뿐 현저히 다른 작용 방식에서 비롯된 전혀 다른 효과라 할 수 있다.

<56> 또 다른 라-효과와 긴밀한 관계가 있는 구성요소는 침 즉 전극의 극성의 배치 방법이다. 원칙적으로 라-효과는 침 즉 바늘에 교류를 인가하되 원칙적으로 이웃하는 바늘간의 극성이 서로 다르도록 도 7과 같이 배치한다는 점이다. 물론 이러한 배치는 정사각형의 모임으로 이루어지고 각 직교점에 바늘이 배치된 형태로서 한 바늘의 극성이 가장 이웃하는 직교점에 있는 바늘의 극성과는 다르도록 한다는 의미이다. 물론 교류 전류를 사용하므로 하나의 바늘이라 해도 통상의 교류전기를

ENDYMED EXHIBIT 1002 - 93/509

ENDYMED EXHIBIT 1002 - 94/509

사용할 경우 초당 약 50 - 60회 극성이 바뀌게 된다. 그렇다고 하더라도 당연히 매 순간마다 침 즉 바늘에 교류를 인가하되 이웃하는 바늘간의 극성이 서로 다르도록 도 7과 같이 배치가 가능하다. 본 발명에서 각 침들의 극성이 가장 가깝게 이웃하는 침들의 극성과 다르도록 각 방향으로 (+), (-)로 교차하면서 배열되었다고 하는 것은 이런 원리로 된 것들을 의미한다.

<57> 물론 일반적으로는 정사각형의 모임이 바람직하지만 얼마든지 약간 기울어진 마름모 모양의 집합이 될 수도 있고 직사각형 혹은 약간 기울어진 변의 길이가 다른 사각형의 집합인 경우에도 이웃하는 바늘간의 극성이 다르게 배치하는 한 라-효과가 발생하는 것을 확인하였다. 또한 어떤 경우에는 전기가 통하지 않는 바늘을 군데군데 배치할 수도 있고 바늘의 존재를 아예 군데군데 의도적으로 뺄 수도 있다. 하지만 상기 바늘의 극성 배치는 원칙적으로 그리한다는 의미로 원칙적으로 가장 가깝게 이웃하는 침들의 극성과 다르도록 각 방향으로 (+), (-)로 교차하면서 배열했다면 라-효과에 당연히 기여한다고 할 수 있고 상기 구성요소를 채택한 것이라 할 수 있다. 본 발명에서 바늘의 극성 배치와 관련하여 표현한 "원칙적으로"라는 의미는 위 경우들을 포함한다는 의미에서 사용된 것이다.

<58> 또한 제품을 디자인을 하다가 보면 불가피하게 위의 여러 가지 모양을 혼합할 수 있는데라-효과를 획득하기 위하여 원칙적으로 전극의 배열을 상기와 같이 이웃하는 바늘간의 극성이 서로 다르도록 한 상당한 부분을 포함하고 있는 다양한 경우를 설정할 수 있다.

<59> 여기서 상당한 부분이란 라-효과를 활용하기 위해 의도적으로 일정 영역의

전극들을 상기와 같이 배치하고 있는 경우를 예로 들 수 있다.

<60> 또 다른 중요한 구성요소는 전압으로서 이는 바늘 간격을 정하는데 있어서도 중요한 고려 요소이지만 이는 기기의 안전과도 직결된 구성요소이다. 따라서 통상 피부에 인가되는 전압을 중심으로 측정하는 것이 바람직하다.

<61> 따라서 "피부에 인가되는 전압"의 의미를 살펴 보고 그 측정의 가능성을 살펴보면 다음과 같다.

<62> 실제 피부에 인가되는 전압은 피부에 삽입된 바늘(침)의 특정부위 표면과 접하는 피부 부위 사이에 걸리는 전압이다. 따라서 기기에 인가되는 전압과는 달리 3가지의 저항값 즉 기기저항, 적극(침) 저항, 피부저항 값의 합에 따라 달라질 수 있다. 또한 피부에 삽입된 바늘 표면의 모든 부위에서 각각 같거나 달라질 수 있다. 왜냐하면 특정부위의 바늘표면과 접하는 피부 부위의 저항값이 다를 수 있어 바늘 전체표면에서는 똑같은 전압을 인가하여도 각 부위의 피부인가 전압은 달라질 수 있다.

<63> 그러나 피부 내에서 저항값은 차이가 있기는 하나 그리 큰 차이가 아니므로 본 발명에서는 바늘이 피부에 삽입된 상태에서 바늘 표면에서 측정된 전압값을 기준으로 측정하였고 이를 전압값으로 표시하였다.

<64> 이는 인가되는 에너지의 양과 직결된 구성요소로서 최대 100V를 넘어서는 것은 바람직하지 못하다. 바람직한 전압은 10 - 60V이며 최적 전압은 20 - 40V로 실험되었다. 물론 100V가 넘더라도 라-효과는 나타날 수 있다. 따라서 어떤 가혹한

ENDYMED EXHIBIT 1002 - 95/509

상황에서는 100V를 사용하는 것이 바람직할 수도 있겠으나 예를 들어 100V로 전압을 주는 경우에 라-효과는 일어나나 흉터가 생길 수 있으므로 적어도 피부 미용과 관련해서는 100V를 넘는 것은 설정하기가 어렵다. 하지만 인가시간을 최대한 단축하는 등 다양한 조건을 도입하여 흉터 등의 문제를 제거할 수 있다면 100V이상에서도 사용이 가능할 것이다.

<65> 상기 시술시 인체의 피부에 걸리는 전압(피부전압)은 기기에서 설정하는 전압(외부전압)과 회로 설계에 따라 다양하게 변하도록 설계 가능하며 이는 이 분야에 종사하는 당업자라면 쉽게 구현 가능한 것으로서 본 발명의 특징적 구성요소도 아니므로 구체적인 설명은 생략한다.

<66> 또 하나의 변수는 전류이다. 하지만 이는 전압과 저항값에 따라 변하므로 장비를 통해 가해주는 전압과 기기저항, 전극(바늘) 저항, 피부저항값이 정해지면 계산이 가능하다.

<67> $V = I * R$

<68> 저항값은 크게 3가지의 저항값으로 구분하는데, 즉 기기저항, 전극(침)저항, 피부 저항으로 구분 가능하다.

<69> 또 하나의 중요 구성요소는 에너지 지속 시간이다. 이는 라-효과를 달성하는데도 상당히 영향이 있는 것으로 나타났다. 최저시간을 살펴보면 고주파 에너지가 스테이블한 영역에 도달하기 위한 시간으로 약 0.02초가 소요되므로 에너지 지속시간이 지나치게 짧으면 그 효과가 거의 측정할 수 없을 만큼 나타나므로 시간을 지

ENDYMED EXHIBIT 1002 - 96/509

나치게 짧게 할 수는 없다. 측정해본 결과 최소한 0.05초 이상은 되어야 하는 것으로 나타났다. 본 발명의 주요한 특징으로 에너지 지속시간이 비교적 짧다는 것이기는 하나 효과가 나타나는 가장 긴 시간을 측정해 본 결과 0.8초인 것으로 나타났다. 물론 침간 간격을 넓히고 전압을 최소화하면 더 긴 시간도 가능할 수 있겠으나 그래도 현 시점에서 시술이 가능한 최적의 조건을 전제로 할 경우 0.05 - 0.8초의 범위를 잡을 수 있었다.

<70> 그러나 바람직한 시간은 0.1 - 0.4초이며, 가장 바람직한 시간은 0.1 - 0.2초 인 것으로 측정되었다. 이러한 시간을 찾아내는 것은 생각보다는 대단히 어려웠고 수많은 시행착오를 거듭했으며 많은 예지력을 필요로 하였다. 왜냐하면 높은 고주파를 사용하고 교류를 사용하면서 낮은 전압을 사용하면서도 인가시간을 이렇게 짧게 한다는 것은 라-효과를 창작해 내고서야 이렇게 짧은 인가시간을 상상할 수 있었기 때문이다.

<71> 실제 바늘로 피부에 침투하지 않고 피부에 전극으로 자극을 주는 기기(이전의 Polaris 기기)에서는 훨씬 높은 전압에서도 실제 0.5 초 이상의 시간 동안 에너지를 주었던 사실과 상기의 본 발명의 전기 인가 시간을 비교해보면 본 발명의 기기가 훨씬 짧은 시간 동안 에너지를 부가하는 장치임을 알 수 있다.

<72> 다음으로 고려해야할 중요한 구성요소는 침의 길이와 굵기이다. 침의 굵기는 침 간 간격에 영향을 준다. 또한 반복적으로 피부에 삽입했다가 뺐다가 해야 하므로 그러한 과정에서 구부러지지 않고 견딜만한 능력이 있어야 한다. 그리고 굵어질수록 통증을 더 크게 수반할 수 있고 침에 찔린 흔적이 커지게 되고 출혈도 증가될

ENDYMED EXHIBIT 1002 - 97/509

수 있다.

<73> 결론적으로 바늘의 굵기는 찌르는데 있어 통증을 최소화 하고 바늘이 휘지 않을 정도이어야 하고 상처가 최소화되도록 적정범위를 찾아야 한다. 현재 임상적으로 사용하고 있는 바늘 굵기는 0.25㎜ 와 0.3㎜ 를 사용하고 있는데 이런 정도면 무난한 것으로 판단된다.

<74> 상기 바늘 굵기에 다소 벗어나더라도 라-효과를 나타내는 데는 바늘의 굵기는 다소간의 영향은 있으나 그 영향은 그리 크지 않았다.

<75> 침의 길이는 장치의 설계 방식에 따라 차이가 날 수 있으므로 일률적으로 이야기하기는 곤란하다. 하지만 피부에 삽입되는 길이를 중심으로 이야기하면 피부의 두께와 시술목적에 따라 일률적으로 언급하는데 큰 문제가 없다.

<76> 이와 관련하여 도 1에서 피부들의 깊이를 정리하고 있는 바 이를 중심으로 판단할 수 있다. 통상 표피의 깊이는 0.2㎜ 에서 1㎜ 사이이고 진피의 깊이는 1㎜ 에서 4㎜ 사이 이다. 따라서 적어도 진피 초입까지 도달하기 위한 길이는 최소 0.2㎜는 되어야 하고 진피의 끝부분까지 도달하기 위한 최대 길이는 5㎜라고 할 수 있으므로 치료를 위한 바람직한 깊이는 안전을 고려하면 1㎜ - 5㎜라고 할 수 있다. 그러므로 침의 총 길이는 장치의 종류에 따라 달라질 수는 있으나 피부에 삽입되어지는 침의 길이는 1㎜ - 5㎜로 하는 것이 바람직하다.

<77> 라-효과를 얻는 기기를 설계하기 위해 가장 신경을 쓰야 할 부분 중 하나는

ENDYMED EXHIBIT 1002 - 98/509

ENDYMED EXHIBIT 1002 - 99/509

앞서 설명한 바와 같이 침의 간격이다. 간격을 재는 여러 가지 방법이 있겠으나 여기서는 도 8과 같이 어느 특정의 침의 외피와 인접 침의 외피간의 가장 가까운 간격을 중심으로 설명하도록 한다. 본 발명에 있어서 바늘 간의 간격은 이와 같은 방법으로 정의된 것이다.

<78> 라-효과가 가능한 간격은 1.3㎜ 까지는 가능한 결과를 얻었다. 따라서 바람직한 간격은 1.3 - 3.0㎜ 수준으로 관찰되고 있으나 좀 더 넓은 간격이라 할지라도 인가되는 전류의 양이나 저항을 적게 하는 방법들을 동원할 경우 가능할 것으로 판단하고 있다.

<79> 그러나 바늘간 간격은 많은 변수들에 의해 조금씩 달라질 수 있다.

<80> 적절한 라-효과를 얻는다는 전제 하에 바늘 간 간격에 영향을 주는 구성요소를 살펴보면 다음과 같다.

<81> 먼저 전력(=에너지)이 증가하거나 바늘의 굵기가 두꺼워지면 바늘간의 간격은 증대되어야 한다. 이를 분설하면 전력은 전압과 전류 및 인가 시간을 서로 곱하여 이루어지므로 결국 전압, 전류, 인가시간, 바늘의 굵기, 전도도 중 어느 하나의 값이나 둘이상의 값이 증대하면 바늘간의 간격은 증대되어야 한다.

<82> 그러나 저항, 교류주파수, 고주파 주파수 또는 피부로 침투한 바늘 깊이 중 어느 하나 혹은 둘 이상의 값이 증대하면 그 영향의 정도에 따라 바늘의 간격을 좀 더 좁히더라도 라-효과를 발생시키는데 영향이 없을 수 있다.

<83> 이를 공식으로 표현하면 다음과 같다.

【0084】

$$\text{간격} = N \frac{(\text{전력(=에너지)}) * (\text{바늘 두께}) * (\text{전도도})}{(\text{저항}) * (\text{교류주파수}) * (\text{고주파 주파수}) * (\text{피부로 침투한 바늘 깊이})}$$

<85> N : 비례 상수

<86> 저항 : 기기 저항, 전극 저항, 피부저항(피부 내에서만 고려하면 피부저항만 사용)

<87> 전력(=에너지)는 J = W*t 이므로 (W=전력, t=시간)

<88> = V*I*t (W=V*I)

<89> = I^2*R*t (V=I*R)

<90> 따라서,

【0091】

$$\text{간격} = N \frac{V * I * t * \text{바늘 두께} * \text{전도도}}{(\text{저항}) * (\text{교류주파수}) * (\text{고주파 주파수}) * (\text{피부로 침투한 바늘 깊이})}$$

<92> 라고 표현할 수도 있다.

<93> 본 발명에서 침 고정부를 구성요소로 하는데 여기서 고정이라는 의미는 그 침들이 자유롭게 아무 곳이나 흩어지지 않게 한다는 의미이지 그 고정부 내에서 움직일 수 있다는 것을 제한하는 것은 아니며 본 발명의 특징적 구성요소도 아니다.

ENDYMED EXHIBIT 1002 - 100/509

【특허청구범위】

【청구항 1】

첨예한 단부를 가지는 다수개의 침;

상기 다수개의 침들을 고정하는 침 고정부;

상기 침 고정부에 고정된 다수개의 니들이 피부에 삽입되게 상기 침 고정부에 직접 또는 간접적으로 힘을 전달하는 구동부; 및

상기 다수의 침과 전기적으로 연결되어 있는 전기에너지 전달부;를 포함하며,

상기 투입되는 전기가 교류전류이고, 상기 전기에너지의 형태가 고주파이며, 상기 다수의 침들은 바이폴라의 전극체제를 가지고, 상기 구성들에 의한 피부의 시술부위가 라-효과가 구현된 익은 모습을 가지는 것을 특징으로 하는 피부처치장치.

【청구항 2】

첨예한 단부를 가지는 다수개의 침;

상기 다수개의 침들을 고정하는 침 고정부;

상기 침 고정부에 고정된 다수개의 니들이 피부에 삽입되게 상기 침 고정부에 직접 또는 간접적으로 힘을 전달하는 구동부; 및

상기 다수의 침과 전기적으로 연결되어 있는 전기에너지 전달부;를 포함하며,

ENDYMED EXHIBIT 1002 - 101/509

상기 투입되는 전기가 교류전류이고, 상기 다수의 침들은 바이폴라의 전극체제를 가지면서 상기 침들 중 같이 군을 이루는 9개 이상의 각 침들의 극성이 원칙적으로 가장 가깝게 이웃하는 침들의 극성과 다르도록 각 방향으로 (+), (-)로 교차하면서 배열된 영역을 포함하며, 상기 전기에너지의 형태가 고주파이고, 상기 구성들에 의한 피부의 시술부위가 라-효과가 구현된 익은 모습을 가지는 것을 특징으로 하는 피부처치 장치.

【청구항 3】

첨예한 단부를 가지는 다수개의 침;

상기 다수개의 침들을 고정하는 침 고정부;

상기 침 고정부에 고정된 다수개의 니들이 피부에 삽입되게 상기 침 고정부에 직접 또는 간접적으로 힘을 전달하는 구동부; 및

상기 다수의 침과 전기적으로 연결되어 있는 전기에너지 전달부;를 포함하며,

상기 투입되는 전기가 교류전류이고, 상기 다수의 침들은 바이폴라의 전극체제를 가지면서 각 침에서 가장 가까운 침까지의 간격이 1.3 - 3.0㎜이며, 상기 전기에너지의 형태가 고주파이고, 상기 구성들에 의한 피부의 시술부위가 라-효과가 구현된 익은 모습을 가지는 것을 특징으로 하는 피부처치 장치.

【청구항 4】

첨예한 단부를 가지는 다수개의 침;

ENDYMED EXHIBIT 1002 - 102/509

상기 다수개의 침들을 고정하는 침 고정부;

상기 침 고정부에 고정된 다수개의 니들이 피부에 삽입되게 상기 침 고정부에 직접 또는 간접적으로 힘을 전달하는 구동부; 및

상기 다수의 침과 전기적으로 연결되어 있는 전기에너지 전달부;를 포함하며,

상기 투입되는 전기가 교류전류이고, 상기 다수의 침들은 바이폴라의 전극체제를 가지면서 각 침에서 가장 가까운 침까지의 간격이 1.3 - 3.0㎜이며, 상기 침들 중 같이 군을 이루는 9개 이상의 각 침들의 극성이 가장 가깝게 이웃하는 침들의 극성과 다르도록 각 방향으로 (+), (-)로 교차하면서 배열된 영역을 포함하며, 상기 전기에너지의 형태가 고주파이고, 상기 구성들에 의한 피부의 시술부위가 라-효과가 구현된 익은 모습을 가지는 것을 특징으로 하는 피부처치 장치.

【청구항 5】

첨예한 단부를 가지는 다수개의 침;

상기 다수개의 침들을 고정하는 침 고정부;

상기 침 고정부에 고정된 다수개의 니들이 피부에 삽입되게 상기 침 고정부에 직접 또는 간접적으로 힘을 전달하는 구동부; 및

상기 다수의 침과 전기적으로 연결되어 있는 전기에너지 전달부;를 포함하며,

상기 투입되는 전기가 교류전류이고, 상기 다수의 침들은 바이폴라의 전극체

ENDYMED EXHIBIT 1002 - 103/509

제를 가지면서 각 침에서 가장 가까운 침까지의 간격이 1.3 - 3.0㎜이며, 상기 침들 중 같이 군을 이루는 9개 이상의 각 침들의 극성이 가장 가깝게 이웃하는 침들의 원칙적으로 극성과 다르도록 각 방향으로 (+), (-)로 교차하면서 배열된 영역을 포함하며, 상기 전기에너지의 형태가 고주파이고, 상기 구성들에 의한 피부의 시술부위가 라-효과가 구현된 익혀진 모습을 가지는 것을 특징으로 하는 피부처치 장치.

【청구항 6】

첨예한 단부를 가지는 다수개의 침;

상기 다수개의 침들을 고정하는 침 고정부;

상기 침 고정부에 고정된 다수개의 니들이 피부에 삽입되게 상기 침 고정부에 직접 또는 간접적으로 힘을 전달하는 구동부; 및

상기 다수의 침과 전기적으로 연결되어 있는 전기에너지 전달부;를 포함하며,

상기 투입되는 전기가 교류전류이고 상기 교류전류의 주파수가 20Hz 이상이며, 상기 다수의 침들은 바이폴라의 전극체제를 가지면서 각 침에서 가장 가까운 침까지의 간격이 1.3 - 3.0㎜이며, 상기 침들 중 라-효과와 관련한 침들은 적어도 진피 구간은 코팅되지 않고, 상기 침들에 인가되는 전압은 100V 이하이고, 상기 침들에 전기가 인가되는 시간은 0.05 - 0.8초이며, 상기 구성들에 의한 피부의 시술부위가 라-효과가 구현된 익은 모습을 가지는 것을 특징으로 하는 피부처치 장치.

ENDYMED EXHIBIT 1002 - 104/509

【청구항 7】

제1항 내지 제6항 중 어느 한 항에 있어서, 고주파의 범위가 0.5 - 10 MHz인 것을 특징으로 하는 피부처치 장치.

【청구항 8】

제1항 내지 제6항 중 어느 한 항에 있어서, 고주파의 범위가 1 - 4 MHz인 것을 특징으로 하는 피부처치 장치.

【청구항 9】

제1항 내지 제6항 중 어느 한 항에 있어서, 고주파의 범위가 1.5 - 2.5 MHz인 것을 특징으로 하는 피부처치 장치.

【청구항 10】

제1항 내지 제6항 중 어느 한 항에 있어서, 상기 침의 굵기가 0.25mm 와 0.3mm이고 피부에 삽입되어지는 침의 길이는 1mm - 5mm인 것을 특징으로 하는 피부처치 장치.

【청구항 11】

제1항 내지 제6항 중 어느 한 항에 있어서, 상기 침의 굵기가 0.25mm 와 0.3mm이고 피부에 삽입되어지는 침의 길이는 0.1mm - 1mm인 것을 특징으로 하는 피부처치 장치.

【청구항 12】

제1항 내지 제6항 중 어느 한 항에 있어서, 상기 인가되는 전기의 전압이 10

ENDYMED EXHIBIT 1002 - 105/509

- 60V인 것을 특징으로 하는 피부처치 장치.

【청구항 13】

제1항 내지 제6항 중 어느 한 항에 있어서, 상기 인가되는 전기의 전압이 20 - 40V인 것을 특징으로 하는 피부처치 장치.

【청구항 14】

제1항 내지 제6항 중 어느 한 항에 있어서, 상기 인가되는 전기의 인가시간이 0.1 - 0.4초인 것을 특징으로 하는 피부처치 장치.

【청구항 15】

제1항 내지 제6항 중 어느 한 항에 있어서, 상기 인가되는 전기의 인가시간이 0.1 - 0.2초인 것을 특징으로 하는 피부처치 장치.

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【요약서】

【요약】

본 발명에 따른 피부처치 장치는 첨예한 단부를 가지는 다수개의 침; 상기 다수개의 침들을 고정하는 침 고정부; 상기 침 고정부에 고정된 다수개의 니들이 피부에 삽입되게 상기 침 고정부에 직접 또는 간접적으로 힘을 전달하는 구동부; 및 상기 다수의 침과 전기적으로 연결되어 있는 전기에너지 전달부;를 포함하며, 상기 투입되는 전기가 교류전류이고, 상기 전기에너지의 형태가 고주파이며, 상기 다수의 침들은 바이폴라의 전극체제를 가지고, 상기 구성들에 의한 피부의 시술부위가 라-효과가 구현된 익은 모습을 가지는 것을 특징으로 한다.

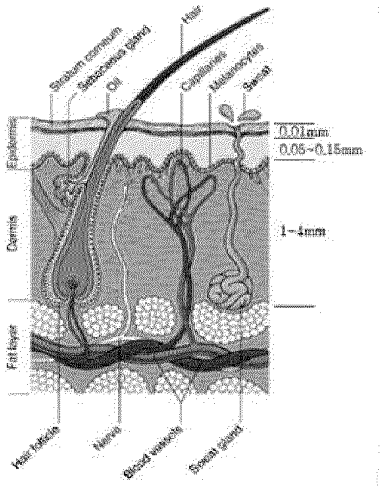
【대표도】

도 1

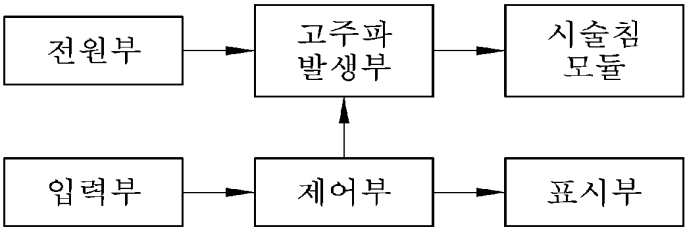
ENDYMED EXHIBIT 1002 - 107/509

【도면】

【도 1】

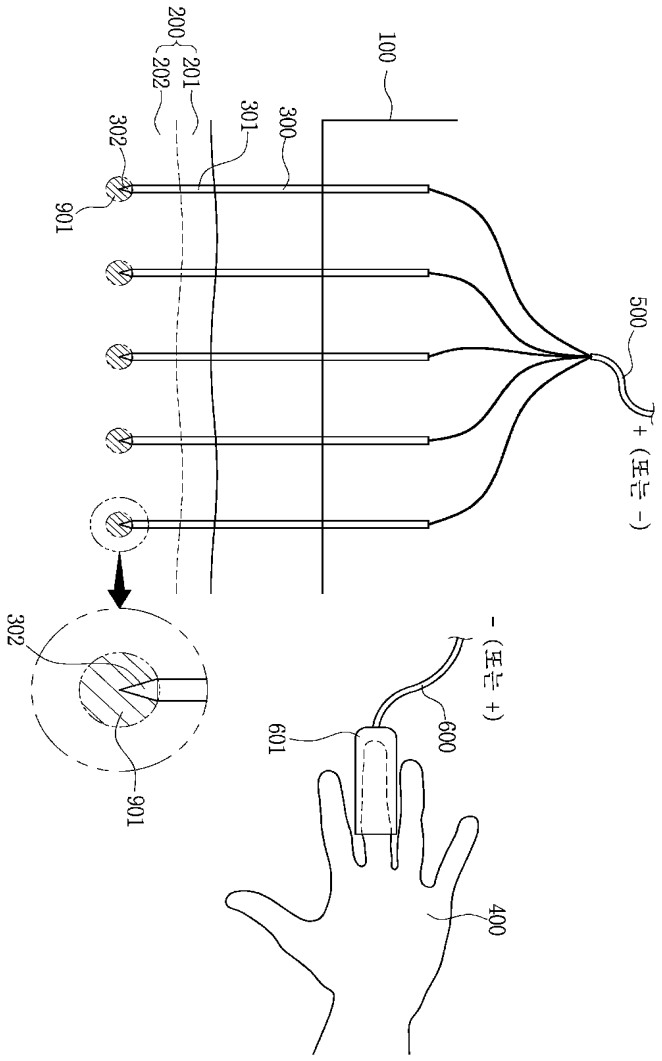


【도 2】

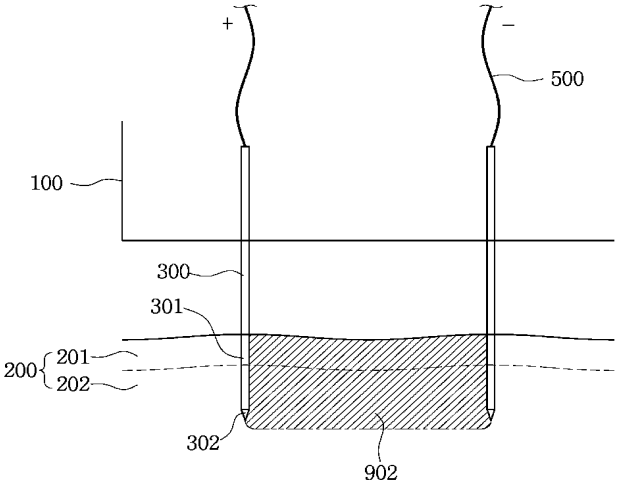


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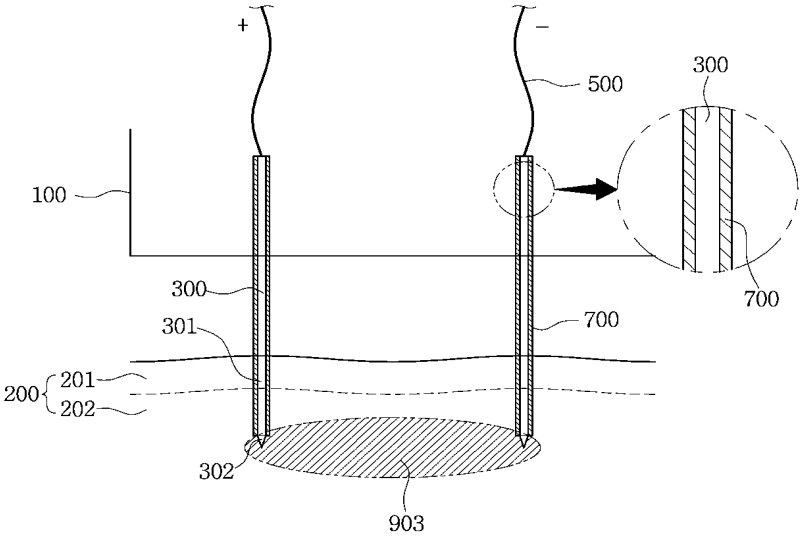
【도 3】



【도 4】

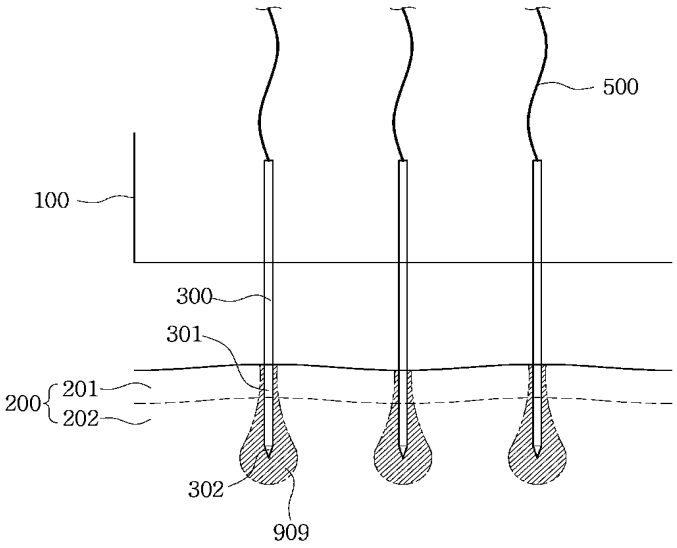


【도 5】

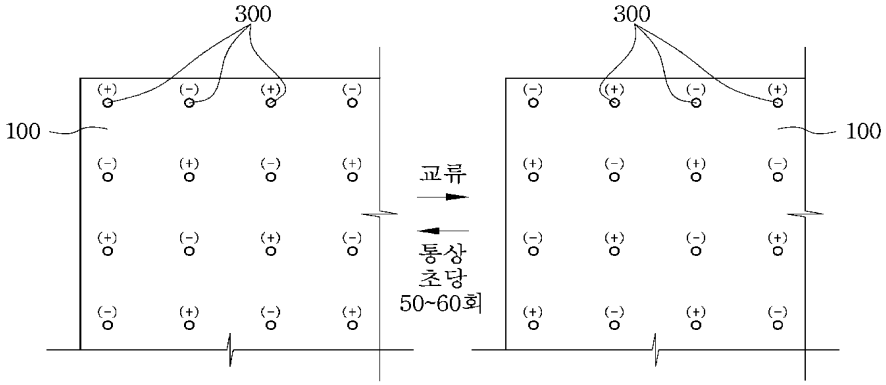


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【도 6】

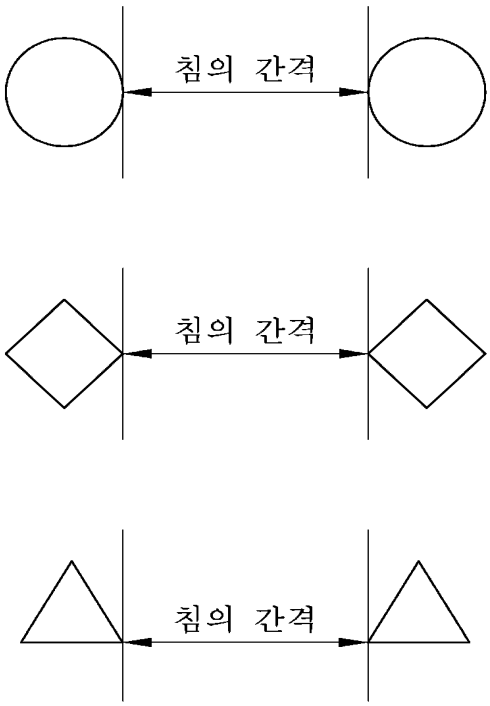


【도 7】



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【도 8】



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1211 Geneva 20, Switzerland
www.wipo.int

PCT 출원서

출력(전자적 형태가 원본)

0	**수리관청 전용**	
0-1	국제출원번호	**PCT/KR2012/004695**
0-2	국제출원일자	**2012년 06월 14일 (14.06.2012)**
0-3	수리관청 명칭 및 "PCT 국제출원"	**RO/KR**

0-4	**서식 PCT/RO/101 - PCT 출원서**	
0-4-1	우측에 기재된 바와 같이 작성되었다.	**PCT-SAFE** **버전 3.51.053.229 MT/FOP 20120101/0.20.5.19**
0-5	**신청** 아래 서명인은 본 국제 출원서가 특허협력조약에 의해 처리될 것을 청구합니다.	
0-6	**출원인이 지정한 수리관청**	**대한민국 특허청 (RO/KR)**
0-7	**출원인 또는 대리인의 서류참조기호**	**PCT12-14**
I	**발명의 명칭**	**라-효과 또는 라플러스-효과에 의한 피부 개선 장치 및 방법**
II	**출원인**	
II-1	이 사람은	출원인 겸 발명자
II-2	우측 지정국에 관한 출원인	모든 지정국
II-4ko	성명	라종주
II-4en	Name (LAST, First):	**NA, Jong Ju**
II-5ko	주소	대한민국 **138-836** 서울 송파구 양재대로 **1089** 한양아파트 **1**동 **901**호
II-5en	Address:	**1-901 Hanyang Apt., 1089, Yangjae-daero, Songpa-gu** **Seoul 138-836** **Republic of Korea**
II-6	국적	대한민국 **KR**
II-7	거주국	대한민국 **KR**
II-8	전화번호	**82-2-10-7140-7966**
II-9	팩스번호	**82-2-6442-7893**
II-11	출원인 코드	**4-2007-017445-9**

PCT 출원서

출력(전자적 형태가 원본)

III-1	**출원인 및/또는 발명자**	
III-1-1	이 사람은	출원인 겸 발명자
III-1-2	우측 지정국에 관한 출원인	모든 지정국
III-1-4ko	성명	곽정구
III-1-4en	Name (LAST, First):	**GWAK, Jeong Gu**
III-1-5ko	주소	대한민국 **138-836** 서울 송파구 양재대로 **1089** 한양아파트 **1**동 **901**호
III-1-5en	Address:	**1-901 Hanyang Apt., 1089, Yangjae-daero, Songpa-gu** **Seoul 138-836** **Republic of Korea**
III-1-6	국적	대한민국 **KR**
III-1-7	거주국	대한민국 **KR**
III-1-11	출원인 코드	**4-2011-026653-9**
IV-1	**대리인 또는 대표자** 아래에 기재된 자는 관할 국제기관에 대하여 우측에 표시된 자격으로 출원인을 대리하는 것으로 선임되었다.	**대리인 (agent)**
IV-1-1ko	성명	특허법인 프렌즈
IV-1-1en	Name:	**FRIENDS INTERNATIONAL PATENT & LAW FIRM**
IV-1-2ko	주소	대한민국 **135-910** 서울특별시 강남구 테헤란로 **147** 성지하이츠 **2**차 **411**호
IV-1-2en	Address:	**411, Sung-ji Heights 2, 147, Teheran-ro, Gangnam-gu** **Seoul 135-910** **Republic of Korea**
IV-1-3	전화번호	**82-2-563-4593**
IV-1-4	팩스번호	**82-2-563-1770**
IV-1-5	이메일 주소	**friends@friendspat.com**
IV-1-5(a)	이메일 사용동의 수리관청, 국제조사기관, 국제사무국, 국제예비심사기관이 필요 시 이 이메일 주소를 사용하여 이 국제 출원과 관련하여 발행된 통지서를 송부할 것에 동의한다.	서면 통지서에 앞서 선람용 사본 송부
IV-1-6	대리인 코드	**9-2012-100082-8**
V	지정국	
V-1	**본 출원서의 제출로, 규칙 4.9(a)에 따라, 부여될 수 있는 모든 종류의 권리 보호를 위하여, 그리고 해당하는 경우 지역특허 및 국내특허 모두를 위하여 당해 국제출원일에 PCT에 기속되는 모든 체약국이 지정된다.**	
V-2	**V-2란은 출원서 제출시 또는 규칙 26의2.1에 의해 그 이후 출원서 제6기재란에 위 특정 관련 체약국의 국내 선출원에 대한 우선권주장이 포함되어 있을 경우 당해 체약국의 국내법에 의해 해당 국내 선출원의 효력이 상실되는 것을 방지하기 위한 목적으로 당해 체약국의 지정을 제외하는 데에만 사용될 수 있다 (지정 제외시 이의 취소 불가능).**	**KR**

PCT 출원서

출력(전자적 형태가 원본)

VI-1	**선국내출원에 대한 우선권 주장**		
VI-1-1	출원일	**2011년 06월 14일 (14.06.2011)**	
VI-1-2	출원번호	**10-2011-0057691**	
VI-1-3	국가	**KR**	
VI-2	**선국내출원에 대한 우선권 주장**		
VI-2-1	출원일	**2011년 06월 14일 (14.06.2011)**	
VI-2-2	출원번호	**10-2011-0057692**	
VI-2-3	국가	**KR**	
VI-3	**우선권 주장 요청** 수리관청에 대하여 위에 명시된 선출원의 인증등본을 준비하여 국제사무국에 송부하여 줄 것을 신청한다.	**VI-1, VI-2**	
VI-4	**인용에 의한 보완** 조약 제11조(1)(iii)(d) 또는 (e)에서 규정하는 국제출원의 요소, 또는 규칙 20.5(a)에서 규정하는 명세서, 청구 범위 또는 도면의 일부가 본 국제출원에는 포함되어 있지 않지만 조약 제11조(1)(iii) 규정의 요소 중 하나 이상이 수리관청에 최초로 접수된 날에 우선권주장의 기초가 된 선출원에 완전히 포함되어 있는 경우, 그 요소 또는 부분은 규칙 20.6 규정에 의한 확인을 조건으로, 규칙 20.6의 규정과 관련하여 본 국제출원에 있어서 인용에 의해 보완된다.		
VII-1	**국제조사기관(ISA) 선택**	**대한민국 특허청 (ISA/KR)**	
VIII	**선언서**	선언서 개수	
VIII-1	발명자의 동일성에 관한 선언	-	
VIII-2	국제출원일에 특허출원 및 특허를 받을 수 있는 출원인의 자격에 관한 선언	-	
VIII-3	국제출원일에 선출원의 우선권을 주장할 수 있는 출원인의 자격에 관한 선언	-	
VIII-4	발명자 선언(미국에 대한 지정의 경우에 한함)	-	
VIII-5	신규성을 해치지 아니하는 개시 또는 신규성 상실의 예외에 관한 선언	-	
IX	**체크 리스트**	용지 수	전자적 파일 첨부
IX-1	출원서(선언서 포함)	**4**	✓
IX-2	명세서	**14**	✓
IX-3	청구범위	**3**	✓
IX-4	요약서	**1**	✓
IX-5	도면	**6**	✓
IX-7	용지매수 소계	**28**	
	첨부 항목	서면 첨부	전자적 파일 첨부
IX-8	수수료 계산 용지	-	✓
IX-9	개별위임장 원본	-	✓
IX-18	PCT-SAFE 전자출원 매체	-	-
IX-20	**요약서에 수반되어야 할 도면 번호**	**1**	
IX-21	**국제출원의 출원 언어**	한국어	

PCT 출원서

출력(전자적 형태가 원본)

X-1	**출원인, 대리인 또는 대표자의 서명 또는 날인**	**(PKCS7 전자서명)**
X-1-1	성명	**특허법인 프렌즈**
X-1-2	서명인의 성명	**특허법인 프렌즈**
X-1-3	권한 (출원서를 통해 서명자의 자격이 명백하지 않은 경우에는 그 자격도 표시)	

수리관청 전용

10-1	**국제출원으로 제출된 서류의 실제 접수일**	**2012년 06월 14일 (14.06.2012)**
10-2	**도면**	
10-2-1	접수	
10-2-2	미접수	
10-3	**국제출원으로 제출된 서류를 완성하는 서류 또는 도면의 추후 기간내 제출에 따른 정정된 실제 접수일**	
10-4	**PCT 제11조(2)에 따라 제출이 요구된 보완서로서 기간내 제출된 보완서의 접수일**	
10-5	**국제조사기관(ISA)**	**ISA/KR**
10-6	**조사료 납부시까지 지연된 조사용 사본의 송부**	

국제 사무국 전용

11-1	**국제 사무국의 기록원본 접수일**	

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION OF THE RECORDING OF A CHANGE

(PCT Rule 92*bis*.1 and Administrative Instructions, Section 422)

To:

MAC PATENT & LAW FIRM
5th Floor, Hwaseung Bldg.
15-3 Yangjae-dong, Seocho-gu
Seoul 137-130
RÉPUBLIQUE DE CORÉE

Date of mailing *(day/month/year)*
04 September 2012 (04.09.2012)

Applicant's or agent's file reference
PCT12-14

IMPORTANT NOTIFICATION

International application No.
PCT/KR2012/004695

International filing date *(day/month/year)*
14 June 2012 (14.06.2012)

1. The following indications appeared on record concerning:

☐ the applicant ☐ the inventor ☒ the agent ☐ the common representative

Name and Address
FRIENDS INTERNATIONAL PATENT & LAW FIRM
411, Sung-ji Heights 2, 147, Teheran-ro, Gangnam-gu
Seoul 135-910
Republic of Korea

State of Nationality:
State of Residence:
Telephone No.: 82-2-563-4593
Facsimile No.: 82-2-563-1770
E-mail address: friends@friendspat.com

2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

☒ the person ☐ the name ☐ the address ☐ the nationality ☐ the residence

Name and Address
MAC PATENT & LAW FIRM
5th Floor, Hwaseung Bldg.
15-3 Yangjae-dong, Seocho-gu
Seoul 137-130
Republic of Korea

State of Nationality:
State of Residence:
Telephone No.: 82-2-566-0002
Facsimile No.: 82-2-575-2585
E-mail address
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【서지사항】

【서류명】 특허출원서

【출원구분】 특허출원

【출원인】

【성명】 곽정구

【출원인코드】 4-2011-026653-9

【대리인】

【성명】 이윤원

【대리인코드】 9-2008-000501-2

【포괄위임등록번호】 2011-044432-1

【발명의 국문명칭】 라플러스-효과에 의한 피부 개선 장치 및 방법

【발명의 영문명칭】 The apparatus and mathod for improving human skin by NaPlus-Effect

【발명자】

【성명】 곽정구

【출원인코드】 4-2011-026653-9

【발명자】

【성명】 라종주

【출원인코드】 4-2007-017445-9

【심사청구】 청구

【취지】 위와 같이 특허청장에게 제출합니다.

대리인 이윤원 (서명 또는 인)

【수수료】

【출원료】 0 면 38,000 원

ENDYMED EXHIBIT 1002 - 120/509

2011-06-14

【가산출원료】	39 면	0 원
【우선권주장료】	0 건	0 원
【심사청구료】	15 항	730,000 원
【합계】	768,000 원	
【감면사유】	개인(70%감면)	
【감면후 수수료】	230,400 원	

ENDYMED EXHIBIT 1002 - 121/509

【명세서】

【발명의 명칭】

라플러스-효과에 의한 피부 개선 장치 및 방법{The apparatus and mathod for improving human skin by NaPlus-Effect}

【기술분야】

<1> 본 발명은 전기 에너지를 이용한 피부 치료에 관한 것으로서, 특히 미용을 위한 피부 치료를 우선적 목적으로 하나 경우에 따라서는 피부성형의 직접적 및 보조적 수단으로도 활용될 수 있다.

<2> 더 상세하게는 본 발명은 고주파를 이용하여 피부를 탄력 있게 시술하는 것에 관한 것으로, 피부의 표피층과 피하지방층 사이의 진피층에 고주파 전류가 직접 전달되도록 하여 피부노화를 최소화하는 등 피부 개선을 직접적이고 확실하게 할 수 있는 고주파를 이용한 피부 시술방법 및 장치에 관한 것이다.

【배경기술】

<3> 일반적으로 피부는 우리 몸 전체를 덮고 있는 인체의 가장 큰 보호기관으로서, 이렇게 몸 전체를 덮고 있는 피부는 크게 표피층, 진피층, 피하지방층의 3개의 층으로 이루어져 표면의 항상성(恒常性)을 유지하게 된다.

<4> 상기 진피층은 표피층의 아래에 위치하고 있으며 기저층에 바로 연결되어 있고 피부의 대부분이 진피로 이루어져 있으며, 수분을 비롯하여 단백질, 당질, 무코

ENDYMED EXHIBIT 1002 - 122/509

다당류, 무기질, 무기염류 등이 젤리상태로 되어 있고, 이러한 진피층은 표피층에 영양을 제공하면서 혈액순환과 관련 있는 모세혈관과 림프를 운반하는 림프관이 위치하는 유두층과, 피부의 주름과 관련 있는 교원섬유인 콜라겐과 피부의 탄력성을 부여하는 탄력섬유인 엘라스틴과 기질(물의 저장고)로 구성되는 망상층으로 구성된다. 상기 피하지방층은 진피와 근육, 뼈 사이에 위치하고 있으며 지방을 다량 함유하고 있으며 피부의 가장 아래층을 구성하고 있다.

<5> 피부의 노화방지를 위해 대표적인 피부 시술 방법으로 피부에 영양성분이 포함된 이로운 물질을 사용하여 맛사지 하는 방법이 가장 널리 사용되고 있다. 그러나 이러한 맛사지 형태의 피부 시술 방식은 피부의 표피층으로 영양분을 공급하여 표피층을 윤택하게는 하지만 그리 오랜 시간을 지속하지 못하고 그 개선효과도 단시간에 나타나는 경우가 드물다.

<6> 그래서 새롭게 나타난 방법이 주사기 등을 사용하여 피부에 미용액을 주입하는 방식이었으나 이와 같은 방식은 시술에 따른 많은 비용이 소요될 뿐만 아니라 사람들의 체질적인 특성에 따라 부작용도 많이 발생하여 오히려 피부에 역효과가 발생하는 문제점이 초래되었다.

<7> 이후 나타난 방법이 고주파 등을 피부의 표피층에서 진피층으로 간접적으로 전달하는 방식이다. 하지만 이는 표피층을 거쳐 진피층으로 전달됨에 따라 높은 전압을 사용함에도 불구하고 그리 큰 효과를 가질 수 없을 뿐만 아니라 효과를 얻기 위해서는 지속적으로 시술을 받아야 하는 번거로움과 많은 비용이 소요되는 문제점을 가지고 있었다.

ENDYMED EXHIBIT 1002 - 123/509

<8> 이후 진피층에 상처를 주어 콜라겐의 재생작용을 활성화시키는 방법을 피부 개선 방법으로 강구하게 되었고 그런 방법의 하나로 바늘(본 발명에서는 이를 침이라고 표현하고 있는데 이는 원칙적으로 같은 의미를 가진다)을 진피층까지 삽입하여 전기적 자극을 주는 것이 강구되어 왔다.

<9> 이를 좀 더 상세하게 살펴보면 진피층은 콜라겐으로 불리는 단백질로 이루어지는데 콜라겐은 섬유모세포 및 폴리펩타이드를 포함한 삼중 나선구조로서, 콜라겐 조직이 가열되면 수축(shrinkage)되는 온도에서 단백질 매트릭스(matrix) 부분의 물리적 변이가 일어나게 된다. 이러한 변이의 하나인 연조직(soft tissue) 리모델링은 세포 및 분자 수준에서 일어나는 현상으로, 인위적인 열에 의해 발생된 수축 또는 콜라겐의 부분 변성(denaturization)으로 인해 삼중 나선결합이 분해되어 매트릭스의 분자간 결합을 파괴하게 된다. 세포 수축이 일어나면, 콜라겐은 팽팽해진 연조직 구조 내의 정적 지지 매트릭스로서 하부에 위치한다. 초기 흉터 매트릭스의 증착 및 후속 리모델링은 미용 목적을 위한 연조직의 일관성 및 모양을 변경시키는 수단을 제공한다. 상처 내로 섬유모세포의 이동 및 자연적인 상처 치유 결과로서의 나타나는 수축과 비교하면, 연조직 리모델링은 즉각적인 공정이다. 결국 피부개선 또는 주름 개선과 같은 미용상의 목적으로 처치하는 방법은, 해당 부위에 다양한 에너지원을 가하여 조직을 응고시킴으로서 시작된다고 할 수 있다.

<10> 피부의 진피층에 에너지를 가하게 되면 주입되는 에너지의 양에 따라 진피에 영향을 주는 형태가 달라지게 되는데 일반적으로 카보니제이션(carbonization), 베이포리제이션(vaporization), 응고(coagulation) 등의 단계로 나누어 진다. 본 발

ENDYMED EXHIBIT 1002 - 124/509

명의 라-효과는 이중 응고(coagulation) 상태를 원칙적으로 형성하여서 피부를 개선하는 방법으로 이는 "태운다", "열을 가한다", "익힌다" 등과 같이 표현할 수 있겠으나 어느 것도 정확한 일반적인 표현이라 할 수 없는 측면이 있다. 하지만 본 발명에서는 "익힌다"는 표현이 그래도 '에너지를 가하여 원칙적으로 응고의 상태로 만든다'는 의미를 비교적 잘 나타내는 것으로 생각하여 "익힌다"는 표현을 '에너지를 가하여 원칙적으로 응고의 상태로 만든다'는 의미로 사용하기로 한다.

<11> 상세한 설명에 기재된 "익힌다"는 의미는 에너지를 가한다는 의미가 보다 강한 경우가 있으나 본 발명의 특허 청구항에 기재된 "익힌다"는 의미는 특히 '에너지를 가하여 원칙적으로 응고의 상태로 만든다'는 의미로 사용되었다.

<12> 이와 관련하여 특허출원 2000-0058346호를 들 수 있다. 본 발명은 주름을 피부의 원래 모양인 평편한 상태로 복원시키는 것을 목적으로 하여 제작된 것으로 그 방법으로 주름의 굵기, 패인 정도, 주름의 길이, 모양 등을 확인 한 다음 콘트롤 기계 상자인 주름 치료기에서 세포 조직이 확대되는 엘러베이션 커런트(elevation current)의 와트(watt)를 설정하고, 펄스와 시간을 지정한 후, 주름의 길이와 패인 정도에 따라 니들의 길이를 결정하고 핸드피스에 니들을 장착하여 주름을 제거할 수 있게 구성되어 있다.

<13> 상기 특허 기술은 침이 하나로서 원리도 충분히 나타내지 못했지만 특히 실제 인체에 적용하기에는 대단히 위험한 초보적인 단계였다. 따라서 이것이 진일보하여 다양한 특허가 나오게 되는데 그 대표적인 것이 본 발명의 발명자가 출원하여

ENDYMED EXHIBIT 1002 - 125/509

ENDYMED EXHIBIT 1002 - 126/509

등록받은 등록특허 10-0856736호 이다. 특히 이 발명은 수십개에 이르는 다수의 침을 동시에 피부 속으로 침투시킴으로서 일종의 다수의 침이 동시에 피부에 닿게하는 것 자체가 면접촉을 하는 형상을 이루게 되어 피부시술에 있어서 실효성을 높이는 중요한 계기가 되기도 했다.

<14> 이와 또 다른 최근의 유사한 기술로서 국내 특허출원 10-2009-23494호를 들 수 있다. 이를 좀 더 상세히 살펴보면 고주파를 이용하여 피부를 탄력있게 시술하는 것에 관한 것으로, 더 상세하게는 피부의 표피층과 피하지방층 사이의 진피층에 고주파가 직접 전달되어 세포조직을 활성화시켜 탄력적인 피부를 유지하여 피부 노화를 최소화할 수 있도록 하기 위하여, 상기 피부 시술장치는 한쌍의 전극봉이 삽입되는 본체케이스에 상기 전극봉과 접촉되어 고주파 전류가 통전되는 접속부가 삽입 고정되며, 상기 접속부의 하부로 삽입 접촉되어 통전된 고주파 전류를 피부의 진피층을 구성하는 망상층으로 삽입되어 고주파 전류를 발생하는 수개의 고주파 발생단자로 구성되는 것을 특징으로 하는 고주파를 이용한 피부 시술방법 및 장치에 관한 것이다.

<15> 그러나 이러한 피부시술 방법은 종전의 맛사지나 레이저를 이용하는 방법 또는 고주파를 이용한다고 해도 침을 피부로 침투시키지 않는 방법에 비해서는 직접 진피층에 에너지를 투입하여 시술하는 것이므로 짧은 시간 내에 효과를 거둘 수 있다는 측면에서는 효과가 있었으나 그로 인한 부작용도 많이 있었다.

<16> 가장 큰 부작용으로 바늘 사이의 진피층은 물론 표피층도 모두 익혀버려 표피층이 상하게 되는 점과 과다하게 피부를 익혀 피부가 되돌릴 수 없도록 손상되어

버리는 경우가 다반사로 일어나는 점을 들 수 있다.

<17> 진피층만을 적절히 익히는 경우에는 응고(coagulation)현상으로 나타나 콜라겐의 재생을 촉진하는 역할을 하지만 상기 시술방법에 의해 표피층이 익혀진 경우 그 부위가 바로 흉터가 되어 피부개선을 위한 조치가 더 큰 피부손상을 불러오는 경향이 있었다.

<18> 상기 바늘 사이의 진피층과 표피층을 모두 익혀버리는 이러한 현상은 전기공학적 측면에서 지금까지 당업자 입장에서 보면 당연한 현상으로 전극 역할을 하는 침 사이를 전기에너지가 통과하고 그 사이의 피부는 공기보다는 훨씬 낮은 저항치를 가지지만 일정한 저항치를 가지게 되므로 그러한 저항치에 의해 그 침 사이의 피부 부분에서 모두 열이 발생하는 것으로 받아 드려졌고 실제로도 그렇게 현상들이 나타났다.(도 4 참조)

<19> 또 하나의 문제점은 상기 시술방법은 미세조정이 대단히 어렵다는 점이었다. 왜냐하면 위에서 기술된 바와 같이 침과 침사이가 모두 익어버리는 경우 익혀지는 형태 또한 상당히 급격하기 때문이다. 따라서 피부조직의 상황에 맞추어서 여러 번 나누어 시술하는 것이 상당히 어려웠는데 이는 의료장비라는 측면에서 보면 안전성 측면에서 사용상의 많은 제한을 가져오는 심각한 문제라고도 볼 수 있다.

<20> 그래서 이후 대부분의 기술에서는 진피에 도달하는 침들의 끝단을 제외하고는 모두 절연성 코팅을 하여 시술하기에 이르렀다. 그러나 이 또한 많은 문제를 발생시켰다.

ENDYMED EXHIBIT 1002 - 127/509

<21> 첫째 코팅을 하게 되면 침의 굵기가 당연히 굵어지게 되어 문제점을 낳게 되었다. 대표적인 문제점들만 들게 되면, 투침한 흔적이 크게 남게 되는 점과 투침시 더 많은 통증을 유발할 수 있고 더욱이 절연 코팅제가 인체와 조화를 이루지 못하는 부작용의 발생가능성 등을 들 수 있다.

<22> 두 번째 문제점은 코팅한 부분이 언제나 벗겨질 가능성이 높다는 점이다. 왜냐하면 투침이 지속적으로 이루어지는 장비라는 점을 고려하면 지극히 당연한 것이라 할 것이다. 코팅이 벗겨질 경우 애초 코팅을 하지 않고 조심을 하는 경우에 비해 오히려 더 큰 부작용을 불러일으킬 우려가 높았다.

<23> 세 번째 여전히 절연되지 않은 침과 침 사이를 모두 익혀버리는 과격한 장치이므로 미세조정이 어렵고 과다하게 익혀져 버릴 가능성이 존재한다는 점이다.

<24> 또 다른 종래 기술로서 모노폴라를 이용한 장치를 들 수 있다. 모노폴라는 치료하고자 하는 피부에 닿는 기구에 하나의 극성을 부여하고 반대극성은 치료와 관계없는 다른 부위에 인가하는 형태이다. 하지만 이 방법으로 유효한 효과를 내기 위해서는 고전압의 전기를 흘려보내야 열을 발생시킬 수 있다는 치명적인 약점이 있었다. 이로 인해 화상의 위험이 있는 것은 물론 인가 전류가 항상 심장 등과 같은 기관에 영향을 미칠 가능성이 있어서 심한 경우 사망에 이르는 경우까지 있어서 대단히 제한적으로 사용될 수밖에 없었다.

<25> 본 발명은 이러한 문제점을 수년간 다각적으로 고민하고 연구하는 과정에서 이루어진 것이다.

ENDYMED EXHIBIT 1002 - 128/509

【발명의 내용】

【해결하려는 과제】

<26> 본 발명이 추구하는 해결하려는 과제는 상기 종래기술에서 언급한 여러 문제점 들이다.

【과제의 해결 수단】

<27> 본 발명은 종래 기술에서는 전혀 생각하지 못했던 구성요소를 도입하여 종래에는 전혀 없었던 획기적인 새로운 효과를 창작함으로써 발명하게 되었고 이를 근거로 완성하게 되었다. 이러한 창작된 새로운 효과를 본 발명의 명세서에서는 "라-효과(Na-Effect)"라 명명하였다.

<28> 이러한 라-효과에 더하여 연구를 계속하여 왔는데 또 다른 새로운 형태의 효과를 얻게 되었는데 도 8 내지 도 10에서 나타내고 있는 실시예들이 그 대표적인 것들이다. 이들을 본 발명에서는 라플러스-효과(NaPlus-Effect)라고 명명하였다. 라플러스-효과도 원칙적으로는 절연코팅을 하지 않은 침들을 사용하게 되는데 어떤 경우에도 진피부분만은 코팅을 하지 않는 것이 바람직하다. 이러한 라플러스-효과는 피부처치장치에 다양한 치료 방법을 부가하고 인체에 적용함에 있어서 세밀하게 구별하여 적용하는데 크게 기여한다.

<29> 라-효과는 바이폴라(bipolar) 전극에서 당업자가 종래 인지하던 피부가 익는 형태와는 전혀 달리 도면과 같이 표피는 거의 익혀지지 않고 침의 끝단을 중심으로 대부분 진피부근에서만 전구 형태로 익혀지는 형태를 말한다. 그리고 종래 기술과

ENDYMED EXHIBIT 1002 - 129/509

는 달리 절연코팅을 하지 아니한 침사이의 모든 영역을 익히지 않고 각 침별로 독립적으로 익히는 공간을 가지고 있다는 점에서 종래기술과는 현저히 다른 기술이다. 그에 더하여 라플러스-효과는 수년간 수많은 시행착오와 실험을 근거로 발명한 것으로 이로 인한 효과는 종래 기술의 문제점을 현저히 개선하는 효과가 있다.

<30> 먼저 라-효과는 앞서 간단히 설명한 바와 같이 전극간의 영역을 익히는 것이 아니라 개별 전극의 끝단을 중심으로 각기 구별되게 익히는 방법이므로 전기의 여러 가지 요소를 조정하거나 간격을 조정하는 등의 방법으로 미세하게 나누어 시술할 수 있는 획기적인 방법이다. 다시 말하면 전체적으로 그 세기를 조정하여 시술이 좀 더 필요한 부분은 다수 시술하고 그렇지 않는 부분은 작은 회수를 시술하여 의사가 상황을 보아 적절히 조절하기가 종전의 기술에 비해 현저히 향상되었다고 할 수 있다.

<31> 또한 라-효과는 표피는 거의 익지 않고 목적으로 하는 진피부분만 집중하여 익힐 수 있으므로 침을 절연코팅하지 않는 것을 원칙으로 한다는 점에서 종래기술과 현저한 차이가 있을 뿐만 아니라 이로 인해 종래기술의 가장 치명적인 문제점이던 절연코팅의 문제점을 완전히 해소할 수 있게 되었다. 라-효과를 본 발명의 시술방법은 원칙적으로 피부에 침투하는 침부분은 절연 코팅을 특별한 경우를 제외하고는 할 필요가 없는 것으로 판단된다.

<32> 간혹 라-효과를 응용하여 다소 가혹한 조건으로 작업을 한다고 해도 표피부분과 닿는 아주 좁은 침의 부분만 코팅을 하면 되는 것으로 이러한 경우도 만일을

ENDYMED EXHIBIT 1002 - 130/509

위한 것이지 일반적으로는 그럴 필요가 없다.

<33> 라-효과와 라플러스-효과를 위해 채택해야할 필수구성요소는 먼저 바이폴라와 교류전류이되 고주파전류일 것을 요구하고 있다. 그리고 라-효과를 위해서는 전극간의 간격이 중요하다. 왜냐하면 전극간의 간격이 너무 좁으면 전극 끝단에 집중된 익는 부위가 서로 붙어 라-효과를 나타내는데 지장을 줄 수 있으나 라플러스-효과는 나타낼 수 있기 때문이다.

<34> 또 다른 라-효과와 라플러스-효과의 구성요소는 바늘이 코팅되어 있지 않아야 한다는 것으로 이는 종래기술의 경향과는 다른 구성요소이다. 이는 코팅을 전혀 할 수 없다는 것이 아니라 종래기술에서는 할 필요가 있던 것이 할 필요가 없어졌다는 것으로 이 경우에는 특히 코팅을 하면 제품의 기능이 오히려 저하된다는 점에서 종래기술과는 현저한 차이가 있다고 할 수 있다.

<35> 또 다른 라-효과와 라플러스-효과에 관계되는 구성요소는 바늘의 수가 바늘의 끝단을 이었을 경우 그물 형태의 면을 형성하는 것이 바람직하다는 점이다. 이론적으로는 바늘의 수가 4개 이상이면 되지만 바람직하기로는 적어도 사각형이라고 가정할 경우 한 측면의 바늘의 수가 4개 이상인 것이 바람직하다고 할 수 있다.

<36> 또 다른 라-효과의 구성요소는 바늘에 교류를 인가하되 이웃하는 바늘간의 +와 -의 극성이 서로 다르도록 도면과 같이 배치하는 것이 바람직하다는 점이다.

ENDYMED EXHIBIT 1002 - 131/509

【발명의 효과】

<37> 본 발명의 가장 큰 효과는 종래기술의 치명적인 문제점을 해소할 수 있다는 점이다.

<38> 먼저 종래기술의 가장 큰 부작용으로 바늘 사이의 진피층과 표피층을 모두 익혀버리는 점과 과다하게 피부를 익혀 피부가 되돌릴 수 없도록 손상되어 버리는 경우가 다반사로 일어나는 점들이 라-효과와 라플러스-효과가 적용된 기기를 사용할 경우 모두 해결될 수 있다.

<39> 라-효과는 종래 인지하던 바이폴라(bipolar) 전극에서 피부가 익는 형태와는 전혀 달리 도 6과 같이 표피는 거의 익혀지지 않고 침의 끝단을 중심으로 대부분 진피부근에서만 전구 형태로 익혀지는 형태를 말한다. 따라서 전기의 여러 가지 요소들의 세기를 조정하거나 간격을 조정하는 등의 방법으로 미세하게 조정하여 시술할 수도 있고 처음부터 그 세기를 약하게 하여 나누어 시술할 수 있는 획기적인 방법이다. 다시 말하면 전체적으로 그 세기를 조정하여 시술이 좀 더 필요한 부분은 다수(多數) 시술하고 그렇지 않는 부분은 작은 회수를 시술하여 의사가 상황을 보아 적절히 조절하기가 종전의 기술에 비해 현저히 향상되었다고 할 수 있다. 이는 의학적 측면에서 보면 획기적 변화라 하지 않을 수 없다. 이점에 있어서는 라플러스-효과도 마찬가지이다.

<40> 또한 종래기술에서 표피층이 익어서 익혀진 부위가 바로 흉터가 되어 피부개선을 위한 조치가 더 큰 피부손상을 불러오는 경향이 있었는데 도면에서 보는 바와

ENDYMED EXHIBIT 1002 - 132/509

같이 표피층이 익는 현상이 거의 일어나지 않아 이 또한 중요한 효과 중의 하나이다.

<41> 그래서 이후 대부분의 기술에서는 단지 진피에 도달하는 침들의 끝단을 제외하고는 모두 절연성 코팅을 하여 시술하기에 이르렀는데 본 발명은 오히려 코팅을 하면 라-효과와 라플러스-효과를 제대로 활용할 수 없다는 측면이 있으므로 절연체 코팅을 할 경우 발생할 수 있는 침의 굵기가 당연히 굵어지게 되어 투침한 흔적이 크게 남게 되고 통증을 증가시키고 코팅한 부분이 언제나 벗겨질 가능성이 높아 더 큰 부작용을 불러일으킬 우려가 높다는 문제점을 현저히 해소할 수 있게 되었다.

【도면의 간단한 설명】

<42> 도 1은 피부의 세포구조

도 2는 본 발명장치의 일실시예에 해당하는 대체적 구조도

도 3은 모노폴라전극 사용시 시술의 시술결과 표시도

도 4는 종래 침에 절연코팅을 하지 않은 바이폴라 전극 사용시 시술의 시술결과 표시도

도 5는 종래 침에 절연코팅을 하고 침의 끝단만 절연코팅을 하지 않은 바이폴라 전극 사용시 시술의 시술결과 표시도

도 6은 라-효과가 구현된 피부삽입부분이 코팅되지 않은 침이 사용된 시술의 시술결과 표시도

ENDYMED EXHIBIT 1002 - 133/509

ENDYMED EXHIBIT 1002 - 134/509

도 7은 라-효과가 구현된 교류상의 전극의 극성 변화 형태의 일 실시예

도 8은 라플러스-효과가 구현된 하나의 실시예로서 시술시 시술결과 표시도

도 9는 라플러스-효과가 구현된 또 다른 하나의 실시예로서 시술시 시술결과 표시도

도 10은 라플러스-효과가 구현된 또 다른 하나의 실시예로서 시술시 시술결과 표시도

도 11은 라-효과가 구현된 교류상의 전극의 극성 변화 형태의 또 다른 일 실시예

도 12는 침과 침사이의 간격을 나타내는 그림이다.

<도면의 주요부분에 대한 부호의 설명>

100 : 침 고정부 200 : 피부

201 : 표피 202 : 진피

300 : 침/바늘/전극 301 : 피부로 삽입되는 침 영역

302 : 진피까지 삽입되는 침의 끝단

400 : 모노폴라전극 사용시 시술받는 환자의 손

500, 600 : 전기출입선

700 : 절연코팅부분

901 : 모노폴라전극 사용시 익는 부위의 모습

902 : 종래 침에 절연코팅을 하지 않은 바이폴라 전극 사용시 익는 부위의

모습

903 : 종래 침에 절연코팅을 하고 침의 끝단만 절연코팅을 하지 않은 바이폴라 전극 사용시 익는 부위의 모습

909 : 피부삽입부분이 코팅되지 않은 침이 사용되고 라-효과가 구현된 익는 부위의 모습

【발명을 실시하기 위한 구체적인 내용】

<43> 본 발명은 위에서 제시한 내용을 바탕으로 다양한 실시예를 통해 실험해 보았는데 이런 내용을 바탕으로 여기서는 그 구성요소를 중심으로 세부적으로 정리하고자 한다.

<44> 본 발명이 추구하는 효과는 두 가지로서 라-효과와 라플러스-효과이다. 본질적으로 이 두 효과는 서로 관련이 있는 것으로 근본적으로는 라-효과를 바탕으로 하고 있으며, 양자간의 차이는 전압, 전류, 인가시간, 바늘 두께, 저항, 교류주파수, 고주파 주파수, 전도도, 피부로 침투한 바늘 깊이 등에 의해 라-효과가 나타나는 영역에서 좀 더 가혹해지면 라플러스-효과가 나타나는 경향이 있으므로 양 효과를 나타내는 기술적 구성요소는 상당히 대동소이한 경향이 있다.

<45> 라-효과와 라플러스-효과를 위해 채택해야할 필수구성요소는 먼저 바이폴라와 일상의 교류전류이되 고주파를 이용할 것을 요구하고 있다. 그리고 라-효과와 라플러스-효과를 위해서는 전극간의 간격이 중요하다. 왜냐하면 전극간의 간격이 너무 좁으면 전극 끝단에 집중된 익는 부위가 서로 붙어 라-효과를 나타내는데 지

ENDYMED EXHIBIT 1002 - 135/509

장을 줄 수 있지만 라플러스-효과를 나타내기는 용이하기 때문이다.

<46> 교류전류(alternating current / AC)는 통상 시간에 따라 크기와 방향이 주기적으로 변하는 전류로서 보통 AC(alternating current)로 표시한다. 사인파형이 가장 전형적이며 사각파나 삼각파 등으로 변형이 가능하다. 전류 흐름의 방향이 일정한 직류와 여러 다른 성질을 갖고 있다. 일반적으로 교류 전류는 각국에서 주파수를 50Hz 혹은 60Hz로 통일하여 사용하고 있다.

<47> 교류 전류는 라-효과와 라플러스-효과를 발생시키는 가장 중요 요인으로 인식되는데 주파수가 큰 것은 특별히 높은 경우 예를 들면 수백Hz와 같은 경우가 아니면 문제가 되지 않을 것으로 판단하고 있다. 주파수가 상당히 높은 경우에도 침 간격을 좁혀 줌으로서 그로 인한 영향을 상쇄할 수 있을 것으로 판단된다. 그러나 주파수가 낮은 경우는 라-효과의 구현에 문제가 될 것으로 판단된다. 이 경우에도 20Hz 이상이면 다른 요인들을 조절하여 라-효과를 구현할 수 있다. 다른 요인의 조절은 뒤에서 다시 설명하기로 한다.

<48> 또한 다각적으로 검토 및 실험하였으나 라-효과와 라플러스-효과는 적어도 고주파가 아닌 경우에는 구현되지 않는 것으로 나타났다. 예를 들면 저주파는 물론이고 초음파, 중주파, 이온 등 다른 방법을 이용해서는 라-효과와 라플러스-효과는 제대로 구현되지 않았다.

<49> 특히 고주파에서도 0.5 메가헤르츠(MHz)이상에서 라-효과와 라플러스-효과가 잘 나타났는데 그 중에서도 가장 바람직한 경우가 2 MHz 내외라고 실험되어 현재 이를 이용하고 있다. 다시 말하면 바람직하기는 0.5 - 10 MHz 범위이고 더욱 바람

ENDYMED EXHIBIT 1002 - 136/509

직하기는 1 - 4 MHz이며, 가장 바람직하기는 1.5 - 2.5 MHz 이라 할 수 있다. 그러나 주어지는 조건에 따라 당연히 조금은 달라질 것으로 예상되나 대체적으로는 위 범위를 크게 벗어나지는 않았다.

<50> 이를 다시 상세히 설명하면 건조 피부와 젖은 피부를 2 MHz와 1 MHz를 사용하여 전기 통전도를 실험해보면 마른 피부에서는 2 MHz에서는 0.037102, 1 MHz에서는 0.013237이 나왔고, 젖은 피부에서는 2 MHz에서는 0.26649, 1 MHz에서는 0.2214가 나왔다. 결국 RF에너지흐름이 2 MHz에서 보다 원활하다는 것을 알 수 있고 이는 결론적으로 건조피부에서 동일한 에너지가 가해졌을 때 1 MHz에서 스파크가 생길 확률이 다른 변수들에 의해 달라질 수는 있지만 산술적인 전기전도도 비교만으로는 약 3배가 높다는 할 수도 있다.

<51> 이를 이론적으로 보다 상세히 설명하면 고주파 주파수는 주파수가 높을수록 동일한 전류를 흘려보낼 때 상대적으로 가까운 부근까지만 에너지 영역을 형성하는 반면 주파수가 낮으면 전극으로부터 먼 부분까지 에너지 영역을 형성하게 된다.

<52> 예를 들면 0.5MHz 이하인 경우 전극을 멀리 떨어 뜨려도 에너지 영역이 너무 넓어 표피까지 화상을 입혀 흉터의 원인이 될 수도 있고 특히 좁은 영역을 정밀한 치료를 필요로 하는 눈꺼풀 같은 얇은 피부 치료시 안구에 영향을 줄 수도 있다.

<53> 10MHz 이상의 경우 에너지 영역이 너무 좁아 치료시간이 길어지고 최적의 치료를 위한 에너지 영역을 만들기도 어렵다.

<54> 다음으로 라-효과와 라플러스-효과는 침의 간격과도 깊은 관계가 있다. 특히

ENDYMED EXHIBIT 1002 - 137/509

침의 간격은 모든 다른 구성요소와 깊은 관계가 있는데 예를 들어 고주파수의 주파수와의 관계를 살펴보면, 고주파 주파수가 증가하는 경우 침의 간격은 감소하고 고주파 주파수가 감소하는 경우 침(혹은 "바늘"이라 표현하기도 한다)의 간격은 증가하는 것으로 실험되었다.

<55> 2 MHz의 경우는 침의 간격은 2㎜ 내외가 가장 적당한 것으로 실험되었다. 이에 대해서는 뒷부분에서 보다 상세히 설명하기로 한다.

<56> 다음으로 라-효과와 라플러스-효과에 영향을 미치는 중요 구성요소로 침의 절연코팅 여부를 들 수 있다. 원칙적으로 라-효과와 라플러스-효과가 작동하는 한 표피부근은 거의 익지 않고 진피까지 파고 든 침 끝을 중심으로 도 6, 8, 9, 10에서 나타난 바와 같이 마치 전구모양 혹은 그 연결된 모양과 유사한 익는 부분이 형성되게 되므로 절연 코팅을 할 필요가 없다. 그러나 전기의 절연을 목적으로 하지 않는 한 코팅 그 자체만으로 라-효과와 라플러스-효과를 저해한다고 성급하게 판단할 수는 없다. 예를 들면 침의 강도강화를 위하면서 절연에 영향을 주지 않는 금속코팅이나 열처리 등으로 인한 코팅은 라-효과와 라플러스-효과에 영향을 주지 않는 경우도 당연히 있었다.

<57> 다시 말하면 라-효과와 라플러스-효과를 최대한 활용하기 위해서는 절연을 하지 않는 것이 바람직하고 혹시 하더라도 최소한 진피 구간만은 절연 코팅을 하지 않는 것이 바람직하다는 것을 의미한다. 그러나 절연을 하였다고 하여 라-효과와 라플러스-효과가 나타나지 않는 것은 아니다. 예를 들어 침 끝단을 제외한 부분을 절연 코팅을 하였을 경우 모노폴라를 사용한 경우와 유사한 형상의 익는 부분을 가

ENDYMED EXHIBIT 1002 - 138/509

ENDYMED EXHIBIT 1002 - 139/509

질 수 있으나 그 형상만 동일할 뿐 현저히 다른 작용 방식에서 비롯된 전혀 다른 효과라 할 수 있다.

<58> 또 다른 라-효과와 라플러스-효과와 긴밀한 관계가 있는 구성요소는 침 즉 전극의 극성의 배치 방법이다. 원칙적으로 라-효과와 라플러스-효과는 침 즉 바늘에 교류를 인가하되 이웃하는 바늘간의 극성이 서로 다르도록 도 7과 같이 배치한다는 점이다. 물론 이러한 배치는 정사각형의 모임으로 이루어지고 각 직교점에 바늘이 배치된 형태로서 한 바늘의 극성이 가장 이웃하는 직교점에 있는 바늘의 극성과는 다르도록 한다는 의미이다. 물론 교류 전류를 사용하므로 하나의 바늘이라 해도 통상의 교류전기를 사용할 경우 초당 약 50 - 60회 극성이 바뀌게 된다. 그렇다고 하더라도 당연히 매 순간마다 침 즉 바늘에 교류를 인가하되 이웃하는 바늘간의 극성이 서로 다르도록 도 7과 같이 배치가 가능하다. 본 발명에서 각 침들의 극성이 가장 가깝게 이웃하는 침들의 극성과 다르도록 각 방향으로 (+), (-)로 교차하면서 배열되었다고 하는 것은 이런 원리로 된 것들을 의미한다.

<59> 물론 일반적으로는 정사각형의 모임이 바람직하지만 얼마든지 약간 기울어진 마름모 모양의 집합이 될 수도 있고 직사각형 혹은 약간 기울어진 변의 길이가 다른 사각형의 집합인 경우에도 이웃하는 바늘간의 극성이 다르게 배치하는 한 라-효과와 라플러스-효과가 발생하는 것을 확인하였다.

<60> 또한 어떤 경우에는 전기가 통하지 않는 바늘을 군데군데 배치할 수도 있고 바늘의 존재를 아예 군데군데 의도적으로 뺄 수도 있다. 하지만 상기 바늘의 극성 배치는 원칙적으로 그리한다는 의미로 원칙적으로 가장 가깝게 이웃하는 침들의 극

성과 다르도록 각 방향으로 (+), (-)로 교차하면서 혹은 상기 방법과 같이 원칙적으로 배열했다면 라-효과에 당연히 기여한다고 할 수 있고 상기 구성요소를 채택한 것이라 할 수 있다. 본 발명에서 바늘의 극성 배치와 관련하여 표현한 "원칙적으로"라는 의미는 위 경우들을 포함한다는 의미에서 사용된 것이다.

<61> 라-효과와 라플러스-효과가 가능한 또 다른 배열 방법을 찾았는데 도 11이 그 한 예이다. 도 11과 같이 어떤 하나의 바늘을 A라고 가정할 때 가장 가까이 바늘이 있는 각 방향 중 하나의 방향의 바늘의 전극의 극성은 A와 동일하여도 라-효과와 라플러스-효과가 구현될 수 있었다.

<62> 또한 제품을 디자인을 하다가 보면 불가피하게 위의 여러 가지 모양을 혼합할 수 있는데 라-효과를 획득하기 위하여 원칙적으로 전극의 배열을 상기와 같이 이웃하는 바늘간의 극성이 서로 다르도록 한 상당한 부분을 포함하고 있는 다양한 경우를 설정할 수 있다.

<63> 이를 위한 최소한의 바늘의 숫자는 4개라고 할 수 있으나 적어도 9개 이상되는 부분이 상기 기재와 같은 동일한 배열을 포함하면서 라-효과와 라플러스-효과가 부분적으로 구현될 수 있도록 할 수 있다.

<64> 여기서 상당한 부분이란 라-효과를 활용하기 위해 의도적으로 일정 영역의 전극들을 상기와 같이 배치하고 있는 경우를 예로 들 수 있다.

<65> 또 다른 중요한 구성요소는 전압으로서 이는 바늘 간격을 정하는데 있어서도 중요한 고려 요소이지만 이는 기기의 안전과도 직결된 구성요소이다. 이는 통상 피

ENDYMED EXHIBIT 1002 - 140/509

부에 인가되는 전압을 중심으로 측정하게 된다.

<66> 또 다른 중요한 구성요소는 전압으로서 이는 바늘 간격을 정하는데 있어서도 중요한 고려 요소이지만 이는 기기의 안전과도 직결된 구성요소이다. 따라서 통상 피부에 인가되는 전압을 중심으로 측정하는 것이 바람직하다.

<67> 따라서 "피부에 인가되는 전압"의 의미를 살펴 보고 그 측정의 가능성을 살펴보면 다음과 같다.

<68> 실제 피부에 인가되는 전압은 피부에 삽입된 바늘(침)의 특정부위 표면과 접하는 피부 부위 사이에 걸리는 전압이다. 따라서 기기에 인가되는 전압과는 달리 3가지의 저항값 즉 기기저항,전극(침) 저항, 피부저항 값의 합에 따라 달라질 수 있다. 또한 피부에 삽입된 바늘 표면의 모든 부위에서 각각 같거나 달라질 수 있다. 왜냐하면 특정부위의 바늘표면과 접하는 피부 부위의 저항값이 다를 수 있어 바늘 전체표면에서는 똑같은 전압을 인가하여도 각 부위의 피부인가 전압은 달라질 수 있다.

<69> 그러나 피부 내에서 저항값은 차이가 있기는 하나 그리 큰 차이가 아니므로 본 발명에서는 바늘이 피부에 삽입된 상태에서 바늘 표면에서 측정된 전압값을 기준으로 측정하였고 이를 전압값으로 표시하였다.

<70> 이는 인가되는 에너지의 양과 직결된 구성요소로서 최대 100V를 넘어서는 안된다. 바람직한 전압은 10 - 60V이며 최적 전압은 20 - 40V로 실험되었다. 물론 100V가 넘더라도 라-효과와 라플러스-효과는 나타날 수 있다. 따라서 어떤 가혹한

ENDYMED EXHIBIT 1002 - 141/509

상황에서는 100V를 사용하는 것이 바람직할 수도 있겠으나 예를 들어 100V로 전압을 주는 경우에 라-효과와 라플러스-효과는 일어나나 흉터가 생길 수 있으므로 적어도 피부 미용과 관련해서는 100V를 넘는 것은 설정하기가 어렵다.

<71> 상기 시술시 인체의 피부에 걸리는 전압(피부전압)은 기기에서 설정하는 전압(외부전압)과 회로 설계에 따라 다양하게 변하도록 설계 가능하며 이는 이 분야에 종사하는 당업자라면 쉽게 구현 가능한 것으로서 본 발명의 특징적 구성요소도 아니므로 구체적인 설명은 생략한다.

<72> 또 하나의 변수는 전류이다. 하지만 이는 전압과 저항값에 따라 변하므로 장비를 통해 가해주는 전압과 기기저항, 전극(바늘) 저항, 피부저항값이 정해지면 계산이 가능하다.

<73> V=I *R

<74> 저항값은 크게 3가지의 저항값으로 구분하는데, 즉 기기저항, 전극(침)저항, 피부 저항으로 구분 가능하다.

<75> 또 하나의 중요 구성요소는 에너지 지속 시간이다. 최저시간을 살펴보면 고주파 에너지가 스테이블한 영역에 도달하기 위한 시간으로 약 0.02초가 소요되므로 에너지 지속시간이 지나치게 짧으면 그 효과가 거의 측정할 수 없을 만큼 나타나므로 시간을 지나치게 짧게 할 수는 없다. 측정해본 결과 최소한 0.05초 이상은 되어야 하는 것으로 나타났다. 본 발명의 주요한 특징으로 에너지 지속시간이 비교적 짧다는 것이기는 하나 효과가 나타나는 가장 긴시간을 측정해 본 결과 0.8초인 것

ENDYMED EXHIBIT 1002 - 142/509

으로 나타났다. 물론 침간 간격을 넓히고 전압을 최소화하면 더 긴 시간도 가능할 수 있겠으나 그래도 최적의 조건을 전제로 할 경우 0.05 - 0.8초의 범위를 잡을 수 있었다.

<76> 그러나 바람직한 시간은 0.1 - 0.4초이며, 가장 바람직한 시간은 0.1 - 0.2초 인 것으로 측정되었다. 이러한 시간을 찾아내는 것은 생각보다는 대단히 어려웠고 수많은 시행착오를 거듭했으며 많은 에지력을 필요로 하였다. 왜냐하면 높은 주파수의 고주파를 사용하고 교류를 사용하면서 낮은 전압을 사용하면서도 인가시간을 이렇게 짧게 한다는 것은 라-효과를 창작해 내고서야 이렇게 짧은 인가시간을 상상할 수 있었기 때문이다.

<77> 실제 바늘로 피부에 침투하지 않고 피부에 전극으로 자극을 주는 기기(이전의 Polaris 기기)에서는 훨씬 높은 전압에서도 실제 0.5 초 이상의 시간 동안 에너지를 주었던 사실과 상기의 본 발명의 전기 인가 시간을 비교해보면 본 발명의 기기가 훨씬 짧은 시간 동안 에너지를 부가하는 장치임을 알 수 있다.

<78> 다음으로 고려해야할 중요한 구성요소는 침의 길이와 굵기이다. 침의 굵기는 침 간 간격에 영향을 준다. 또한 반복적으로 피부에 삽입했다가 뺐다가 해야 하므로 그러한 과정을 구부러지지 않고 견딜만한 능력이 있어야 한다. 그리고 굵어질수록 통증을 더 크게 수반할 수 있고 침에 찔린 흔적이 커지게 된다.

<79> 결론적으로 바늘의 굵기는 찌르는데 있어 통증을 최소화 하고 바늘이 휘지 않을 정도이어야 하고 상처가 최소화되도록 적정범위를 찾아야 한다. 현재 임상적으로 사용하고 있는 바늘 굵기는 0.25㎜ 와 0.3㎜ 를 사용하고 있는데 이런 정도면

ENDYMED EXHIBIT 1002 - 143/509

무난한 것으로 판단된다.

<80> 상기 바늘 굵기에 다소 벗어나더라도 라-효과와 라플러스-효과를 나타내는 데는 바늘의 굵기는 다소간의 영향은 있으나 그 영향은 그리 크지 않았다.

<81> 침의 길이는 장치의 설계 방식에 따라 차이가 날 수 있으므로 일률적으로 이야기하기는 곤란하다. 하지만 피부에 삽입되는 길이를 중심으로 이야기하면 피부의 두께와 시술목적에 따라 일률적으로 언급하는데 큰 문제가 없다.

<82> 이와 관련하여 도 1에서 피부들의 깊이를 정리하고 있는 바 이를 중심으로 판단할 수 있다. 통상 표피의 깊이는 0.2㎜ 에서 1㎜ 사이이고 진피의 깊이는 1㎜ 에서 4㎜ 사이이다. 따라서 적어도 진피 초입까지 도달하기 위한 길이는 최소 0.2㎜는 되어야 하고 진피의 끝부분까지 도달하기 위한 최대 길이는 5㎜라고 할 수 있으므로 치료를 위한 바람직한 깊이는 안전을 고려하면 1㎜ - 5㎜라고 할 수 있다. 그러므로 침의 총 길이는 장치의 종류에 따라 달라질 수는 있으나 피부에 삽입되어지는 침의 길이는 1㎜ - 5㎜로 하는 것이 바람직하다.

<83> 다만, 표피도 각질층, 과립층, 가시층, 기저층이 있어 각각의 피부저항값이 다르고 현미경적으로는 라-효과를 볼 수 있으므로 표피층만의 치료도 할 수 있다. 이 때 치료의 깊이는 1㎜ 이하가 될 수 있다.

<84> 또한 피하지방층까지 도달 길이가 6㎜인 경우도 있다.

<85> 따라서 침의 길이는 피부에 들어가는 깊이가 1㎜ - 6㎜ 범위 내에서 하나의 피부처치장치 내에서도 각기 길이를 달라하여 다양하게 디자인할 수 있다.

ENDYMED EXHIBIT 1002 - 144/509

<86> 라-효과와 라플러스-효과를 얻는 기기를 설계하기 위해 가장 신경을 써야 할 부분 중 하나는 앞서 설명한 바와 같이 침의 간격이다. 간격을 재는 여러 가지 방법이 있겠으나 여기서는 도 12와 같이 어느 특정의 침의 외피와 인접 침의 외피간의 가장 가까운 간격을 중심으로 설명하도록 한다. 본 발명에 있어서 바늘 간의 간격은 이와 같은 방법으로 정의된 것이다.

<87> 라-효과와 라플러스-효과가 가능한 간격은 1.3㎜ 까지는 가능한 결과를 얻었다. 따라서 바람직한 간격은 1.3 - 3.0㎜ 수준으로 관찰되고 있으나 좀 더 넓은 간격이라 할지라도 인가되는 전류의 양이나 저항을 적게 하는 방법들을 동원할 경우 가능할 것으로 판단하고 있다.

<88> 이를 다시 상세히 설명하면 1.3㎜ 이내의 경우 예측 밖의 초과된 열이 발생하여 화상 또는 흉터화의 위험성이 있고 3.0㎜ 이상인 경우 동일 면적으로 시술함에 있어서 효과적인 밀도로 치료 영역을 만드는데 걸리는 시간 즉 치료시간이 증가되어 시술의 효율이 현저히 떨어지게 되고 이는 환자들에게 큰 비용의 부담을 주는 원인이 되기도 한다.

<89> 그러나 바늘 간 간격은 많은 변수들에 의해 조금씩 달라질 수 있다.

<90> 적절한 라-효과와 라플러스-효과를 얻는다는 전제 하에 바늘 간 간격에 영향을 주는 구성요소를 살펴보면 다음과 같다.

<91> 먼저 전력(=에너지)이 증가하거나 바늘의 굵기가 두꺼워지면 바늘간의 간격

ENDYMED EXHIBIT 1002 - 145/509

은 증대되어야 한다. 이를 분설하면 전력은 전압과 전류 및 인가 시간을 서로 곱하여 이루어지므로 결국 전압, 전류, 인가시간, 바늘의 굵기 중 어느 하나의 값이나 둘이상의 값이 증대하면 바늘간의 간격은 증대되어야 한다.

<92> 그러나 저항, 교류주파수, 고주파 주파수, 전도도 또는 피부로 침투한 바늘 깊이 중 어느 하나 혹은 둘 이상의 값이 증대하면 그 영향의 정도에 따라 바늘의 간격을 좀 더 좁히더라도 라-효과와 라플러스-효과를 발생시키는데 영향이 없을 수 있다.

<93> 이를 공식으로 표현하면 다음과 같다.

【0094】

$$\text{간격} = N \frac{(\text{전력(=에너지)}) * (\text{바늘 두께}) * (\text{전도도})}{(\text{저항}) * (\text{교류주파수}) * (\text{고주파 주파수}) * (\text{피부로 침투한 바늘 깊이})}$$

<95> N : 비례 상수

<96> 저항 : 기기 저항, 전극 저항, 피부저항(피부 내에서만 고려하면 피부저항만 사용)

<97> 전력(=에너지)는 J = W*t 이므로 (W=전력, t=시간)

<98> = V*I*t (W=V*I)

<99> = I^2*R*t (V=I*R)

<100> 따라서,

ENDYMED EXHIBIT 1002 - 146/509

【0101】

$$\text{간격} = N \frac{V * I * t * \text{바늘 두께} * \text{전도도}}{(\text{저항}) * (\text{교류주파수}) * (\text{고주파 주파수}) * (\text{피부로 침투한 바늘 깊이})}$$

<102> 라고 표현할 수도 있다.

<103> 본 발명에서 침 고정부를 구성요소로 하는데 여기서 고정이라는 의미는 그 침들이 자유롭게 아무 곳이나 흩어지지 않게 한다는 의미이지 그 고정부 내에서 움직일 수 있다는 것을 제한하는 것은 아니며 본 발명의 특징적 구성요소도 아니다.

ENDYMED EXHIBIT 1002 - 147/509

【특허청구범위】

【청구항 1】

첨예한 단부를 가지는 다수개의 침;

상기 다수개의 침들을 고정하는 침 고정부;

상기 침 고정부에 고정된 다수개의 니들이 피부에 삽입되게 상기 침 고정부에 직접 또는 간접적으로 힘을 전달하는 구동부; 및

상기 다수의 침과 전기적으로 연결되어 있는 전기에너지 전달부;를 포함하며,

상기 투입되는 전기가 교류전류이고, 상기 전기에너지의 형태가 고주파이며, 상기 다수의 침들은 바이폴라의 전극체제를 가지고, 사기 구성들에 의한 피부의 시술부위가 라플러스-효과가 구현된 익혀진 모습을 가지는 것을 특징으로 하는 피부처치 장치.

【청구항 2】

첨예한 단부를 가지는 다수개의 침;

상기 다수개의 침들을 고정하는 침 고정부;

상기 침 고정부에 고정된 다수개의 니들이 피부에 삽입되게 상기 침 고정부에 직접 또는 간접적으로 힘을 전달하는 구동부; 및

상기 다수의 침과 전기적으로 연결되어 있는 전기에너지 전달부;를 포함하며,

ENDYMED EXHIBIT 1002 - 148/509

상기 투입되는 전기가 교류전류이고, 상기 다수의 침들은 바이폴라의 전극체제를 가지면서 상기 침들 중 같이 군을 이루는 9개 이상의 각 침들의 극성이 가장 가깝게 이웃하는 침들의 극성이 모두 다르거나 적어도 하나의 방향을 제외하고는 다르도록 각 방향으로 (+), (-)로 교차하면서 배열된 영역을 포함하며, 상기 전기에너지의 형태가 고주파이고, 상기 구성들에 의한 피부의 시술부위가 라-효과 혹은 라플러스-효과가 구현된 익은 모습을 가지는 것을 특징으로 하는 피부처치 장치.

【청구항 3】

첨예한 단부를 가지는 다수개의 침;

상기 다수개의 침들을 고정하는 침 고정부;

상기 침 고정부에 고정된 다수개의 니들이 피부에 삽입되게 상기 침 고정부에 직접 또는 간접적으로 힘을 전달하는 구동부; 및

상기 다수의 침과 전기적으로 연결되어 있는 전기에너지 전달부;를 포함하며,

상기 투입되는 전기가 교류전류이고, 상기 다수의 침들은 바이폴라의 전극체제를 가지면서 각 침에서 가장 가까운 침까지의 간격이 1.3 - 3.0㎜이며, 상기 전기에너지의 형태가 고주파이고, 상기 구성들에 의한 피부의 시술부위가 라플러스-효과가 구현된 익은 모습을 가지는 것을 특징으로 하는 피부처치 장치.

【청구항 4】

첨예한 단부를 가지는 다수개의 침;

ENDYMED EXHIBIT 1002 - 149/509

상기 다수개의 침들을 고정하는 침 고정부;

상기 침 고정부에 고정된 다수개의 니들이 피부에 삽입되게 상기 침 고정부에 직접 또는 간접적으로 힘을 전달하는 구동부; 및

상기 다수의 침과 전기적으로 연결되어 있는 전기에너지 전달부;를 포함하며,

상기 투입되는 전기가 교류전류이고, 상기 다수의 침들은 바이폴라의 전극체제를 가지면서 각 침에서 가장 가까운 침까지의 간격이 1.3 - 3.0㎜이며, 상기 침들 중 같이 군을 이루는 9개 이상의 각 침들의 극성이 가장 가깝게 이웃하는 침들의 극성과 다르도록 각 방향으로 (+), (-)로 교차하면서 배열된 영역을 포함하며, 상기 전기에너지의 형태가 고주파이고, 상기 구성들에 의한 피부의 시술부위가 라플러스-효과가 구현된 익은 모습을 가지는 것을 특징으로 하는 피부처치 장치.

【청구항 5】

첨예한 단부를 가지는 다수개의 침;

상기 다수개의 침들을 고정하는 침 고정부;

상기 침 고정부에 고정된 다수개의 니들이 피부에 삽입되게 상기 침 고정부에 직접 또는 간접적으로 힘을 전달하는 구동부; 및

상기 다수의 침과 전기적으로 연결되어 있는 전기에너지 전달부;를 포함하며,

상기 투입되는 전기가 교류전류이고, 상기 다수의 침들은 바이폴라의 전극체

ENDYMED EXHIBIT 1002 - 150/509

제를 가지면서 각 침에서 가장 가까운 침까지의 간격이 1.3 - 3.0㎜이며, 상기 침들 중 같이 군을 이루는 9개 이상의 각 침들의 극성이 가장 가깝게 이웃하는 침들의 극성과 다르도록 각 방향으로 (+), (-)로 교차하면서 배열된 영역을 포함하며, 상기 전기에너지의 형태가 고주파이고, 상기 구성들에 의한 피부의 시술부위가 라플러스-효과가 구현된 익은 모습을 가지는 것을 특징으로 하는 피부처치 장치.

【청구항 6】

첨예한 단부를 가지는 다수개의 침;

상기 다수개의 침들을 고정하는 침 고정부;

상기 침 고정부에 고정된 다수개의 니들이 피부에 삽입되게 상기 침 고정부에 직접 또는 간접적으로 힘을 전달하는 구동부; 및

상기 다수의 침과 전기적으로 연결되어 있는 전기에너지 전달부;를 포함하며,

상기 투입되는 전기가 교류전류이고 상기 교류전류의 주파수가 20Hz 이상이며, 상기 다수의 침들은 바이폴라의 전극체제를 가지면서 각 침에서 가장 가까운 침까지의 간격이 1.3 - 3.0㎜이며, 상기 침들 중 라플러스-효과와 관련한 침들은 적어도 진피 구간은 코팅되지 않고, 상기 침들에 인가되는 전압은 100V 이하이고, 상기 침들에 전기가 인가되는 시간은 0.05 - 0.8초이며, 상기 구성들에 의한 피부의 시술부위가 라플러스-효과가 구현된 익혀진 모습을 가지는 것을 특징으로 하는 피부처치 장치.

ENDYMED EXHIBIT 1002 - 151/509

【청구항 7】

제1항 내지 제6항 중 어느 한 항에 있어서, 고주파의 범위가 0.5 - 10 MHz인 것을 특징으로 하는 피부처치 장치.

【청구항 8】

제1항 내지 제6항 중 어느 한 항에 있어서, 고주파의 범위가 1 - 4 MHz인 것을 특징으로 하는 피부처치 장치.

【청구항 9】

제1항 내지 제6항 중 어느 한 항에 있어서, 고주파의 범위가 1.5 - 2.5 MHz인 것을 특징으로 하는 피부처치 장치.

【청구항 10】

제1항 내지 제6항 중 어느 한 항에 있어서, 상기 침의 굵기가 0.25mm 와 0.3mm이고 피부에 삽입되어지는 침의 길이는 1mm - 5mm인 것을 특징으로 하는 피부처치 장치.

【청구항 11】

제1항 내지 제6항 중 어느 한 항에 있어서, 상기 침의 굵기가 0.25mm 와 0.3mm이고 피부에 삽입되어지는 침의 길이는 0.1mm - 1mm인 것을 특징으로 하는 피부처치 장치.

【청구항 12】

제1항 내지 제6항 중 어느 한 항에 있어서, 상기 인가되는 전기의 전압이 10

ENDYMED EXHIBIT 1002 - 152/509

- 60V인 것을 특징으로 하는 피부처치 장치.

【청구항 13】

제1항 내지 제6항 중 어느 한 항에 있어서, 상기 인가되는 전기의 전압이 20 - 40V인 것을 특징으로 하는 피부처치 장치.

【청구항 14】

제1항 내지 제6항 중 어느 한 항에 있어서, 상기 인가되는 전기의 인가시간이 0.1 - 0.4초인 것을 특징으로 하는 피부처치 장치.

【청구항 15】

제1항 내지 제6항 중 어느 한 항에 있어서, 상기 인가되는 전기의 인가시간이 0.1 - 0.2초인 것을 특징으로 하는 피부처치 장치.

ENDYMED EXHIBIT 1002 - 153/509

【요약서】

【요약】

본 발명에 따른 피부처치장치는 첨예한 단부를 가지는 다수개의 침; 상기 다수개의 침들을 고정하는 침 고정부; 상기 침 고정부에 고정된 다수개의 니들이 피부에 삽입되게 상기 침 고정부에 직접 또는 간접적으로 힘을 전달하는 구동부; 및 상기 다수의 침과 전기적으로 연결되어 있는 전기에너지 전달부;를 포함하며, 상기 투입되는 전기가 교류전류이고, 상기 전기에너지의 형태가 고주파이며, 상기 다수의 침들은 바이폴라의 전극체제를 가지고, 사기 구성들에 의한 피부의 시술부위가 라플러스-효과가 구현된 익혀진 모습을 가지는 것을 특징으로 한다.

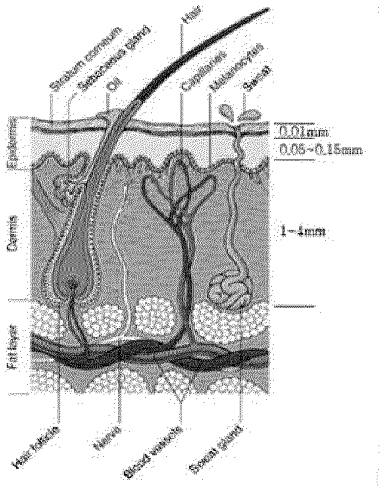
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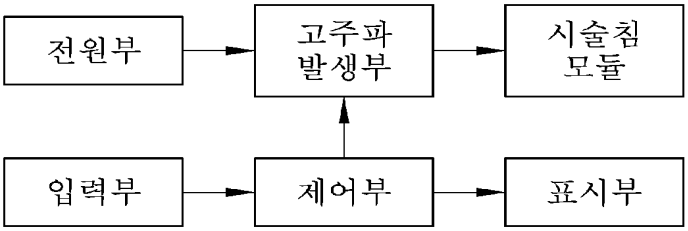
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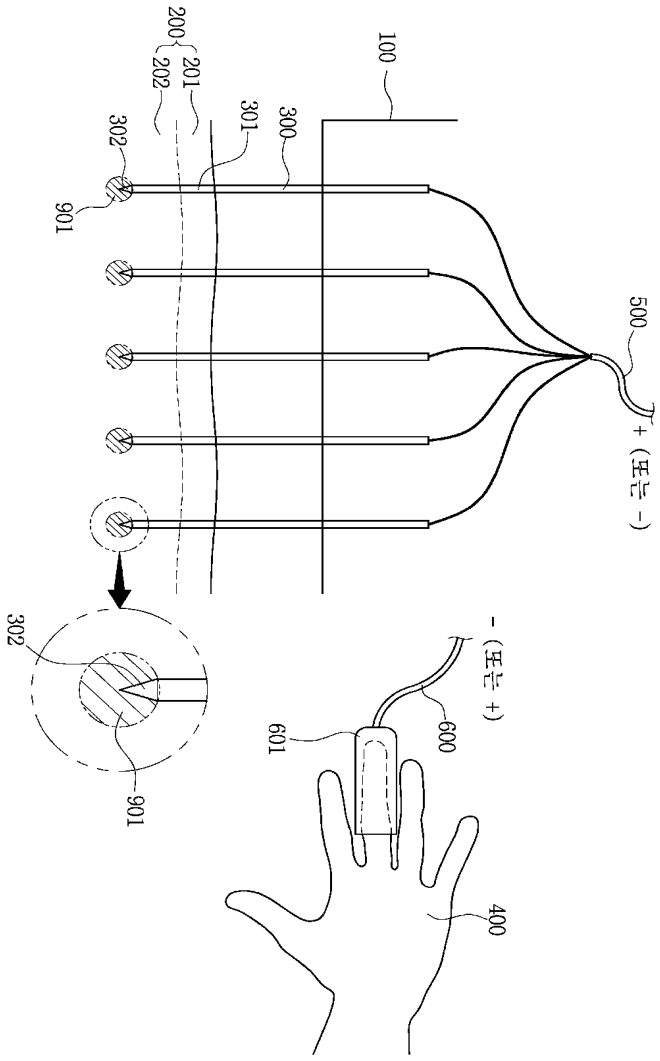


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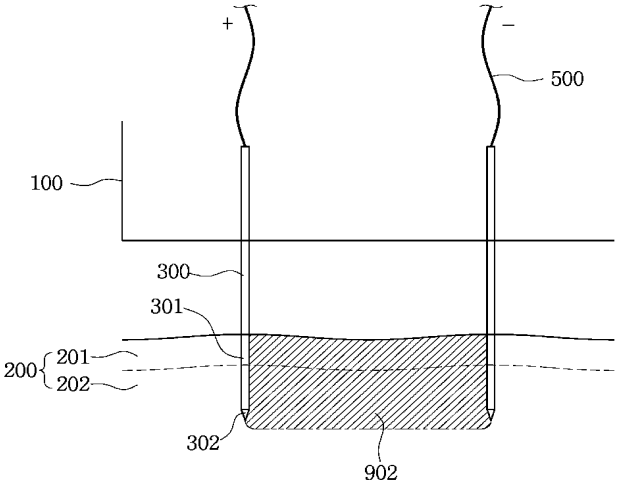
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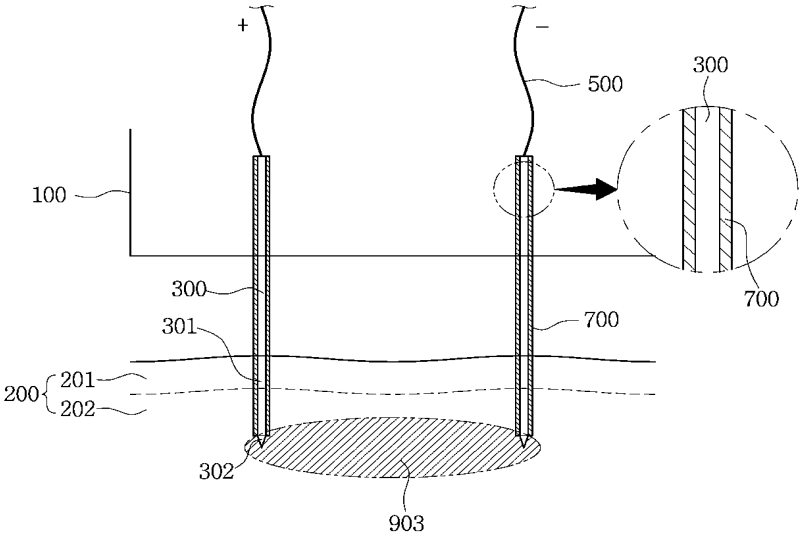


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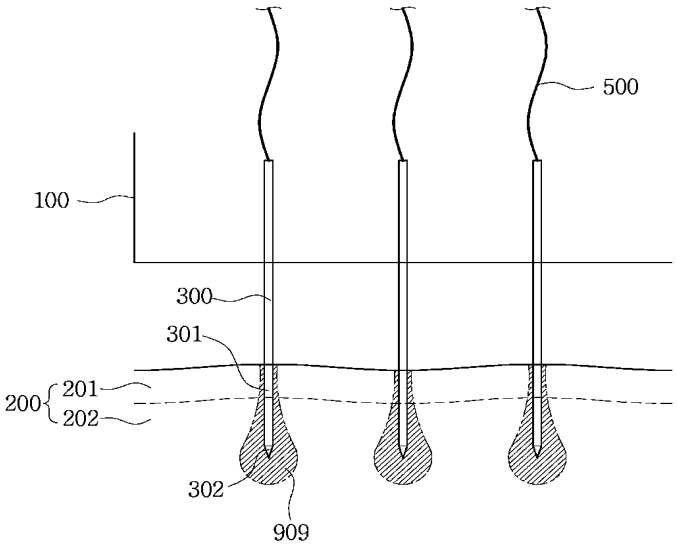


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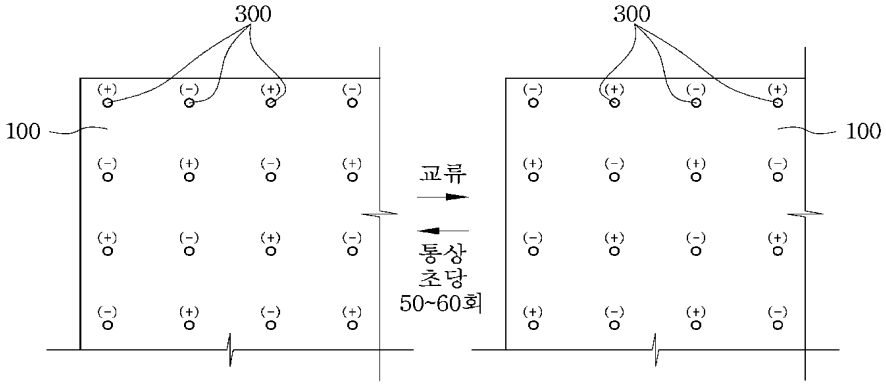


ENDYMED EXHIBIT 1002 - 157/509

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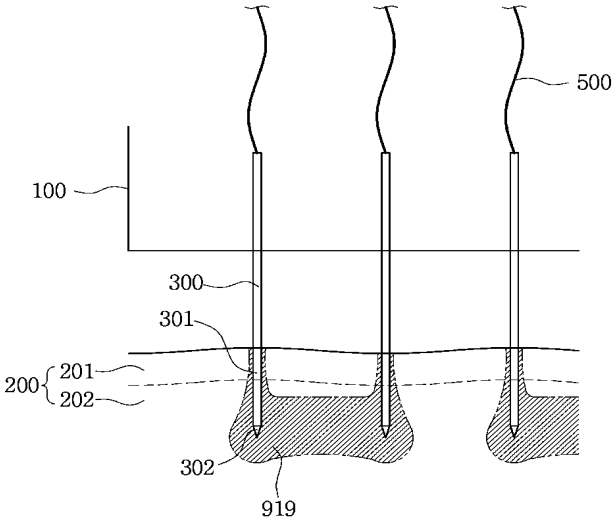


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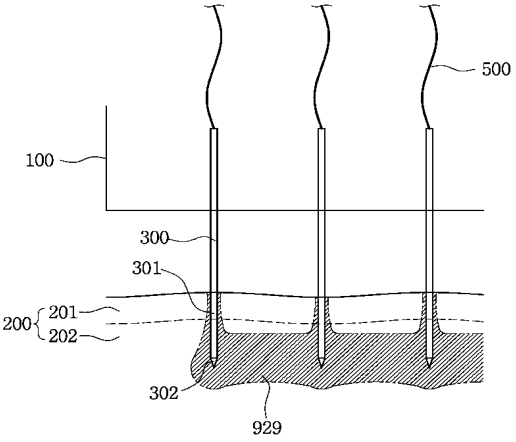


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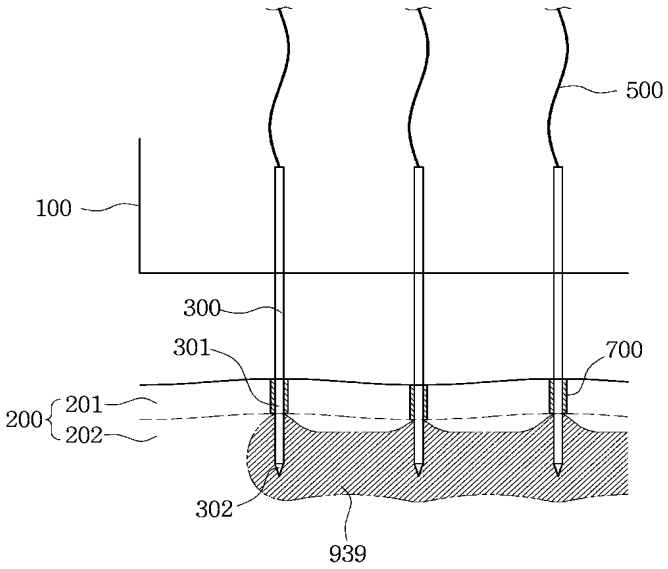


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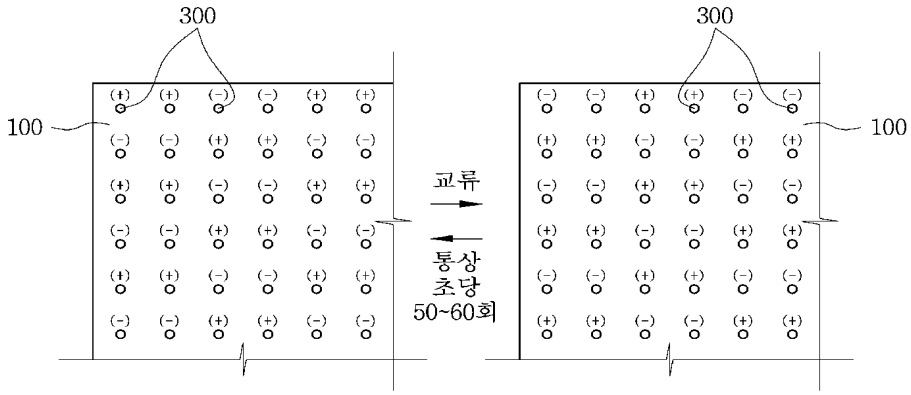


ENDYMED EXHIBIT 1002 - 159/509

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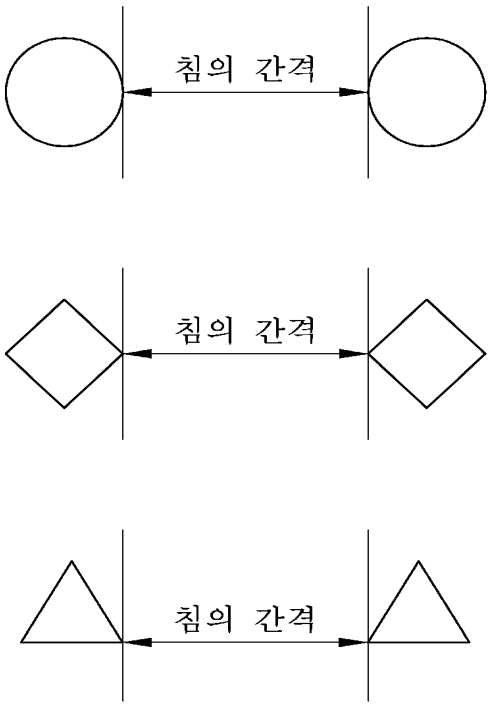


【도 11】



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【도 12】



ENDYMED EXHIBIT 1002 - 161/509

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From the INTERNATIONAL BUREAU

PCT

NOTIFICATION OF THE RECORDING OF A CHANGE

(PCT Rule 92*bis*.1 and Administrative Instructions, Section 422)

To:

JUNG, Seung-Hun
5th Floor, Hwaseung Bldg.
15-3 Yangjae-dong, Seocho-gu
Seoul 137-130
RÉPUBLIQUE DE CORÉE

Date of mailing *(day/month/year)*
23 April 2013 (23.04.2013)

Applicant's or agent's file reference
PCT12-14

IMPORTANT NOTIFICATION

International application No.
PCT/KR2012/004695

International filing date *(day/month/year)*
14 June 2012 (14.06.2012)

1. The following indications appeared on record concerning:

☐ the applicant ☐ the inventor ☒ the agent ☐ the common representative

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2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

☒ the person ☐ the name ☐ the address ☐ the nationality ☐ the residence

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State of Nationality:
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☐ Notifications by e-mail authorized

3. Further observations, if necessary:

4. A copy of this notification has been sent to:

☒ the receiving Office
☐ the International Searching Authority
☐ the Authority(ies) specified for supplementary search
☐ the International Preliminary Examining Authority
☒ the designated Offices concerned
☐ the elected Offices concerned
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(12) 특허협력조약에 의하여 공개된 국제출원

(19) 세계지식재산권기구
국제사무국

(43) 국제공개일
2012 년 12 월 20 일 (20.12.2012)

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(25) 출원언어: 한국어

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(71) 출원인 : **라종주 (NA, Jong Ju)** [KR/KR]; 138-836 서울 송파구 양재대로 1089 한양아파트 1 동 901 호, Seoul (KR). **곽정구 (GWAK, Jeong Gu)** [KR/KR]; 138-836 서울 송파구 양재대로 1089 한양아파트 1 동 901 호, Seoul (KR).

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(81) 지정국 (별도의 표시가 없는 한, 가능한 모든 종류의 국내 권리의 보호를 위하여): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) 지정국 (별도의 표시가 없는 한, 가능한 모든 종류의 역내 권리의 보호를 위하여): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), 유라시아 (AM, AZ, BY, KG, KZ, RU, TJ, TM), 유럽 (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

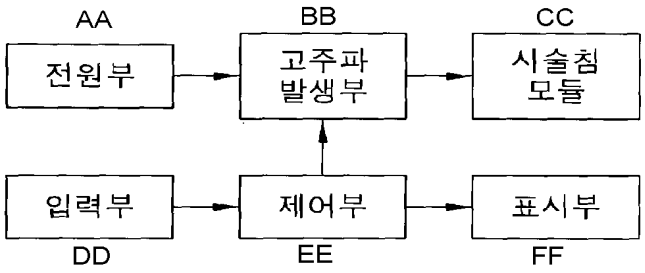
공개:
— 국제조사보고서와 함께 (조약 제 21 조(3))

(88) 국제조사보고서 공개일: 2013 년 4 월 4 일

(54) **Title**: APPARATUS AND METHOD FOR IMPROVING SKIN USING A RA-EFFECT OR RA PLUS-EFFECT

(54) **발명의 명칭** : 라-효과 또는 라플러스-효과에 의한 피부 개선 장치 및 방법

[Fig. 1]



AA ... Power source unit
BB ... High-frequency generating unit
CC ... Surgical needle module
DD ... Input unit
EE ... Control unit
FF ... Display unit

(57) **Abstract**: According to the present invention, a skin treatment apparatus comprises: a plurality of needles each of which has a sharp end; a needle-fixing unit in which the plurality of needles are fixed; a driving unit for directly or indirectly transferring a force to the needle-fixing unit such that the plurality of needles fixed in the needle-fixing unit are inserted into the skin; and an electrical-energy transfer unit which is electrically connected to the plurality of needles. The electricity applied to the apparatus is alternating current; the electrical energy has a high frequency; the plurality of needles have a bipolar electrode system; and the area of the skin treated by the thus-configured apparatus achieves the appearance of being burnt by a Ra-effect or Ra plus-effect.

(57) **요약서**: 본 발명에 따른 피부처치장치는 첨예한 단부를 가지는 다수개의 침; 상기 다수개의 침들을 고정하는 침 고정부; 상기 침 고정부에 고정된 다수개의 니들이 피부에 삽입되게 상기 침 고정부에 직접 또는 간접적으로 힘을 전달하는 구동부; 및 상기 다수의 침과 전기적으로 연결되어 있는 전기에너지 전달부;를 포함하며, 상기 투입되는 전기가 교류전류이고, 상기 전기에너지의 형태가 고주파이며, 상기 다수의 침들은 바이폴라의 전극체제를 가지고, 상기 구성들에 의한 피부의 시술부위가 라-효과 또는 라플러스-효과가 구현된 익혀진 모습을 가지는 것을 특징으로 한다.

WO 2012/173405 A3

ENDYMED EXHIBIT 1002 - 164/509

INTERNATIONAL SEARCH REPORT

International application No.
PCT/KR2012/004695

A. CLASSIFICATION OF SUBJECT MATTER

A61N 1/32(2006.01)i, A61N 1/06(2006.01)i, A61H 39/08(2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A61N 1/32; A61B 18/00; A61N 1/04; A61N 1/00; A61N 1/06

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Korean Utility models and applications for Utility models: IPC as above
Japanese Utility models and applications for Utility models: IPC as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS (KIPO internal) & Keywords: noodle, skin, insertion, alternating current, high frequency, bipolar, solidification, Na-effect, NaPlus-effect.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2011-0046615 A1 (MANSTEIN, DIETER) 24 February 2011 See paragraphs [0019], [0031]-[0032], [0039]-[0042], [0056]-[0060], [0062]-[0063], [0073], [0075], and [0077]-[0079]; claims 16 and 25; and figures 3-4.	1-16
A	US 2008-0281389 A1 (KNOPP, PETER G. et al.) 13 November 2008 See paragraphs [0069], [0072], [0092], [0098] and [0121]; claim 96; and figures 2D-2F, 8C-8F and 13A-13B.	1-16
A	US 2006-0293725 A1 (RUBINSKY, BORIS et al.) 28 December 2006 See paragraphs [0062], [0065] and [0085]-[0087]; claims 36, 39-40 and 53-56; and figures 2(c)-2(d).	1-16
A	KR 10-2010-0055292 A (JEJOONG MEDICAL CO., LTD.) 26 May 2010 See paragraphs [0031], [0034]-[0041], [0045] and [0060]-[0066]; claims 1-4, 9 and 12; and figures 1-4.	1-16

☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
31 DECEMBER 2012 (31.12.2012)	**02 JANUARY 2013 (02.01.2013)**
Name and mailing address of the ISA/KR Korean Intellectual Property Office Government Complex-Daejeon, 139 Seonsa-ro, Daejeon 302-701, Republic of Korea Facsimile No. 82-42-472-7140	Authorized officer Telephone No.

Form PCT/ISA/210 (second sheet) (July 2009)

ENDYMED EXHIBIT 1002 - 165/509

Patent document cited in search report	Publication date	Patent family member	Publication date
US 2011-0046615 A1	24.02.2011	AU 2005-231443 A1	20.10.2005
		AU 2005-231470 A1	20.10.2005
		AU 2005-231470 B2	06.10.2011
		CA 2579145 A1	20.10.2005
		CA 2579146 A1	20.10.2005
		EP 1740117 A2	10.01.2007
		EP 1742588 A1	17.01.2007
		EP 2301471 A1	30.03.2011
		EP 2343021 A1	13.07.2011
		IL 178411 D0	11.02.2007
		JP 2007-531578 A	08.11.2007
		JP 2007-537781 A	27.12.2007
		JP 4971133 B2	13.04.2012
		JP 5065005 B2	17.08.2012
		US 2005-0222565 A1	06.10.2005
		US 2007-0264288 A1	15.11.2007
		US 2008-0082090 A1	03.04.2008
		US 7824394 B2	02.11.2010
		US 8268332 B2	18.09.2012
		WO 2005-096979 A1	20.10.2005
		WO 2005-096981 A2	20.10.2005
		WO 2005-096981 A3	20.10.2005
		WO 2005-107848 A2	17.11.2005
		WO 2005-107848 A8	19.01.2006
US 2008-0281389 A1	13.11.2008	NONE	
US 2006-0293725 A1	28.12.2006	CA 2612525 A1	04.01.2007
		EP 1898992 A2	19.03.2008
		EP 1898992 A4	31.08.2011
		JP 2008-543493 A	04.12.2008
		WO 2007-001750 A2	04.01.2007
		WO 2007-001750 A3	08.03.2007
KR 10-2010-0055292 A	26.05.2010	KR 10-1071382 B1	11.10.2011

국 제 조 사 보 고 서

국제출원번호
PCT/KR2012/004695

A. 발명이 속하는 기술분류(국제특허분류(IPC))

A61N 1/32(2006.01)i, A61N 1/06(2006.01)i, A61H 39/08(2006.01)i

B. 조사된 분야

조사된 최소문헌(국제특허분류를 기재)
A61N 1/32; A61B 18/00; A61N 1/04; A61N 1/00; A61N 1/06

조사된 기술분야에 속하는 최소문헌 이외의 문헌
한국등록실용신안공보 및 한국공개실용신안공보: 조사된 최소문헌란에 기재된 IPC
일본등록실용신안공보 및 일본공개실용신안공보: 조사된 최소문헌란에 기재된 IPC

국제조사에 이용된 전산 데이터베이스(데이터베이스의 명칭 및 검색어(해당하는 경우))
eKOMPASS(특허청 내부 검색시스템) & 키워드: 침, 피부, 삽입, 교류전류, 고주파, 바이폴라, 응고, 라-효과, 라플러스-효과.

C. 관련 문헌

카테고리*	인용문헌명 및 관련 구절(해당하는 경우)의 기재	관련 청구항
A	US 2011-0046615 A1 (MANSTEIN, DIETER) 2011.02.24 단락 [0019], [0031]-[0032], [0039]-[0042], [0056]-[0060], [0062]-[0063], [0073], [0075], 및 [0077]-[0079]; 청구항 16과 25; 및 도면 3-4 참조.	1-16
A	US 2008-0281389 A1 (KNOPP, PETER G. 외 1명) 2008.11.13 단락 [0069], [0072], [0092], [0098]과 [0121]; 청구항 96; 및 도면 2D-2F, 8C-8F와 13A-13B 참조.	1-16
A	US 2006-0293725 A1 (RUBINSKY, BORIS 외 2명) 2006.12.28 단락 [0062], [0065]와 [0085]-[0087]; 청구항 36, 39-40과 53-56; 및 도면 2(c)-2(d) 참조.	1-16
A	KR 10-2010-0055292 A ((주)제중메디칼) 2010.05.26 단락 [0031], [0034]-[0041], [0045]와 [0060]-[0066]; 청구항 1-4, 9와 12; 및 도면 1-4 참조.	1-16

☐ 추가 문헌이 C(계속)에 기재되어 있습니다.

☒ 대응특허에 관한 별지를 참조하십시오.

* 인용된 문헌의 특별 카테고리:

"A" 특별히 관련이 없는 것으로 보이는 일반적인 기술수준을 정의한 문헌

"E" 국제출원일보다 빠른 출원일 또는 우선일을 가지나 국제출원일 이후에 공개된 선출원 또는 특허 문헌

"L" 우선권 주장에 의문을 제기하는 문헌 또는 다른 인용문헌의 공개일 또는 다른 특별한 이유(이유를 명시)를 밝히기 위하여 인용된 문헌

"O" 구두 개시, 사용, 전시 또는 기타 수단을 언급하고 있는 문헌

"P" 우선일 이후에 공개되었으나 국제출원일 이전에 공개된 문헌

"T" 국제출원일 또는 우선일 후에 공개된 문헌으로, 출원과 상충하지 않으며 발명의 기초가 되는 원리나 이론을 이해하기 위해 인용된 문헌

"X" 특별한 관련이 있는 문헌. 해당 문헌 하나만으로 청구된 발명의 신규성 또는 진보성이 없는 것으로 본다.

"Y" 특별한 관련이 있는 문헌. 해당 문헌이 하나 이상의 다른 문헌과 조합하는 경우로 그 조합이 당업자에게 자명한 경우 청구된 발명은 진보성이 없는 것으로 본다.

"&" 동일한 대응특허문헌에 속하는 문헌

국제조사의 실제 완료일	국제조사보고서 발송일
2012년 12월 31일 (31.12.2012)	**2013년 01월 02일 (02.01.2013)**

ISA/KR의 명칭 및 우편주소
대한민국 특허청
(302-701) 대전광역시 서구 청사로 189,
4동 (둔산동, 정부대전청사)
팩스 번호 82-42-472-7140

심사관
노지명
전화번호 82-42-481-8528

서식 PCT/ISA/210 (두 번째 용지) (2009년 7월)

국 제 조 사 보 고 서
대응특허에 관한 정보

국제출원번호
PCT/KR2012/004695

국제조사보고서에서 인용된 특허문헌	공개일	대응특허문헌	공개일
US 2011-0046615 A1	2011.02.24	AU 2005-231443 A1	2005.10.20
		AU 2005-231470 A1	2005.10.20
		AU 2005-231470 B2	2011.10.06
		CA 2579145 A1	2005.10.20
		CA 2579146 A1	2005.10.20
		EP 1740117 A2	2007.01.10
		EP 1742588 A1	2007.01.17
		EP 2301471 A1	2011.03.30
		EP 2343021 A1	2011.07.13
		IL 178411 D0	2007.02.11
		JP 2007-531578 A	2007.11.08
		JP 2007-537781 A	2007.12.27
		JP 4971133 B2	2012.04.13
		JP 5065005 B2	2012.08.17
		US 2005-0222565 A1	2005.10.06
		US 2007-0264288 A1	2007.11.15
		US 2008-0082090 A1	2008.04.03
		US 7824394 B2	2010.11.02
		US 8268332 B2	2012.09.18
		WO 2005-096979 A1	2005.10.20
		WO 2005-096981 A2	2005.10.20
		WO 2005-096981 A3	2005.10.20
		WO 2005-107848 A2	2005.11.17
		WO 2005-107848 A8	2006.01.19
US 2008-0281389 A1	2008.11.13	없음	
US 2006-0293725 A1	2006.12.28	CA 2612525 A1	2007.01.04
		EP 1898992 A2	2008.03.19
		EP 1898992 A4	2011.08.31
		JP 2008-543493 A	2008.12.04
		WO 2007-001750 A2	2007.01.04
		WO 2007-001750 A3	2007.03.08
KR 10-2010-0055292 A	2010.05.26	KR 10-1071382 B1	2011.10.11

ENDYMED EXHIBIT 1002 - 168/509

(12) 특허협력조약에 의하여 공개된 국제출원

(19) 세계지식재산권기구
국제사무국

(43) 국제공개일
2012 년 12 월 20 일 (20.12.2012)

WIPO | PCT

(10) 국제공개번호
WO 2012/173405 A2

(51) 국제특허분류:
A61N 1/32 (2006.01) *A61H 39/08* (2006.01)
A61N 1/06 (2006.01)

(21) 국제출원번호: PCT/KR2012/004695

(22) 국제출원일: 2012 년 6 월 14 일 (14.06.2012)

(25) 출원언어: 한국어

(26) 공개언어: 한국어

(30) 우선권정보:
10-2011-0057691 2011 년 6 월 14 일 (14.06.2011) KR
10-2011-0057692 2011 년 6 월 14 일 (14.06.2011) KR

(72) 발명자; 겸
(71) 출원인 : **라종주 (NA, Jong Ju)** [KR/KR]; 서울 송파구 양재대로 1089 한양아파트 1 동 901 호, 138-836 Seoul (KR). **곽정구 (GWAK, Jeong Gu)** [KR/KR]; 서울 송파구 양재대로 1089 한양아파트 1 동 901 호, 138-836 Seoul (KR).

(74) 대리인: **특허법인 맥 (MAC PATENT & LAW FIRM)**; 서울특별시 서초구 양재동 15-3 화승빌딩 5 층, 137-130 Seoul (KR).

(81) 지정국 (별도의 표시가 없는 한, 가능한 모든 종류의 국내 권리의 보호를 위하여): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

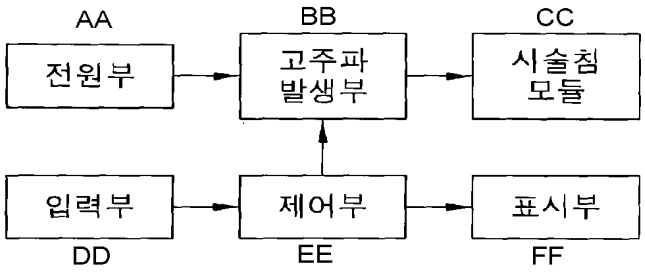
(84) 지정국 (별도의 표시가 없는 한, 가능한 모든 종류의 역내 권리의 보호를 위하여): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), 유라시아 (AM, AZ, BY, KG, KZ, RU, TJ, TM), 유럽 (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

공개:
— 국제조사보고서 없이 공개하며 보고서 접수 후 이를 별도 공개함 (규칙 48.2(g))

(54) **Title**: APPARATUS AND METHOD FOR IMPROVING SKIN USING A RA-EFFECT OR RA PLUS-EFFECT

(54) **발명의 명칭** : 라-효과 또는 라플러스-효과에 의한 피부 개선 장치 및 방법

[Fig. 1]



AA ... Power source unit
BB ... High-frequency generating unit
CC ... Surgical needle module
DD ... Input unit
EE ... Control unit
FF ... Display unit

(57) **Abstract**: According to the present invention, a skin treatment apparatus comprises: a plurality of needles each of which has a sharp end; a needle-fixing unit in which the plurality of needles are fixed; a driving unit for directly or indirectly transferring a force to the needle-fixing unit such that the plurality of needles fixed in the needle-fixing unit are inserted into the skin; and an electrical-energy transfer unit which is electrically connected to the plurality of needles. The electricity applied to the apparatus is alternating current; the electrical energy has a high frequency; the plurality of needles have a bipolar electrode system; and the area of the skin treated by the thus-configured apparatus achieves the appearance of being burnt by a Ra-effect or Ra plus-effect.

(57) **요약서**: 본 발명에 따른 피부처치장치는 첨예한 단부를 가지는 다수개의 침; 상기 다수개의 침들을 고정하는 침 고정부; 상기 침 고정부에 고정된 다수개의 니들이 피부에 삽입되게 상기 침 고정부에 직접 또는 간접적으로 힘을 전달하는 구동부; 및 상기 다수의 침과 전기적으로 연결되어 있는 전기에너지 전달부;를 포함하며, 상기 투입되는 전기가 교류전류이고, 상기 전기에너지의 형태가 고주파이며, 상기 다수의 침들은 바이폴라의 전극체제를 가지고, 상기 구성들에 의한 피부의 시술부위가 라-효과 또는 라플러스-효과가 구현된 익혀진 모습을 가지는 것을 특징으로 한다.

WO 2012/173405 A2

명세서

발명의 명칭: 라-효과 또는 라플러스-효과에 의한 피부 개선 장치 및 방법

기술분야

[1] 본 발명은 전기 에너지를 이용한 피부 치료에 관한 것으로서, 특히 미용을 위한 피부 치료를 우선적 목적으로 하며 경우에 따라서는 피부성형의 직접적 및 보조적 수단으로도 활용될 수 있다.

[2] 더 상세하게는 본 발명은 고주파를 이용하여 피부를 탄력 있게 시술하는 것에 관한 것으로, 피부의 표피층과 피하지방층 사이의 진피층에 고주파 전류가 직접 전달되도록 하여 피부노화를 최소화하는 등 피부 개선을 직접적이고 확실하게 할 수 있는 고주파를 이용한 피부 시술방법 및 장치에 관한 것이다.

배경기술

[3] 일반적으로 피부는 우리 몸 전체를 덮고 있는 인체의 가장 큰 보호기관으로서, 이렇게 몸 전체를 덮고 있는 피부는 크게 표피층, 진피층, 피하지방층의 3개의 층으로 이루어져 표면의 항상성(恒常性)을 유지하게 된다.

[4] 상기 진피층은 표피층의 아래에 위치하고 있으며 기저층에 바로 연결되어 있고 피부의 대부분이 진피로 이루어져 있으며, 수분을 비롯하여 단백질, 당질, 무코다당류, 무기질, 무기염류 등이 젤리상태로 되어 있고, 이러한 진피층은 표피층에 영양을 제공하면서 혈액순환과 관련 있는 모세혈관과 림프를 운반하는 림프관이 위치하는 유두층과, 피부의 주름과 관련 있는 교원섬유인 콜라겐과 피부의 탄력성을 부여하는 탄력섬유인 엘라스틴과 기질(물의 저장고)로 구성되는 망상층으로 구성된다. 상기 피하지방층은 진피와 근육, 뼈 사이에 위치하고 있으며 지방을 다량 함유하고 있으며 피부의 가장 아래층을 구성하고 있다.

[5] 피부의 노화방지를 위해 대표적인 피부 시술 방법으로 피부에 영양성분이 포함된 이로운 물질을 사용하여 마사지(massage) 하는 방법이 가장 널리 사용되고 있다. 그러나 이러한 마사지 형태의 피부 시술 방식은 피부의 표피층으로 영양분을 공급하여 표피층을 윤택하게는 하지만 오랜 시간을 지속하지 못하고 그 개선효과도 단시간에 나타나는 경우가 드물다.

[6] 그래서 새롭게 나타난 방법이 주사기 등을 사용하여 피부에 미용액을 주입하는 방식이었으나 이와 같은 방식은 시술에 따른 많은 비용이 소요될 뿐만 아니라 사람들의 체질적인 특성에 따라 부작용도 많이 발생하여 오히려 피부에 역효과가 발생하는 문제점이 초래되었다.

[7] 이후 나타난 방법이 고주파 등을 피부의 표피층에서 진피층으로 간접적으로 전달하는 방식이다. 하지만 이는 표피층을 거쳐 진피층으로 전달됨에 따라 높은 전압을 사용함에도 불구하고 그리 큰 효과를 가질 수 없을 뿐만 아니라 효과를

얻기 위해서는 지속적으로 시술을 받아야 하는 번거로움과 많은 비용이 소요되는 문제점을 가지고 있었다.

[8] 이후 진피층에 상처를 주어 콜라겐의 재생작용을 활성화시키는 방법을 피부개선 방법으로 강구하게 되었고 그런 방법의 하나로 바늘(본 발명에서는 이를 침이라고 표현하고 있는데 이는 원칙적으로 같은 의미를 가진다)을 진피층까지 삽입하여 전기적 자극을 주는 것이 강구되어 왔다.

[9] 이를 좀 더 상세하게 살펴보면 진피층은 콜라겐으로 불리는 단백질로 이루어지는데 콜라겐은 섬유모세포 및 폴리펩타이드를 포함한 삼중 나선구조로서, 콜라겐조직이 가열되면 수축(shrinkage)되는 온도에서 단백질 매트릭스(matrix) 부분의 물리적 변이가 일어나게 된다. 이러한 변이의 하나인 연조직(soft tissue) 리모델링은 세포 및 분자 수준에서 일어나는 현상으로, 인위적인 열에 의해 발생된 수축 또는 콜라겐의 부분 변성(denaturization)으로 인해 삼중 나선결합이 분해되어 매트릭스의 분자간 결합을 파괴하게 된다. 세포 수축이 일어나면, 콜라겐은 팽팽해진 연조직 구조 내의 정적 지지 매트릭스로서 하부에 위치한다. 초기 흉터 매트릭스의 증착 및 후속 리모델링은 미용 목적을 위한 연조직의 일관성 및 모양을 변경시키는 수단을 제공한다. 상처 내로 섬유모세포의 이동 및 자연적인 상처 치유 결과로서의 나타나는 수축과 비교하면, 연조직 리모델링은 즉각적인 공정이다. 결국 피부개선 또는 주름 개선과 같은 미용상의 목적으로 처치하는 방법은, 해당 부위에 다양한 에너지원을 가하여 조직을 응고시킴으로서 시작된다고 할 수 있다.

[10] 피부의 진피층에 에너지를 가하게 되면 주입되는 에너지의 양에 따라 진피에 영향을 주는 형태가 달라지게 되는데 일반적으로 카보니제이션(carbonization), 베이포리제이션(vaporization), 응고(coagulation) 등의 단계로 나누어 진다. 본 발명의 라-효과는 이중 응고(coagulation) 상태를 원칙적으로 형성하여서 피부를 개선하는 방법으로 이는 "태운다", "열을 가한다", "익힌다" 등과 같이 표현할 수 있겠으나 어느 것도 정확한 일반적인 표현이라 할 수 없는 측면이 있다. 하지만 본 발명에서는 "익힌다"는 표현이 그래도 '에너지를 가하여 원칙적으로 응고의 상태로 만든다'는 의미를 비교적 잘 나타내는 것으로 생각하여 "익힌다"는 표현을 '에너지를 가하여 원칙적으로 응고의 상태로 만든다'는 의미로 사용하기로 한다.

[11] 상세한 설명에 기재된 "익힌다"는 의미는 에너지를 가한다는 의미가 보다 강한 경우가 있으나 본 발명의 특허 청구항에 기재된 "익힌다"는 의미는 특히 '에너지를 가하여 원칙적으로 응고의 상태로 만든다'는 의미로 사용되었다.

[12]

[13] 이와 관련한 종래기술로는 특허출원 2000-0058346호를 들 수 있다. 본 발명은 주름을 피부의 원래 모양인 평편한 상태로 복원시키는 것을 목적으로 하여 제작된 것으로 그 방법으로 주름의 굵기, 패인 정도, 주름의 길이, 모양 등을 확인한 다음 콘트롤 기계 상자인 주름 치료기에서 세포 조직이 확대되는 엘러베이션

커런트(elevation current)의 와트(watt)를 설정하고, 펄스와 시간을 지정한 후, 주름의 길이와 패인 정도에 따라 니들의 길이를 결정하고 핸드피스에 니들을 장착하여 주름을 제거할 수 있게 구성되어 있다.

[14] 상기 특허 기술은 침이 하나로서 원리도 충분히 나타내지 못했지만 특히 실제 인체에 적용하기에는 대단히 위험한 초보적인 단계였다. 따라서 이것이 진일보하여 다양한 특허가 나오게 되는데 그 대표적인 것이 본 발명의 발명자가 출원하여 등록받은 등록특허 10-0856736호 이다. 특히 이 발명은 수십개에 이르는 다수의 침을 동시에 피부 속으로 침투시킴으로서 일종의 다수의 침이 동시에 피부에 닿게 하는 것 자체가 면접촉을 하는 형상을 이루게 되어 피부시술에 있어서 실효성을 높이는 중요한 계기가 되기도 했다.

[15] 이와 또 다른 최근의 유사한 기술로서 국내 특허출원 10-2009-23494호를 들 수 있다. 이를 좀 더 상세히 살펴보면 고주파를 이용하여 피부를 탄력있게 시술하는 것에 관한 것으로, 더 상세하게는 피부의 표피층과 피하지방층 사이의 진피층에 고주파가 직접 전달되어 세포조직을 활성화시켜 탄력적인 피부를 유지하여 피부 노화를 최소화할 수 있도록, 상기 피부 시술장치는 한 쌍의 전극봉이 삽입되는 본체케이스에 상기 전극봉과 접촉되어 고주파 전류가 통전되는 접속부가 삽입 고정되며, 상기 접속부의 하부로 삽입 접촉되어 통전된 고주파 전류를 피부의 진피층을 구성하는 망상층으로 삽입되어 고주파 전류를 발생하는 수개의 고주파 발생단자로 구성되는 것을 특징으로 하는 고주파를 이용한 피부 시술방법 및 장치에 관한 것이다.

[16] 그러나 이러한 피부시술 방법은 종전의 마사지나 레이저를 이용하는 방법 또는 고주파를 이용한다고 해도 침을 피부로 침투시키지 않는 방법에 비해서는 직접 진피층에 에너지를 투입하여 시술하는 것이므로 짧은 시간 내에 효과를 거둘 수 있다는 측면에서는 효과가 있었으나 그로 인한 부작용도 많이 있었다.

[17] 가장 큰 부작용으로 바늘 사이의 진피층은 물론 표피층도 모두 익혀버려 표피층이 상하게 되는 점과 과다하게 피부를 익혀 피부가 되돌릴 수 없도록 손상되어 버리는 경우가 다반사로 일어나는 점을 들 수 있다.

[18] 진피층만을 적절히 익히는 경우에는 응고(coagulation)현상으로 나타나 콜라겐의 재생을 촉진하는 역할을 하지만 상기 시술방법에 의해 표피층이 익혀진 경우 그 부위가 바로 흉터가 되어 피부개선을 위한 조치가 더 큰 피부손상을 불러오는 경향이 있었다.

[19] 상기 바늘 사이의 진피층과 표피층을 모두 익혀버리는 이러한 현상은 전기공학적 측면에서 지금까지 당업자 입장에서 보면 당연한 현상으로 전극 역할을 하는 침 사이를 전기에너지가 통과하고 그 사이의 피부는 공기보다는 훨씬 낮은 저항치를 가지지만 일정한 저항치를 가지게 되므로 그러한 저항치에 의해 그 침 사이의 피부 부분에서 모두 열이 발생하는 것으로 받아 드려졌고 실제로도 그렇게 현상들이 나타났다.(도 4 참조)

[20] 또 하나의 문제점은 상기 시술방법은 미세조정이 대단히 어렵다는 점이었다.

왜냐하면 위에서 기술된 바와 같이 침과 침사이가 모두 익어버리는 경우 익혀지는 형태 또한 상당히 급격하기 때문이다. 따라서 피부조직의 상황에 맞추어서 여러 번 나누어 시술하는 것이 상당히 어려웠는데 이는 의료장비라는 측면에서 보면 안전성 측면에서 사용상의 많은 제한을 가져오는 심각한 문제라고도 볼 수 있다.

[21] 그래서 이후 대부분의 기술에서는 진피에 도달하는 침들의 끝단을 제외하고는 모두 절연성 코팅을 하여 시술하기에 이르렀다. 그러나 이 또한 많은 문제를 발생시켰다.

[22] 첫째 코팅을 하게 되면 침의 굵기가 당연히 굵어지게 되어 문제점을 낳게 되었다. 대표적인 문제점들만 들게 되면, 투침한 흔적이 크게 남게 되는 점과 투침시 더 많은 통증을 유발할 수 있고 더욱이 절연 코팅제가 인체와 조화를 이루지 못하는 부작용의 발생가능성 등을 들 수 있다.

[23] 두 번째 문제점은 코팅한 부분이 언제나 벗겨질 가능성이 높다는 점이다. 왜냐하면 투침이 지속적으로 이루어지는 장비라는 점을 고려하면 지극히 당연한 것이라 할 것이다. 코팅이 벗겨질 경우 애초 코팅을 하지 않고 조심을 하는 경우에 비해 오히려 더 큰 부작용을 불러일으킬 우려가 높았다.

[24] 세 번째 여전히 절연되지 않은 침과 침 사이를 모두 익혀버리는 과격한 장치이므로 미세조정이 어렵고 과다하게 익혀져 버릴 가능성이 존재한다는 점이다.

[25] 또 다른 종래 기술로서 모노폴라를 이용한 장치를 들 수 있다. 모노폴라는 치료하고자 하는 피부에 닿는 기구에 하나의 극성을 부여하고 반대극성은 치료와 관계없는 다른 부위에 인가하는 형태이다. 하지만 이 방법으로 유효한 효과를 내기 위해서는 고전압의 전기를 흘려보내야 열을 발생시킬 수 있다는 치명적인 약점이 있었다. 이로 인해 화상의 위험이 있는 것은 물론 인가 전류가 항상 심장 등과 같은 기관에 영향을 미칠 가능성이 있어서 심한 경우 사망에 이르는 경우까지 있어서 대단히 제한적으로 사용될 수밖에 없었다.

[26] 본 발명은 이러한 문제점을 수년간 다각적으로 고민하고 연구하는 과정에서 이루어진 것이다.

발명의 상세한 설명

기술적 과제

[27] 본 발명이 추구하는 해결하려는 과제는 상기 종래기술에서 언급한 여러 문제점들이다.

과제 해결 수단

[28] 본 발명은 종래 기술에서는 전혀 생각하지 못했던 구성요소를 도입하여 종래에는 전혀 없었던 획기적인 새로운 효과를 창작함으로써 발명하게 되었고 이를 근거로 완성하게 되었다. 이러한 창작된 새로운 효과를 본 발명의 명세서에서는 "라-효과(Na-Effect)"라 명명하였다. 이러한 라-효과에 더하여

ENDYMED EXHIBIT 1002 - 173/509

연구를 계속하여 왔는데 또 다른 새로운 형태의 효과를 얻게 되었는데 도 8 내지 도 10에서 나타내고 있는 실시예들이 그 대표적인 것들이다. 이들을 본 발명에서는 라플러스-효과(NaPlus-Effect)라고 명명하였다.

[29] 라-효과 및 라플러스-효과는 원칙적으로 절연코팅을 하지 않은 침들을 사용하게 되는데 어떤 경우에도 진피부분만은 코팅을 하지 않는 것이 바람직하다. 이러한 라-효과 및 라플러스-효과는 피부처치장치에 다양한 치료 방법을 부가하고 인체에 적용함에 있어서 세밀하게 구별하여 적용하는데 크게 기여한다.

[30] 상기 라-효과는 바이폴라(bipolar) 전극에서 당업자가 종래 인지하던 피부가 익는 형태와는 전혀 달리 도면과 같이 표피는 거의 익혀지지 않고 침의 끝단을 중심으로 대부분 진피부근에서만 전구 형태로 익혀지는 형태를 말한다. 그리고 종래 기술과는 달리 절연코팅을 하지 아니한 침사이의 모든 영역을 익히지 않고 각 침별로 독립적으로 익히는 공간을 가지고 있다는 점에서 종래기술과는 현저히 다른 기술이다. 그에 더하여 라플러스-효과는 수년간 수많은 시행착오와 실험을 근거로 발명한 것으로 이로 인한 효과는 종래 기술의 문제점을 현저히 개선하는 효과가 있다.

[31] 먼저 라-효과는 앞서 간단히 설명한 바와 같이 전극간의 영역을 익히는 것이 아니라 개별 전극의 끝단을 중심으로 각기 구별되게 익히는 방법이므로 전기의 여러 가지 요소를 조정하거나 간격을 조정하는 등의 방법으로 미세하게 나누어 시술할 수 있는 획기적인 방법이다. 다시 말하면 전체적으로 그 세기를 조정하여 시술이 좀 더 필요한 부분은 다수 시술하고 그렇지 않는 부분은 작은 회수를 시술하여 의사가 상황을 보아 적절히 조절하기가 종전의 기술에 비해 현저히 향상되었다고 할 수 있다.

[32] 또한 라-효과는 표피는 거의 익지 않고 목적으로 하는 진피부분만 집중하여 익힐 수 있으므로 침을 절연코팅하지 않는 것을 원칙으로 한다는 점에서 종래기술과 현저한 차이가 있을 뿐만 아니라 이로 인해 종래기술의 가장 치명적인 문제점이던 절연코팅의 문제점을 완전히 해소할 수 있게 되었다. 따라서 라-효과에 의한 본 발명의 시술에 있어 원칙적으로는 피부에 침투하는 침부분에 절연 코팅은 특별한 경우를 제외하고는 할 필요가 없는 것으로 판단된다. 간혹 라-효과를 응용하여 다소 가혹한 조건으로 작업을 한다고 해도 표피부분과 닿는 아주 좁은 침의 부분만 코팅을 하면 되는 것으로 이러한 경우도 만일을 위한 것이지 일반적으로는 그럴 필요가 없다.

[33] 라-효과 및 라플러스-효과를 위해 채택해야할 필수구성요소는 먼저 바이폴라와 교류전류이되 고주파전류일 것을 요구하고 있다. 단, 라-효과를 위해서는 전극간의 간격이 중요하다. 왜냐하면 전극간의 간격이 너무 좁으면 전극 끝단에 집중된 익는 부위가 서로 붙어 라-효과를 나타내는데 지장을 줄 수 있기 때문이다. 그러나 라플러스-효과는 간격이 좁더라도 효과가 나타낼 수 있기 때문에 간격에 구애를 받지는 않는다.

[34] 또 다른 라-효과 및 라플러스-효과의 구성요소는 바늘이 코팅되어 있지 않아야 한다는 것으로 이는 종래기술의 경향과는 다른 구성요소이다. 이는 코팅을 전혀 할 수 없다는 것이 아니라 종래기술에서는 할 필요가 있던 것이 할 필요가 없어졌다는 것으로 이 경우에는 특히 코팅을 하면 제품의 기능이 오히려 저하된다는 점에서 종래기술과는 현저한 차이가 있다고 할 수 있다.

[35] 또 다른 라-효과 및 라플러스-효과에 관계되는 구성요소는 바늘의 수가 바늘의 끝단을 이었을 경우 그물 형태의 면을 형성하는 것이 바람직하다는 점이다. 이론적으로는 바늘의 수가 4개 이상이면 되지만 바람직하기로는 적어도 사각형이라고 가정할 경우 한 측면의 바늘의 수가 4개 이상인 것이 바람직하다고 할 수 있다.

[36] 또 다른 라-효과 및 라플러스-효과의 구성요소는 바늘에 교류를 인가하되 이웃하는 바늘간의 +와 -의 극성이 서로 다르도록 도면과 같이 배치하는 것이 바람직하다는 점이다.

발명의 효과

[37] 본 발명의 가장 큰 효과는 종래기술의 치명적인 문제점을 해소할 수 있다는 점이다.

[38] 먼저 종래기술의 가장 큰 부작용으로 바늘 사이의 진피층과 표피층을 모두 익혀버리는 점과 과다하게 피부를 익혀 피부가 되돌릴 수 없도록 손상되어 버리는 경우가 다반사로 일어나는 점들이 라-효과 또는 라플러스-효과가 적용된 기기를 사용할 경우 모두 해결될 수 있다.

[39] 라-효과는 종래 인지하던 바이폴라(bipolar) 전극에서 피부가 익는 형태와는 전혀 달리 도 6과 같이 표피는 거의 익혀지지 않고 침의 끝단을 중심으로 대부분 진피부근에서만 전구 형태로 익혀지는 형태를 말한다. 따라서 전기의 여러 가지 요소들의 세기를 조정하거나 간격을 조정하는 등의 방법으로 미세하게 조정하여 시술할 수도 있고 처음부터 그 세기를 약하게 하여 나누어 시술할 수 있는 획기적인 방법이다. 다시 말하면 전체적으로 그 세기를 조정하여 시술이 좀 더 필요한 부분은 다수(多數) 시술하고 그렇지 않는 부분은 작은 회수를 시술하여 의사가 상황을 보아 적절히 조절하기가 종전의 기술에 비해 현저히 향상되었다고 할 수 있다. 이는 의학적 측면에서 보면 획기적 변화라 하지 않을 수 없다. 이점에 있어서는 라플러스-효과도 마찬가지이다.

[40] 또한 종래기술에서 표피층이 익어서 익혀진 부위가 바로 흉터가 되어 피부개선을 위한 조치가 더 큰 피부손상을 불러오는 경향이 있었는데 도면에서 보는 바와 같이 표피층이 익는 현상이 거의 일어나지 않아 이 또한 중요한 효과 중의 하나이다.

[41] 그래서 이후 대부분의 기술에서는 단지 진피에 도달하는 침들의 끝단을 제외하고는 모두 절연성 코팅을 하여 시술하기에 이르렀는데 본 발명은 오히려 코팅을 하면 라-효과 또는 라플러스-효과를 제대로 활용할 수 없다는 측면이

있으므로 절연체 코팅을 할 경우 발생할 수 있는 침의 굵기가 당연히 굵어지게 되어 투침한 흔적이 크게 남게 되고 통증을 증가시키고 코팅한 부분이 언제나 벗겨질 가능성이 높아 더 큰 부작용을 불러일으킬 우려가 높다는 문제점을 현저히 해소할 수 있게 되었다.

도면의 간단한 설명

[42] 도 1은 본 발명 장치의 일실시예에 해당하는 대체적 구조도

[43] 도 2는 모노폴라전극 사용시 시술의 시술결과 표시도

[44] 도 3은 종래 침에 절연코팅을 하지 않은 바이폴라 전극 사용시 시술의 시술결과 표시도

[45] 도 4는 종래 침에 절연코팅을 하고 침의 끝단만 절연코팅을 하지 않은 바이폴라 전극 사용시 시술의 시술결과 표시도

[46] 도 5는 라-효과가 구현된 피부삽입부분이 코팅되지 않은 침이 사용된 시술의 시술결과 표시도

[47] 도 6은 라-효과가 구현된 교류상의 전극의 극성 변화 형태의 일 실시예

[48] 도 7은 라플러스-효과가 구현된 하나의 실시예로서 시술시 시술결과 표시도

[49] 도 8은 라플러스-효과가 구현된 또 다른 하나의 실시예로서 시술시 시술결과 표시도

[50] 도 9는 라플러스-효과가 구현된 또 다른 하나의 실시예로서 시술시 시술결과 표시도

[51] 도 10은 라-효과가 구현된 교류상의 전극의 극성 변화 형태의 또 다른 일 실시예

[52] 도 11은 침과 침사이의 간격을 나타내는 그림이다.

[53]

[54] <도면의 주요부분에 대한 부호의 설명>

[55] 100 : 침 고정부 200 : 피부

[56] 201 : 표피 202 : 진피

[57] 300 : 침/바늘/전극 301 : 피부로 삽입되는 침 영역

[58] 302 : 진피까지 삽입되는 침의 끝단

[59] 400 : 모노폴라전극 사용시 시술받는 환자의 손

[60] 500, 600 : 전기출입선

[61] 700 : 절연코팅부분

[62] 901 : 모노폴라전극 사용시 익는 부위의 모습

[63] 902 : 종래 침에 절연코팅을 하지 않은 바이폴라 전극 사용시 익는 부위의 모습

[64] 903 : 종래 침에 절연코팅을 하고 침의 끝단만 절연코팅을 하지 않은 바이폴라 전극 사용시 익는 부위의 모습

[65] 909 : 피부삽입부분에는 코팅되지 않은 침이 사용되고 라-효과 또는 라플러스-효과가 구현된 익는 부위의 모습

ENDYMED EXHIBIT 1002 - 176/509

[66]

발명의 실시를 위한 형태

[67] 본 발명은 위에서 제시한 내용을 바탕으로 다양한 실시예를 통해 실험해 보았는데 이런 내용을 바탕으로 여기서는 그 구성요소를 중심으로 세부적으로 정리하고자 한다.

[68] 본 발명이 추구하는 효과는 두 가지로서 라-효과와 라플러스-효과이다. 본질적으로 이 두 효과는 서로 관련이 있는 것으로 근본적으로는 라-효과를 바탕으로 하고 있으며, 양자간의 차이는 전압, 전류, 인가시간, 바늘 두께, 저항, 교류주파수, 고주파 주파수, 전도도, 피부로 침투한 바늘 깊이 등에 의해 라-효과가 나타나는 영역에서 좀 더 가혹해지면 라플러스-효과가 나타나는 경향이 있으므로 양 효과를 나타내는 기술적 구성요소는 상당히 대동소이한 경향이 있다.

[69] 라-효과와 라플러스-효과를 위해 채택해야할 필수구성요소는 먼저 바이폴라와 일상의 교류전류이되 고주파를 이용할 것을 요구하고 있다. 그리고 라-효과와 라플러스-효과를 위해서는 전극간의 간격이 중요하다. 왜냐하면 전극간의 간격이 너무 좁으면 전극 끝단에 집중된 익는 부위가 서로 붙어 라-효과를 나타내는데 지장을 줄 수 있지만 라플러스-효과를 나타내기는 용이하기 때문이다.

[70] 교류전류(alternating current / AC)는 통상 시간에 따라 크기와 방향이 주기적으로 변하는 전류로서 보통 AC(alternating current)로 표시한다. 사인파형이 가장 전형적이며 사각파나 삼각파 등으로 변형이 가능하다. 전류 흐름의 방향이 일정한 직류와 여러 다른 성질을 갖고 있다. 일반적으로 교류 전류는 각국에서 주파수를 50Hz 혹은 60Hz로 통일하여 사용하고 있다.

[71] 교류 전류는 라-효과와 라플러스-효과를 발생시키는 가장 중요한 요인으로 인식되는데 주파수가 큰 것은 특별히 높은 경우 예를 들면 수백Hz와 같은 경우가 아니면 문제가 되지 않을 것으로 판단하고 있다. 주파수가 상당히 높은 경우에도 침 간격을 좁혀 줌으로서 그로 인한 영향을 상쇄할 수 있을 것으로 판단된다. 그러나 주파수가 낮은 경우는 라-효과의 구현에 문제가 될 것으로 판단된다. 이 경우에도 20Hz 이상이면 다른 요인들을 조절하여 라-효과를 구현할 수 있다. 다른 요인의 조절은 뒤에서 다시 설명하기로 한다.

[72] 또한 다각적으로 검토 및 실험하였으나 라-효과와 라플러스-효과는 적어도 고주파가 아닌 경우에는 구현되지 않는 것으로 나타났다. 예를 들면 저주파는 물론이고 초음파, 중주파, 이온 등 다른 방법을 이용해서는 라-효과와 라플러스-효과는 제대로 구현되지 않았다.

[73] 특히 고주파에서도 0.5 메가헤르츠(MHz)이상에서 라-효과와 라플러스-효과가 잘 나타났는데 그 중에서도 가장 바람직한 경우가 2 MHz 내외라고 실험되어 현재 이를 이용하고 있다. 다시 말하면 바람직하기는 0.5 - 10 MHz 범위이고 더욱

바람직하기는 1 - 4 MHz이며, 가장 바람직하기는 1.5 - 2.5 MHz 이라 할 수 있다. 그러나 주어지는 조건에 따라 당연히 조금은 달라질 것으로 예상되나 대체적으로는 위 범위를 크게 벗어나지는 않았다.

[74] 이를 다시 상세히 설명하면 건조 피부와 젖은 피부를 2 MHz와 1 MHz를 사용하여 전기 통전도를 실험해보면 마른 피부에서는 2 MHz에서는 0.037102, 1 MHz에서는 0.013237이 나왔고, 젖은 피부에서는 2 MHz에서는 0.26649, 1 MHz에서는 0.2214 가 나왔다. 결국 RF에너지흐름이 2 MHz에서 보다 원활하다는 것을 알 수 있고 이는 결론적으로 건조피부에서 동일한 에너지가 가해졌을 때 1 MHz에서 스파크가 생길 확률이 다른 변수들에 의해 달라질 수는 있지만 산술적인 전기전도도 비교만으로는 약 3배가 높다는 할 수도 있다.

[75] 이를 이론적으로 보다 상세히 설명하면 고주파 주파수는 주파수가 높을수록 동일한 전류를 흘려보낼 때 상대적으로 가까운 부근까지만 에너지 영역을 형성하는 반면 주파수가 낮으면 전극으로부터 먼 부분까지 에너지 영역을 형성하게 된다.

[76] 예를 들면 0.5MHz 이하인 경우 전극을 멀리 떨어 뜨려도 에너지 영역이 너무 넓어 표피까지 화상을 입혀 흉터의 원인이 될 수도 있고 특히 좁은 영역을 정밀한 치료를 필요로 하는 눈꺼풀 같은 얇은 피부 치료시 안구에 영향을 줄 수도 있다. 한편, 10MHz 이상의 경우 에너지 영역이 너무 좁아 치료시간이 길어지고 최적의 치료를 위한 에너지 영역을 만들기도 어렵다.

[77] 다음으로 라-효과와 라플러스-효과는 침의 간격과도 깊은 관계가 있다. 특히 침의 간격은 모든 다른 구성요소와 깊은 관계가 있는데 예를 들어 고주파수의 주파수와의 관계를 살펴보면, 고주파 주파수가 증가하는 경우 침의 간격은 감소하고 고주파 주파수가 감소하는 경우 침(혹은 "바늘"이라 표현하기도 한다)의 간격은 증가하는 것으로 실험되었다. 2 MHz의 경우는 침의 간격은 2mm 내외가 가장 적당한 것으로 실험되었다. 이에 대해서는 뒷부분에서 보다 상세히 설명하기로 한다.

[78] 다음으로 라-효과와 라플러스-효과에 영향을 미치는 중요 구성요소로 침의 절연코팅 여부를 들 수 있다. 원칙적으로 라-효과와 라플러스-효과가 작동하는 한 표피부근은 거의 익지 않고 진피까지 파고 든 침 끝을 중심으로 도 6, 8, 9, 10에서 나타난 바와 같이 마치 전구모양 혹은 그 연결된 모양과 유사한 익는 부분이 형성되게 되므로 절연 코팅을 할 필요가 없다. 그러나 전기의 절연을 목적으로 하지 않는 한 코팅 그 자체만으로 라-효과와 라플러스-효과를 저해한다고 성급하게 판단할 수는 없다. 예를 들면 침의 강도강화를 위하면서 절연에 영향을 주지 않는 금속코팅이나 열처리 등으로 인한 코팅은 라-효과와 라플러스-효과에 영향을 주지 않는 경우도 당연히 있었다.

[79] 다시 말하면 라-효과와 라플러스-효과를 최대한 활용하기 위해서는 절연을 하지 않는 것이 바람직하고 혹시 하더라도 최소한 진피 구간만은 절연 코팅을 하지 않는 것이 바람직하다는 것을 의미한다. 그러나 절연을 하였다고 하여

라-효과와 라플러스-효과가 나타나지 않는 것은 아니다. 예를 들어 침 끝단을 제외한 부분을 절연 코팅을 하였을 경우 모노폴라를 사용한 경우와 유사한 형상의 익는 부분을 가질 수 있으나 그 형상만 동일할 뿐 현저히 다른 작용 방식에서 비롯된 전혀 다른 효과라 할 수 있다.

[80] 또 다른 라-효과와 라플러스-효과와 긴밀한 관계가 있는 구성요소는 침 즉 전극의 극성의 배치 방법이다. 원칙적으로 라-효과와 라플러스-효과는 침, 즉 바늘에 교류를 인가하되 이웃하는 바늘간의 극성이 서로 다르도록 도 7과 같이 배치한다는 점이다. 물론 이러한 배치는 정사각형의 모임으로 이루어지고 각 직교점에 바늘이 배치된 형태로서 한 바늘의 극성이 가장 이웃하는 직교점에 있는 바늘의 극성과는 다르도록 한다는 의미이다. 물론 교류 전류를 사용하므로 하나의 바늘이라 해도 통상의 교류전기를 사용할 경우 초당 약 50 - 60회 극성이 바뀌게 된다. 그렇다고 하더라도 당연히 매 순간마다 침 즉 바늘에 교류를 인가하되 이웃하는 바늘간의 극성이 서로 다르도록 도 7과 같이 배치가 가능하다. 본 발명에서 각 침들의 극성이 가장 가깝게 이웃하는 침들의 극성과 다르도록 각 방향으로 (+), (-)로 교차하면서 배열되었다고 하는 것은 이런 원리로 된 것들을 의미한다.

[81] 물론 일반적으로는 정사각형의 모임이 바람직하지만 얼마든지 약간 기울어진 마름모 모양의 집합이 될 수도 있고 직사각형 혹은 약간 기울어진 변의 길이가 다른 사각형의 집합인 경우에도 이웃하는 바늘간의 극성이 다르게 배치하는 한 라-효과 또는 라플러스-효과가 발생할 수 있다는 것을 확인하였다.

[82] 또한 어떤 경우에는 전기가 통하지 않는 바늘을 군데군데 배치할 수도 있고 바늘의 존재를 아예 군데군데 의도적으로 뺄 수도 있다. 하지만 상기 바늘의 극성 배치는 원칙적으로 그리한다는 의미로 원칙적으로 가장 가깝게 이웃하는 침들의 극성과 다르도록 각 방향으로 (+), (-)로 교차하면서 혹은 상기 방법과 같이 원칙적으로 배열했다면 라-효과 또는 라플러스-효과에 당연히 기여한다고 할 수 있고 상기 구성요소를 채택한 것이라 할 수 있다. 본 발명에서 바늘의 극성 배치와 관련하여 표현한 "원칙적으로"라는 의미는 위 경우들을 포함한다는 의미에서 사용된 것이다.

[83] 라-효과와 라플러스-효과가 가능한 또 다른 배열 방법을 찾았는데 도 11이 그 한 예이다. 도 11과 같이 어떤 하나의 바늘을 A라고 가정할 때 가장 가까이 바늘이 있는 각 방향 중 하나의 방향의 바늘의 전극의 극성은 A와 동일하여도 라-효과 또는 라플러스-효과가 구현될 수 있었다.

[84] 또한 제품을 디자인을 하다가 보면 불가피하게 위의 여러 가지 모양을 혼합할 수 있는데 라-효과 또는 라플러스-효과를 획득하기 위하여 원칙적으로 전극의 배열을 상기와 같이 이웃하는 바늘간의 극성이 서로 다르도록 한 상당한 부분을 포함하고 있는 다양한 경우를 설정할 수 있다.

[85] 이를 위한 최소한의 바늘의 숫자는 4개라고 할 수 있으나 적어도 9개 이상되는 부분이 상기 기재와 같은 동일한 배열을 포함하면서 라-효과 또는

라플러스-효과가 부분적으로 구현될 수 있도록 할 수 있다.

[86] 여기서 상당한 부분이란 라-효과 또는 라플러스-효과를 활용하기 위해 의도적으로 일정 영역의 전극들을 상기와 같이 배치하고 있는 경우를 예로 들 수 있다.

[87] 또 다른 중요한 구성요소는 전압으로서 이는 바늘 간격을 정하는데 있어서도 중요한 고려 요소이지만 이는 기기의 안전과도 직결된 구성요소이다. 이는 통상 피부에 인가되는 전압을 중심으로 측정하게 된다.

[88] 또 다른 중요한 구성요소는 전압으로서 이는 바늘 간격을 정하는데 있어서도 중요한 고려 요소이지만 이는 기기의 안전과도 직결된 구성요소이다. 따라서 통상 피부에 인가되는 전압을 중심으로 측정하는 것이 바람직하다.

[89] 따라서 "피부에 인가되는 전압"의 의미를 살펴보고 그 측정의 가능성을 살펴보면 다음과 같다.

[90] 실제 피부에 인가되는 전압은 피부에 삽입된 바늘(침)의 특정부위 표면과 접하는 피부 부위 사이에 걸리는 전압이다. 따라서 기기에 인가되는 전압과는 달리 3 가지의 저항값 즉 기기저항, 전극(침) 저항, 피부저항 값의 합에 따라 달라질 수 있다. 또한 피부에 삽입된 바늘 표면의 모든 부위에서 각각 같거나 달라질 수 있다. 왜냐하면 특정부위의 바늘표면과 접하는 피부 부위의 저항값이 다를 수 있어 바늘 전체표면에서는 똑같은 전압을 인가하여도 각 부위의 피부인가 전압은 달라질 수 있다.

[91] 그러나 피부 내에서 저항값은 차이가 있기는 하나 그리 큰 차이가 아니므로 본 발명에서는 바늘이 피부에 삽입된 상태에서 바늘 표면에서 측정된 전압값을 기준으로 측정하였고 이를 전압값으로 표시하였다.

[92] 이는 인가되는 에너지의 양과 직결된 구성요소로서 최대 100V를 넘어서는 안된다. 바람직한 전압은 10 - 60V이며 최적 전압은 20 - 40V로 실험되었다. 물론 100V가 넘더라도 라-효과 또는 라플러스-효과는 나타날 수 있다. 따라서 어떤 가혹한 상황에서는 100V를 사용하는 것이 바람직할 수도 있겠으나 예를 들어 100V로 전압을 주는 경우에 라-효과 또는 라플러스-효과는 일어나나 흉터가 생길 수 있으므로 적어도 피부 미용과 관련해서는 100V를 넘는 것은 설정하기가 어렵다.

[93] 상기 시술시 인체의 피부에 걸리는 전압(피부전압)은 기기에서 설정하는 전압(외부전압)과 회로 설계에 따라 다양하게 변하도록 설계 가능하며 이는 이 분야에 종사하는 당업자라면 쉽게 구현 가능한 것으로서 본 발명의 특징적 구성요소도 아니므로 구체적인 설명은 생략한다.

[94] 또 하나의 변수는 전류이다. 하지만 이는 전압과 저항값에 따라 변하므로 장비를 통해 가해주는 전압과 기기저항, 전극(바늘) 저항, 피부저항값이 정해지면 계산이 가능하다.

[95] $V=I*R$

[96] 저항값은 크게 3가지의 저항값으로 구분하는데, 즉 기기저항, 전극(침)저항,

피부 저항으로 구분 가능하다.

[97] 또 하나의 중요 구성요소는 에너지 지속 시간이다. 최저시간을 살펴보면 고주파 에너지가 스테이블한 영역에 도달하기 위한 시간으로 약 0.02초가 소요되므로 에너지 지속시간이 지나치게 짧으면 그 효과가 거의 측정할 수 없을 만큼 나타나므로 시간을 지나치게 짧게 할 수는 없다. 측정해본 결과 최소한 0.05초 이상은 되어야 하는 것으로 나타났다. 본 발명의 주요한 특징으로 에너지 지속시간이 비교적 짧다는 것이기는 하나 효과가 나타나는 가장 긴시간을 측정해 본 결과 0.8초인 것으로 나타났다. 물론 침간 간격을 넓히고 전압을 최소화하면 더 긴 시간도 가능할 수 있겠으나 그래도 최적의 조건을 전제로 할 경우 0.05 - 0.8초의 범위를 잡을 수 있었다.

[98] 그러나 바람직한 시간은 0.1 - 0.4초이며, 가장 바람직한 시간은 0.1 - 0.2초 인 것으로 측정되었다. 이러한 시간을 찾아내는 것은 생각보다는 대단히 어려웠고 수많은 시행착오를 거듭했으며 많은 에지력을 필요로 하였다. 왜냐하면 높은 주파수의 고주파를 사용하고 교류를 사용하면서 낮은 전압을 사용하면서도 인가시간을 이렇게 짧게 한다는 것은 라-효과를 창작해 내고서야 이렇게 짧은 인가시간을 상상할 수 있었기 때문이다.

[99] 실제 바늘로 피부에 침투하지 않고 피부에 전극으로 자극을 주는 기기(이전의 Polaris 기기)에서는 훨씬 높은 전압에서도 실제 0.5 초 이상의 시간 동안 에너지를 주었던 사실과 상기의 본 발명의 전기 인가 시간을 비교해보면 본 발명의 기기가 훨씬 짧은 시간 동안 에너지를 부가하는 장치임을 알 수 있다.

[100] 다음으로 고려해야할 중요한 구성요소는 침의 길이와 굵기이다. 침의 굵기는 침 간 간격에 영향을 준다. 또한 반복적으로 피부에 삽입했다가 뺐다가 해야 하므로 그러한 과정을 구부러지지 않고 견딜만한 능력이 있어야 한다. 그리고 굵어질수록 통증을 더 크게 수반할 수 있고 침에 찔린 흔적이 커지게 된다.

[101] 결론적으로 바늘의 굵기는 찌르는데 있어 통증을 최소화 하고 바늘이 휘지 않을 정도이어야 하고 상처가 최소화되도록 적정범위를 찾아야 한다. 현재 임상적으로 사용하고 있는 바늘 굵기는 0.25mm 와 0.3mm 를 사용하고 있는데 이런 정도면 무난한 것으로 판단된다. 상기 바늘 굵기에 다소 벗어나더라도 라-효과 또는 라플러스-효과를 나타내는 데는 바늘의 굵기는 다소간의 영향은 있으나 그 영향은 그리 크지 않았다.

[102] 침의 길이는 장치의 설계 방식에 따라 차이가 날 수 있으므로 일률적으로 이야기하기는 곤란하다. 하지만 피부에 삽입되는 길이를 중심으로 이야기하면 피부의 두께와 시술목적에 따라 일률적으로 언급하는데 큰 문제가 없다.

[103] 이와 관련하여 도 1에서 피부들의 깊이를 정리하고 있는 바 이를 중심으로 판단할 수 있다. 통상 표피의 깊이는 0.2mm 에서 1mm 사이이고 진피의 깊이는 1mm 에서 4mm 사이이다. 따라서 적어도 진피 초입까지 도달하기 위한 길이는 최소 0.2mm는 되어야 하고 진피의 끝부분까지 도달하기 위한 최대 길이는 5mm라고 할 수 있으므로 치료를 위한 바람직한 깊이는 안전을 고려하면 1mm -

5mm라고 할 수 있다. 그러므로 침의 총 길이는 장치의 종류에 따라 달라질 수는 있으나 피부에 삽입되어지는 침의 길이는 1mm - 5mm로 하는 것이 바람직하다.

[104] 다만, 표피도 각질층, 과립층, 가시층, 기저층이 있어 각각의 피부저항값이 다르고 현미경적으로는 라-효과를 볼 수 있으므로 표피층만의 치료도 할 수 있다. 이 때 치료의 깊이는 1mm 이하가 될 수 있다. 또한 피하지방층까지 도달 길이가 6mm인 경우도 있다. 따라서 침의 길이는 피부에 들어가는 깊이가 1mm - 6mm 범위 내에서 하나의 피부처치장치 내에서도 각기 길이를 달라하여 다양하게 디자인할 수 있다.

[105] 라-효과와 라플러스-효과를 얻는 기기를 설계하기 위해 가장 신경을 써야 할 부분 중 하나는 앞서 설명한 바와 같이 침의 간격이다. 간격을 재는 여러 가지 방법이 있겠으나 여기서는 도 12와 같이 어느 특정의 침의 외피와 인접 침의 외피간의 가장 가까운 간격을 중심으로 설명하도록 한다. 본 발명에 있어서 바늘간의 간격은 이와 같은 방법으로 정의된 것이다.

[106] 라-효과와 라플러스-효과가 가능한 간격은 1.3mm 까지는 가능한 결과를 얻었다. 따라서 바람직한 간격은 1.3 - 3.0mm 수준으로 판찰되고 있으나 좀 더 넓은 간격이라 할지라도 인가되는 전류의 양이나 저항을 적게 하는 방법들을 동원할 경우 가능할 것으로 판단하고 있다.

[107] 이를 다시 상세히 설명하면 1.3mm 이내의 경우 예측 밖의 초과된 열이 발생하여 화상 또는 흉터화의 위험성이 있고 3.0mm 이상인 경우 동일 면적으로 시술함에 있어서 효과적인 밀도로 치료 영역을 만드는데 걸리는 시간 즉 치료시간이 증가되어 시술의 효율이 현저히 떨어지게 되고 이는 환자들에게 큰 비용의 부담을 주는 원인이 되기도 한다.

[108] 그러나 바늘 간 간격은 많은 변수들에 의해 조금씩 달라질 수 있다.

[109] 적절한 라-효과와 라플러스-효과를 얻는다는 전제 하에 바늘 간 간격에 영향을 주는 구성요소를 살펴보면 다음과 같다.

[110] 먼저 전력(=에너지)이 증가하거나 바늘의 굵기가 두꺼워지면 바늘간의 간격은 증대되어야 한다. 이를 분설하면 전력은 전압과 전류 및 인가 시간을 서로 곱하여 이루어지므로 결국 전압, 전류, 인가시간, 바늘의 굵기 중 어느 하나의 값이나 둘이상의 값이 증대하면 바늘간의 간격은 증대되어야 한다.

[111] 그러나 저항, 교류주파수, 고주파 주파수, 전도도 또는 피부로 침투한 바늘 깊이 중 어느 하나 혹은 둘 이상의 값이 증대하면 그 영향의 정도에 따라 바늘의 간격을 좀 더 좁히더라도 라-효과와 라플러스-효과를 발생시키는데 영향이 없을 수 있다.

[112] 이를 공식으로 표현하면 다음과 같다.

[113]
$$\text{간격} = N \frac{(\text{전력(=에너지)}) * (\text{바늘 두께}) * (\text{전도도})}{(\text{저항}) * (\text{교류주파수}) * (\text{고주파 주파수}) * (\text{피부로 침투한 바늘 깊이})}$$

[114] N : 비례 상수

[115] 저항 : 기기 저항, 전극 저항, 피부저항(피부 내에서만 고려하면 피부저항만 사용)

[116] 전력(=에너지)는 J = W*t 이므로 (W=전력, t=시간)

[117] = V*I*t (W=V*I)

[118] = I^2*R*t (V=I*R)

[119] 따라서,

[120]

$$\text{간격} = N \frac{V * I * t * \text{바늘 두께} * \text{전도도}}{(\text{저항}) * (\text{교류주파수}) * (\text{고주파 주파수}) * (\text{피부로 침투한 바늘 깊이})}$$

[121] 라고 표현할 수도 있다.

[122] 본 발명에서 침 고정부를 구성요소로 하는데 여기서 고정이라는 의미는 그 침들이 자유롭게 아무 곳이나 흩어지지 않게 한다는 의미이지 그 고정부 내에서 움직일 수 있다는 것을 제한하는 것은 아니며 본 발명의 특징적 구성요소도 아니다.

[123]

청구범위

[청구항 1] 첨예한 단부를 가지는 다수개의 침;
상기 다수개의 침들을 고정하는 침 고정부;
상기 침 고정부에 고정된 다수개의 니들이 피부에 삽입되게 상기 침 고정부에 직접 또는 간접적으로 힘을 전달하는 구동부; 및
상기 다수의 침과 전기적으로 연결되어 있는 전기에너지 전달부;를 포함하며,
상기 투입되는 전기가 교류전류이고, 상기 전기에너지의 형태가 고주파이며, 상기 다수의 침들은 바이폴라의 전극체제를 가지고, 상기 구성들에 의한 피부의 시술부위가 라-효과가 구현된 익혀진 모습을 가지는 것을 특징으로 하는 피부처치 장치.

[청구항 2] 첨예한 단부를 가지는 다수개의 침;
상기 다수개의 침들을 고정하는 침 고정부;
상기 침 고정부에 고정된 다수개의 니들이 피부에 삽입되게 상기 침 고정부에 직접 또는 간접적으로 힘을 전달하는 구동부; 및
상기 다수의 침과 전기적으로 연결되어 있는 전기에너지 전달부;를 포함하며,
상기 투입되는 전기가 교류전류이고, 상기 다수의 침들은 바이폴라의 전극체제를 가지면서 상기 침들 중 같이 군을 이루는 9개 이상의 각 침들의 극성이 가장 가깝게 이웃하는 침들의 극성이 모두 다르거나 적어도 하나의 방향을 제외하고는 다르도록 각 방향으로 (+), (-)로 교차하면서 배열된 영역을 포함하며, 상기 전기에너지의 형태가 고주파이고, 상기 구성들에 의한 피부의 시술부위가 라-효과가 구현된 익은 모습을 가지는 것을 특징으로 하는 피부처치 장치.

[청구항 3] 첨예한 단부를 가지는 다수개의 침;
상기 다수개의 침들을 고정하는 침 고정부;
상기 침 고정부에 고정된 다수개의 니들이 피부에 삽입되게 상기 침 고정부에 직접 또는 간접적으로 힘을 전달하는 구동부; 및
상기 다수의 침과 전기적으로 연결되어 있는 전기에너지 전달부;를 포함하며,
상기 투입되는 전기가 교류전류이고, 상기 다수의 침들은 바이폴라의 전극체제를 가지면서 각 침에서 가장 가까운 침까지의 간격이 1.3 - 3.0mm이며, 상기 전기에너지의 형태가 고주파이고, 상기 구성들에 의한 피부의 시술부위가 라-효과가 구현된 익은 모습을 가지는 것을 특징으로 하는 피부처치 장치.

[청구항 4] 첨예한 단부를 가지는 다수개의 침;

상기 다수개의 침들을 고정하는 침 고정부;
상기 침 고정부에 고정된 다수개의 니들이 피부에 삽입되게 상기 침 고정부에 직접 또는 간접적으로 힘을 전달하는 구동부; 및
상기 다수의 침과 전기적으로 연결되어 있는 전기에너지 전달부;를 포함하며,
상기 투입되는 전기가 교류전류이고, 상기 다수의 침들은 바이폴라의 전극체제를 가지면서 각 침에서 가장 가까운 침까지의 간격이 1.3 - 3.0mm이며, 상기 침들 중 같이 군을 이루는 9개 이상의 각 침들의 극성이 가장 가깝게 이웃하는 침들의 극성과 다르도록 각 방향으로 (+), (-)로 교차하면서 배열된 영역을 포함하며, 상기 전기에너지의 형태가 고주파이고, 상기 구성들에 의한 피부의 시술부위가 라-효과가 구현된 익은 모습을 가지는 것을 특징으로 하는 피부처치 장치.

[청구항 5] 첨예한 단부를 가지는 다수개의 침;
상기 다수개의 침들을 고정하는 침 고정부;
상기 침 고정부에 고정된 다수개의 니들이 피부에 삽입되게 상기 침 고정부에 직접 또는 간접적으로 힘을 전달하는 구동부; 및
상기 다수의 침과 전기적으로 연결되어 있는 전기에너지 전달부;를 포함하며,
상기 투입되는 전기가 교류전류이고 상기 교류전류의 주파수가 20Hz 이상이며, 상기 다수의 침들은 바이폴라의 전극체제를 가지면서 각 침에서 가장 가까운 침까지의 간격이 1.3 - 3.0mm이며, 상기 침들 중 라-효과와 관련한 침들은 적어도 진피 구간은 코팅되지 않고, 상기 침들에 인가되는 전압은 100V 이하이고, 상기 침들에 전기가 인가되는 시간은 0.05 - 0.8초이며, 상기 구성들에 의한 피부의 시술부위가 라-효과가 구현된 익혀진 모습을 가지는 것을 특징으로 하는 피부처치 장치.

[청구항 6] 첨예한 단부를 가지는 다수개의 침;
상기 다수개의 침들을 고정하는 침 고정부;
상기 침 고정부에 고정된 다수개의 니들이 피부에 삽입되게 상기 침 고정부에 직접 또는 간접적으로 힘을 전달하는 구동부; 및
상기 다수의 침과 전기적으로 연결되어 있는 전기에너지 전달부;를 포함하며,
상기 투입되는 전기가 교류전류이고, 상기 다수의 침들은 바이폴라의 전극체제를 가지면서 각 침에서 가장 가까운 침까지의 간격이 1.3 - 3.0mm이며, 상기 침들 중 같이 군을 이루는 9개 이상의 각 침들의 극성이 가장 가깝게 이웃하는 침들의 극성과 다르도록 각 방향으로 (+), (-)로 교차하면서 배열된 영역을

포함하며, 상기 전기에너지의 형태가 고주파이고, 상기 구성들에 의한 피부의 시술부위가 라플러스-효과가 구현된 익은 모습을 가지는 것을 특징으로 하는 피부처치 장치.

[청구항 7] 첨예한 단부를 가지는 다수개의 침;
상기 다수개의 침들을 고정하는 침 고정부;
상기 침 고정부에 고정된 다수개의 니들이 피부에 삽입되게 상기 침 고정부에 직접 또는 간접적으로 힘을 전달하는 구동부; 및
상기 다수의 침과 전기적으로 연결되어 있는 전기에너지 전달부;를 포함하며,
상기 투입되는 전기가 교류전류이고 상기 교류전류의 주파수가 20Hz 이상이며, 상기 다수의 침들은 바이폴라의 전극체제를 가지면서 각 침에서 가장 가까운 침까지의 간격이 1.3 - 3.0mm이며, 상기 침들 중 라플러스-효과와 관련한 침들은 적어도 진피 구간은 코팅되지 않고, 상기 침들에 인가되는 전압은 100V 이하이고, 상기 침들에 전기가 인가되는 시간은 0.05 - 0.8초이며, 상기 구성들에 의한 피부의 시술부위가 라플러스-효과가 구현된 익혀진 모습을 가지는 것을 특징으로 하는 피부처치 장치.

[청구항 8] 제1항 내지 제7항 중 어느 한 항에 있어서, 고주파의 범위가 0.5 - 10 MHz인 것을 특징으로 하는 피부처치 장치.

[청구항 9] 제1항 내지 제7항 중 어느 한 항에 있어서, 고주파의 범위가 1 - 4 MHz인 것을 특징으로 하는 피부처치 장치.

[청구항 10] 제1항 내지 제7항 중 어느 한 항에 있어서, 고주파의 범위가 1.5 - 2.5 MHz인 것을 특징으로 하는 피부처치 장치.

[청구항 11] 제1항 내지 제7항 중 어느 한 항에 있어서, 상기 침의 굵기가 0.25mm 와 0.3mm이고 피부에 삽입되어지는 침의 길이는 1mm - 5mm인 것을 특징으로 하는 피부처치 장치.

[청구항 12] 제1항 내지 제7항 중 어느 한 항에 있어서, 상기 침의 굵기가 0.25mm 와 0.3mm이고 피부에 삽입되어지는 침의 길이는 0.1mm - 1mm인 것을 특징으로 하는 피부처치 장치.

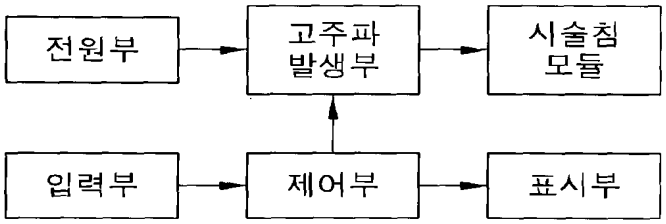
[청구항 13] 제1항 내지 제7항 중 어느 한 항에 있어서, 상기 인가되는 전기의 전압이 10 - 60V인 것을 특징으로 하는 피부처치 장치.

[청구항 14] 제1항 내지 제7항 중 어느 한 항에 있어서, 상기 인가되는 전기의 전압이 20 - 40V인 것을 특징으로 하는 피부처치 장치.

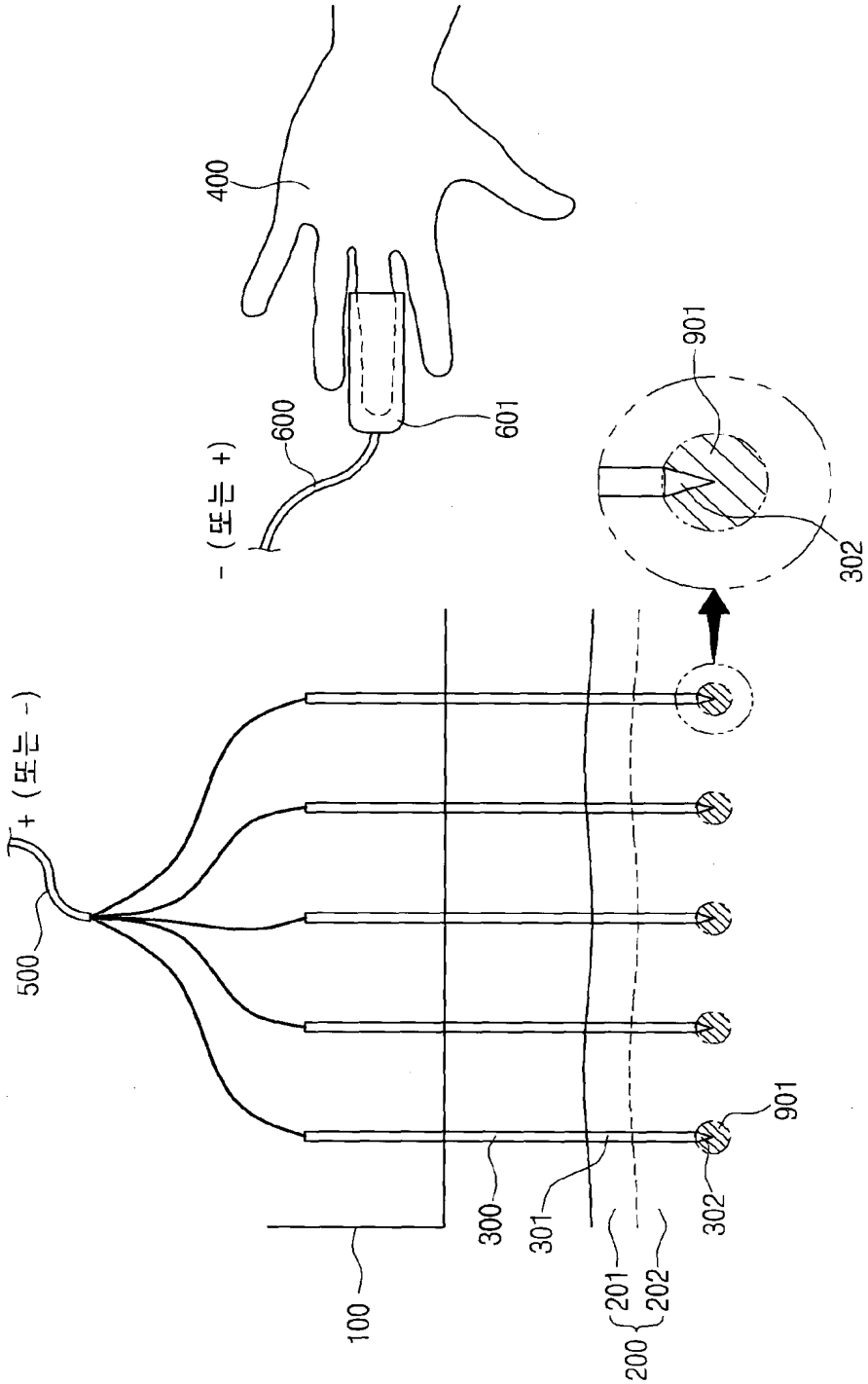
[청구항 15] 제1항 내지 제7항 중 어느 한 항에 있어서, 상기 인가되는 전기의 인가시간이 0.1 - 0.4초인 것을 특징으로 하는 피부처치 장치.

[청구항 16] 제1항 내지 제7항 중 어느 한 항에 있어서, 상기 인가되는 전기의 인가시간이 0.1 - 0.2초인 것을 특징으로 하는 피부처치 장치.

[Fig. 1]

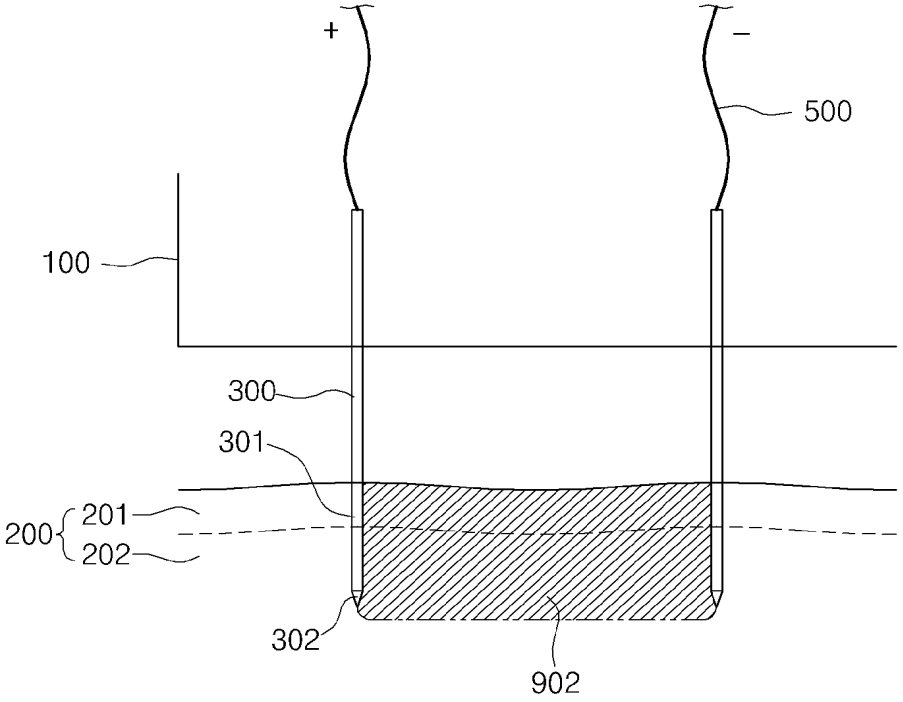


[Fig. 2]

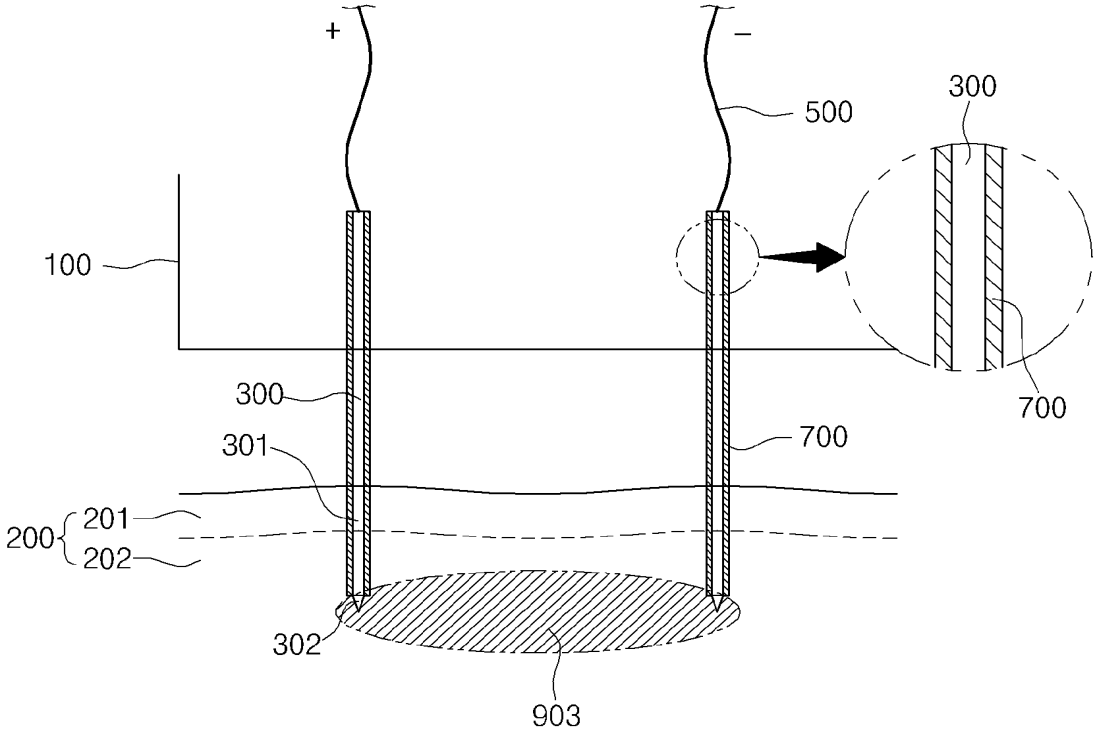


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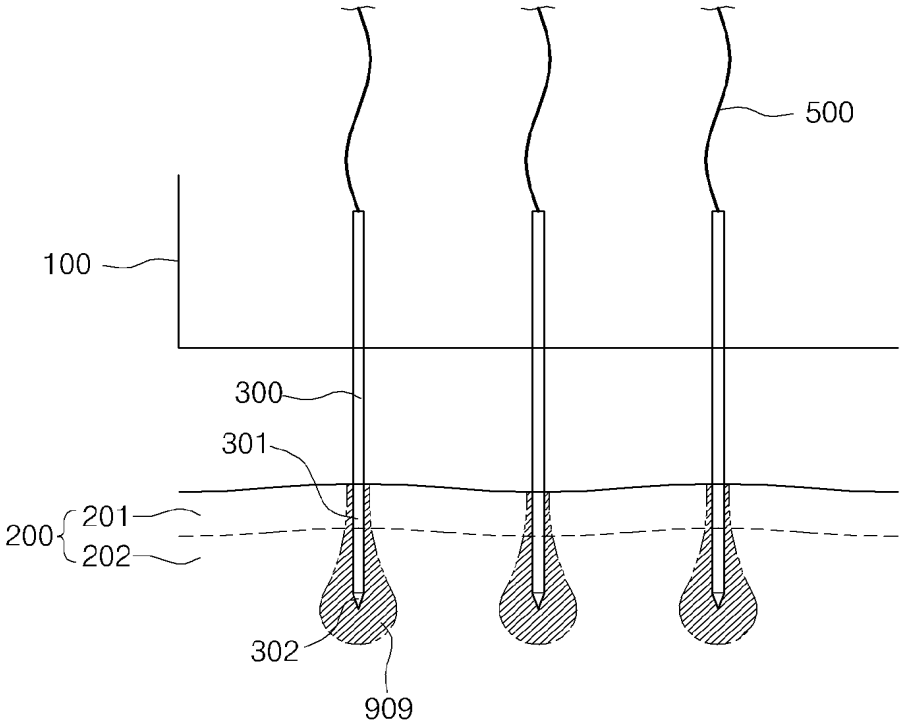
[Fig. 3]


+
−
500
100
300
301
200
201
202
302
902

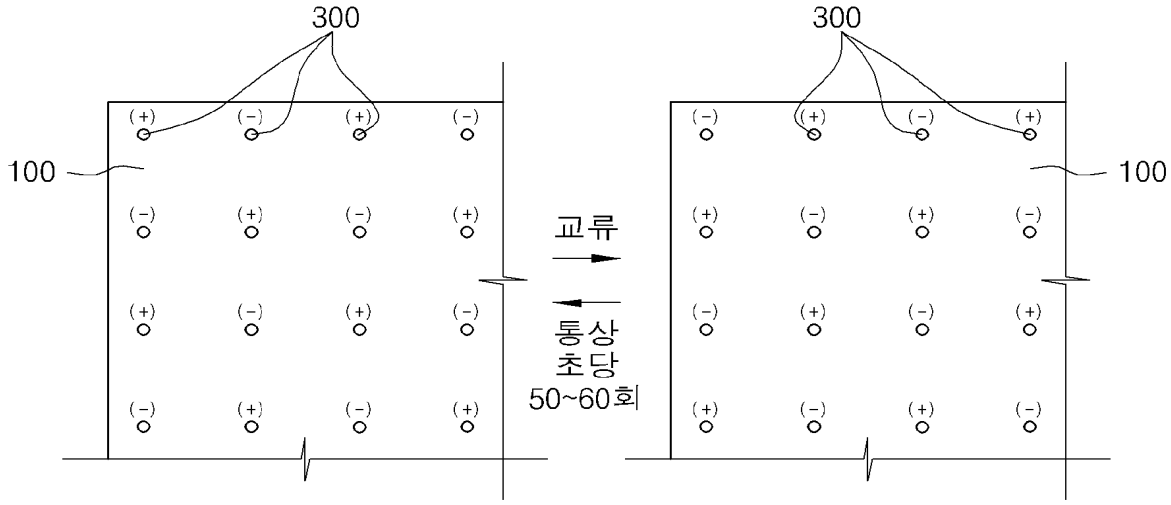
[Fig. 4]


+
−
500
300
100
700
300
301
700
200
201
202
302
903

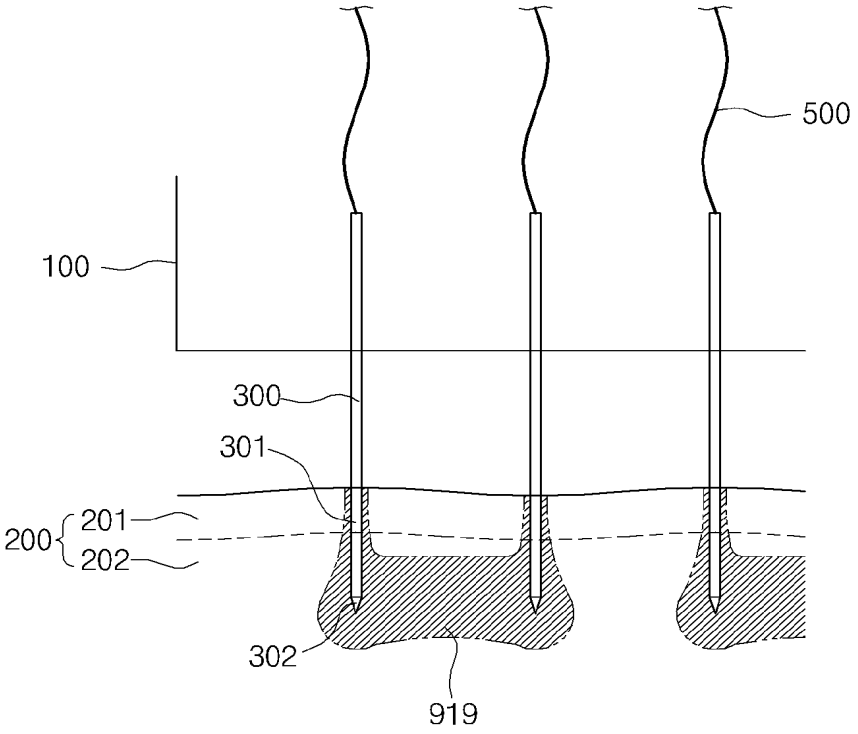
[Fig. 5]


500
100
300
301
200
201
202
302
909

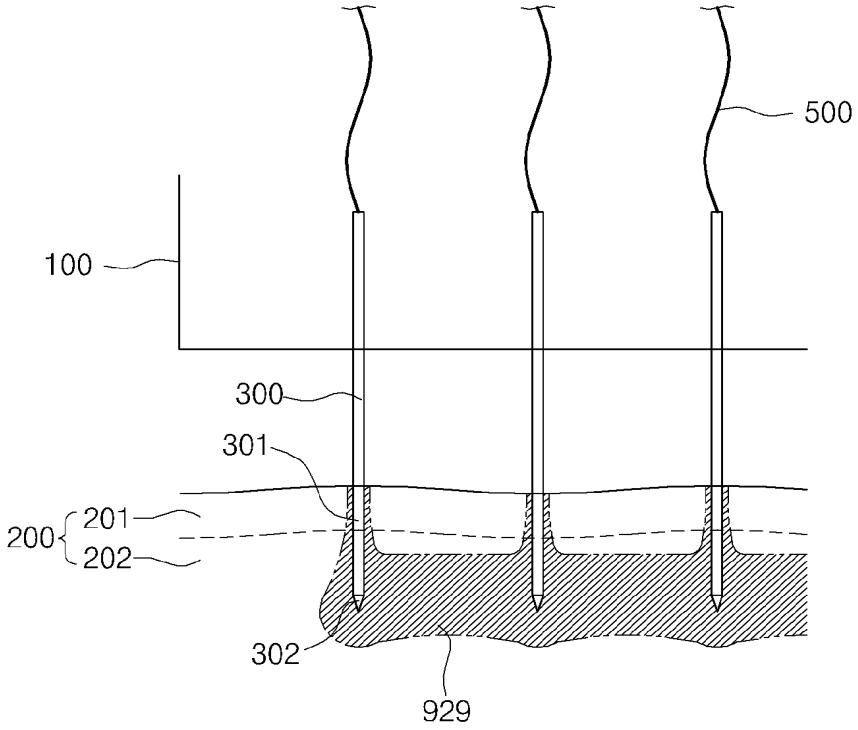
[Fig. 6]


300
300
100
100
교류
통상
초당
50~60회

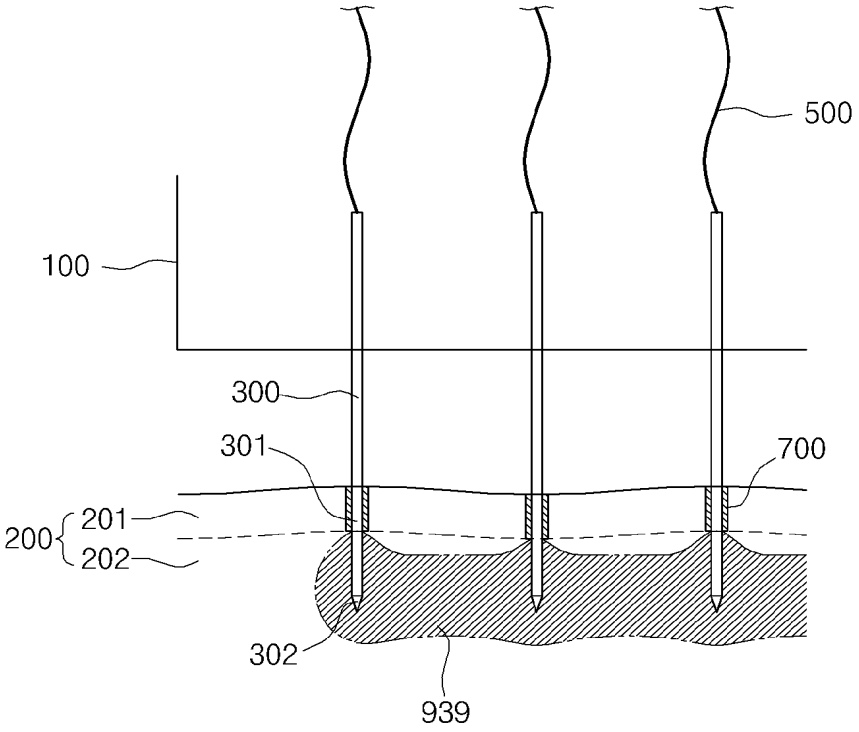
[Fig. 7]


500
100
300
301
200
201
202
302
919

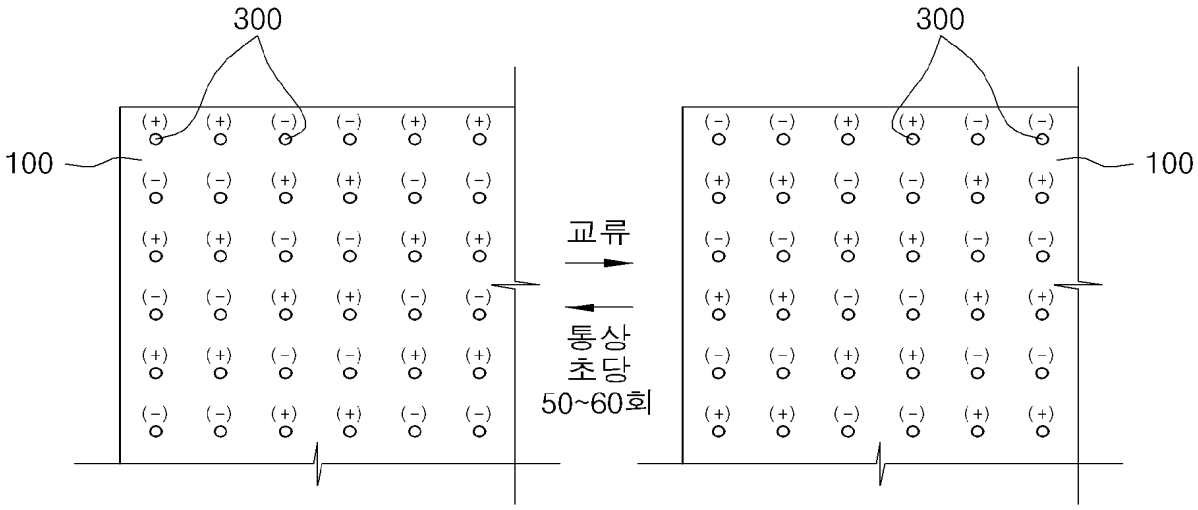
[Fig. 8]


500
100
300
301
200
201
202
302
929

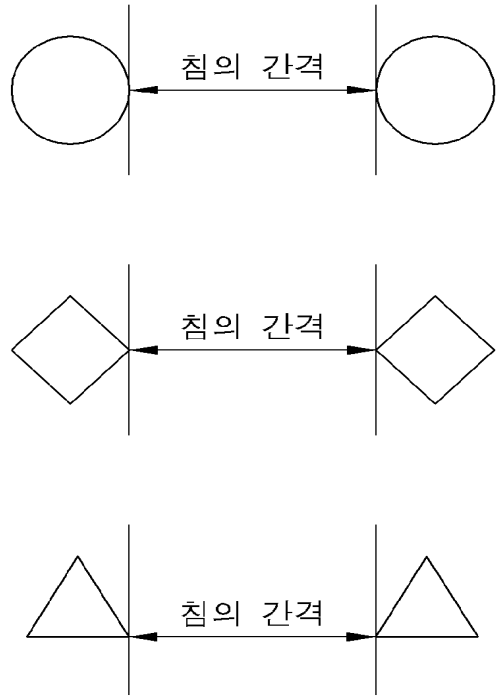
[Fig. 9]


500
100
300
301
700
200
201
202
302
939

[Fig. 10]


300
300
100
100
교류
통상
초당
50~60회

[Fig. 11]



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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Na Application No.: 14/006,930 Filed: September 23, 2013 Title: ELECTRICALLY BASED MEDICAL TREATMENT DEVICE AND METHOD Attorney Docket No.: NA002US	Art Unit: Unknown Examiner: Not Yet Assigned

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

SUPPLEMENTAL PRELIMINARY AMENDMENT

Dear Sir:

Please amend the application as filed herewith and please withdraw the Preliminary Amendment filed with the Application on September 23, 2013:

In the Title:

~~Skin Improvement Device and Method by Na-Effect or Na-Plus Effect~~ Electrically Based Medical Treatment Device and Method

In the Specification:

A substitute specification has been submitted herewith under the Rule 371 filing and noted in the Rule 371 transmittal.

In the claims:

Please cancel claims 1-16 as shown in the corrected translation of the priority PCT application.

1. (Canceled)
2. (Canceled)
3. (Canceled)
4. (Canceled)
5. (Canceled)
6. (Canceled)
7. (Canceled)
8. (Canceled)
9. (Canceled)
10. (Canceled)
11. (Canceled)
12. (Canceled)
13. (Canceled)
14. (Canceled)
15. (Canceled)
16. (Canceled)

Please add claims 17-42:

17. (Newly Added) A medical treatment apparatus, comprising:

a plurality of needles; the needles not coupled to a body ground, separated by a distance, and having a length sufficient to reach a desired region of a human body when inserted into a human body; and

a signal generation module, the signal generation module electrically coupled to the plurality of needles and providing electrical energy signals to the plurality of needles to form an independent, substantially non-intersecting energy field about two or more of the needle tips.

18. (Newly Added) The medical treatment apparatus of claim 17, further comprising a drive module to controllably move one or more of the plurality of needles along their length from a first human body region to second human body region.

19. (Newly Added) The medical treatment apparatus of claim 17, wherein the signal generation module applies a first alternating current electrical energy signal with a first polarity to a first subset of needles and applies a second alternating current electrical energy signal with a second, opposite polarity to a second subset of needles.

20. (Newly Added) The medical treatment apparatus of claim 19, wherein energy field formed about the two or more needle tips is substantially oval in shape.

21. (Newly Added) The medical treatment apparatus of claim 19, wherein the signal generation module provides electrical energy signals to the plurality of needles to form an independent, substantially non-intersecting, substantially oval shaped energy fields about the plurality of needles tips.

22. (Newly Added) The medical treatment apparatus of claim 17, wherein the medical treatment apparatus is a skin treatment apparatus and each of the plurality of needles has a length sufficient to reach dermis of a human body when inserted into the skin of a human body region.

23. (Newly Added) The medical treatment apparatus of claim 17, further comprising a drive module to controllably move one or more of the plurality of needles along their length from an epidermis region to an adjacent dermis region of a human body region.

24. (Newly Added) The medical treatment apparatus of claim 19, wherein the first subset and second subset of needles comprise the plurality of needles and the first subset of needles are evenly interspersed between the second subset of needles.

25. (Newly Added) The medical treatment apparatus of claim 19, wherein the first subset of needles are singly interspersed between the second subset of needles.

26. (Newly Added) The medical treatment apparatus of claim 19, wherein the first and the second alternating current electrical signals have a frequency from 0.5 to 10 Mhz.

27. (Newly Added) The medical treatment apparatus of claim 19, wherein the first and the second alternating current electrical signals have a frequency from 1.5 to 2.5 Mhz.

28. (Newly Added) The medical treatment apparatus of claim 17, wherein each of the plurality of needles has a cross sectional shape of one of a square, rhombus, and rectangle.

29. (Newly Added) The medical treatment apparatus of claim 19, wherein the first and the second alternating current electrical signals have a voltage level below 100 volts.

30. (Newly Added) The medical treatment apparatus of claim 19, wherein the first and the second alternating current electrical signals have a voltage level from 20 to 40 volts.

31. (Newly Added) The medical treatment apparatus of claim 19, wherein the signal generation module applies a first alternating current electrical energy signal with a first polarity to a first subset of needles for 0.05 to 0.8 seconds and applies a second alternating current electrical energy signal with a second, opposite polarity to a second subset of needles for 0.05 to 0.8 seconds.

32. (Newly Added) The medical treatment apparatus of claim 19, wherein the signal generation module applies a first alternating current electrical energy signal with a first polarity to a first subset of needles for 0.1 to 0.2 seconds and applies a second alternating current electrical energy signal with a second, opposite polarity to a second subset of needles for 0.1 to 0.2 seconds.

33. (Newly Added) The medical treatment apparatus of claim 19, wherein the signal generation module delays applies a first alternating current electrical energy signal with a first polarity to a first subset of needles for a time interval after an off interval from 0.1 to 0.4 seconds and applies a second alternating current electrical energy signal with a second, opposite polarity to a second subset of needles for a time interval after an off interval from 0.1 to 0.4 seconds.

34. (Newly Added) The medical treatment apparatus of claim 17, wherein the needles have a length from 0.1mm to 5.0mm and a separation between adjacent needles from about 1.0mm to 3.0mm.

35. (Newly Added) The medical treatment apparatus of claim 17, wherein each of the plurality of needles has a cross sectional diameter of about 0.20mm to 0.40mm.

36. (Newly Added) The medical treatment apparatus of claim 17, wherein each of the plurality of needles has a cross sectional diameter of about 0.25mm to 0.30mm.

37. (Newly Added) The medical treatment apparatus of claim 17, wherein each of the plurality of needles is substantially non-insulated.

38. (Newly Added) The medical treatment apparatus of claim 17, wherein each of the plurality of needles includes an insulated section and non-insulated section.

39. (Newly Added) The medical treatment apparatus of claim 38, wherein the insulated section is longer than the non-insulated section along the needle length.

40. (Newly Added) The medical treatment apparatus of claim 38, wherein the plurality of needles form a rectangular pattern.

41. (Newly Added) The medical treatment apparatus of claim 19, further comprising a user interface to enable a user to select one the voltage level, alternating frequency, on time, and off time of the first and the second alternating current electrical signals.

42. (Newly Added) The medical treatment apparatus of claim 18, further comprising a user interface to enable a user to select the needle depths that the drive module controllably moves one or more of the plurality of needles along their length.

In the Drawings:

Please replace drawing sheet 6 of 7 via the attached replacement sheet. Figure 9 is being deleted and Figures 9A and 9B are being added where Figure 9A is identical to the originally filed Figure 9 and support for Figure 9B exists in the application as filed.

REMARKS

The newly filed translated PCT application included 16 claims as filed. A substitute specification correcting grammatical and language issues has been submitted in the US application filing. The Preliminary Amendment filed with the US application on September 23, 2013 is respectfully withdrawn. Applicants have cancelled claims 1-16 and added claims 17-42. Upon entry of the preliminary amendment claims 17-42 will be pending. Entry of the amendment is respectfully requested.

Applicant has also amended the Title of the PCT application was filed. Applicant has also replaced drawing sheet 6 of 7. Figure 9 is being deleted and Figures 9A and 9B are being added where Figure 9A is identical to the originally filed Figure 9 and support for Figure 9B exists in the application as filed. Entry of the Title change and drawing replacement sheet is respectfully requested.

Respectfully Submitted,

9/24/2013__ _/mwresq/_____
Date Merle Richman
Attorney/Agent for Applicant(s)
Reg. No. 38282

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Tel. 858 320-2030

Specifications

Title of the Invention: Skin Improvement Device and Method by Na-Effect or Na-Plus Effect

Technical Field

[1] This invention is for skin treatment using electrical energy, especially with the primary purpose for skin treatment for aesthetics, and in some cases, can be used as a direct instrument or supplement for skin cosmetic surgery.

[2] In detail, this invention is to provide skin treatment using method and device using high frequency, which minimizes skin aging by directly stimulating dermis between epidermis and subcutaneous layer.

Background Technology

[3] Generally, skin is the largest protective organ that covers the entire body and maintains homeostasis on surface of the body with three layers consisting of epidermis, dermis, and subcutaneous layer.

[4] Dermis is the layer beneath epidermis, directly connected to basal layer. Skin is made up of dermis that consists of protein, glycoside, glycosaminoglycan, mineral, inorganic salt in gelatinous form. In Dermis there are two layers; papillary and reticular layer. Papillary layer is consisted of capillary and lymphatics. Capillary provides nutrition to skin and circulates blood. Lymphatics carry lymph. Reticular layer is consisted of collagen, elastin and the substrate. Collagen is a fiber related to skin wrinkle, elastin is an elastic fiber that gives elasticity to skin and elastin, and the substrate is mostly made of water. Subcutaneous layer lies below dermis, contains plenty of fat, and attaches the skin to underlying muscle and bone at the bottom of the skin.

[5] One of the most popular treatments to prevent skin aging is massaging with nutritious substance. Although this type of skin treatment of massaging provides nutrition to epidermis and make the skin glow, it does not last for long and rarely shows improvement instantaneously.

[6] A new way was presented by using a syringe to inject serum into the skin, but this treatment method was costly, caused side effects individual skin characteristics, resulting in adverse effect on skin.

[7] After that, a new method developed that delivers high frequency indirectly from the skin surface to dermis. Even with a high voltage, this method was not effective for high frequency to enter dermis from the skin surface. Also, this method was costly because patients needed to receive multiple treatments to obtain results.

[8] We invented a method and device that provide electric stimulation directly in dermis by needles. This method revitalizes regeneration of collagen by wounding dermis.

[9] Taking a detailed look at this, dermis is composed of protein called collagen. Collagen is a triple helical structure including fibroblast and polypeptide and when collagen tissue is heated, physical transformation of protein matrix part occurs at its shrinkage temperature. Soft tissue remodeling is a transformation and is a phenomenon happening at cellular and molecular level, and the triple helical binding is disassembled by partial denaturalization of collagen or shrinkage caused by artificial heat, resulting in destruction of molecular bindings of matrix. When the cell shrinkage occurs, collagen lies on lower part and it supports the matrix within tightened soft tissue. The initial deposition and subsequent remodeling of scar matrix offers a way to modify the shape and consistency of soft tissue for aesthetic purpose. Soft tissue remodeling is an immediate process compared to the shrinkage appearing as a result of movement of fibroblast cell or natural healing. Ultimately, the treatment with the purpose of improving skin or wrinkle can be considered to begin by applying various energy sources to selected area and solidify the tissue.

[10] When energy is applied to dermis, the form of effects on dermis differs depending on the amount of applied energy, and it is generally divided into three phenomena: carbonization, vaporization, and coagulation. Na-Effect of this device improves skin condition by forming coagulation condition in principle, and it can also be expressed with such phrases as “to burn”, “ to apply heat”, “to raise temperature”, even though none of these may be exact and typical description. However, for this invention, “to raise temperature” would be the most suitable description conveying this invention’s feature by applying energy to achieve coagulation so “to raise temperature” could be used to express a way to achieve coagulation.

[11] The term “to raise temperature” can be perceived as applying energy, but the meaning

of "to raise temperature" written on the claims for this invention was used as "to apply energy to achieve coagulation"

[12]

[13] One of the existing technologies related to this is the patent 2000-0058346. This device was invented to restore the skin from wrinkles by verifying wrinkles' thickness, length and shape. It sets the pulse, time, elevation current and wattage to magnify the cell tissue. Then in the hand piece, the needle length can be determined according to the length and depth of wrinkle to remove the wrinkle.

[14] The patent 2000-0058346 used a single needle and although it demonstrated the principle, it was not sufficient for treatment. However, this became a baseline formula for various patents, and one of those is the patent 10-0856736 by the inventor of this invention. This invention is a milestone for increasing the effectiveness of skin treatment by using multiple needles penetrating skin simultaneously.

[15] One of similar technologies is the Korean patent 10-2009-23494. Examining this closely, it is about using a high frequency to provide skin treatment. In detail, it revitalizes cell tissues to maintain elasticity in skin and minimizes skin aging by directly delivering a high frequency into dermis between epidermis and subcutaneous layer. This skin treatment device has a pair of electrodes in the main body case that contacts the mating pair of fixed electrodes where the current is flowing. It delivers a high frequency into the reticular layer via electrodes.

[16] Although this treatment method was effective compared to massage or non-invasive radio frequency treatments, there were many side effects.

[17] The biggest side effect was burned both epidermis and dermis between the needles.

[18] When epidermis is burned by the treatment above (Korean patent 10-2009-23494), the treated area forms a scar.

[19] This phenomenon that burns both dermis and epidermis between needles was inevitable based on electrical engineering concepts (See Figure 3).

[20] Another problem of above treatment is difficulty of finite control.

[21] To avoid burning of epidermis, another technology was developed using insulated needles except the end of tip portion (See Figure 4), but it caused a new set of problems.

[22] First, the needle became thicker with insulation and it caused some problems. The major problems were bigger penetration mark, more pain and possible allergic reaction of patients.

[23] Second, there always was a high possibility of the insulating material coming off. Continuous penetration caused the insulating material to come off and that caused heating of unintended areas.

[24] Third, to compensate for lost temperature due to insulation of needles, the device had to generate a high temperature around needles and increased a possibility of burning.

[25] Another example of danger among existing technologies is device using monopole (See Figure 2). Monopole is a technology that uses an electrode on the target area and the other on any other parts of body. A serious flaw of this technology is that in order to generate desired heat, applying a high voltage was required. This could cause a voltage to impact the unintended parts of body including heart, possibly causing death.

[26] My invention was created to resolve above mentioned problems.

Detailed Explanation of the Invention

Technical Challenge

[27] The purpose of this skin improvement device and method is to resolve above mentioned problems.

Principle of Technology

[28] This invention is a byproduct of newly found effects. It is named "Na-Effect" (See Figure 5). In addition to the Na-Effect, an additional set of effects are found (See Figure 7, 8 and 9) and these effects are named Na-Plus effect.

[29] Usually, Na-Effect and Na-Plus effect use non insulated needles, especially in area where the needles come in contact with dermis.

[30] Heated areas of Na-Effect are different from those of existing bipolar electrodes employing system. The temperature is raised and the heat is concentrated at the area in dermis for coagulations. The heat minimally affects the epidermis area. Also, the heated area around the end of tip of needles is shaped like an oval. Also, Na-Effect is different from the existing technology that the heat is concentrated between needles. In Na-Effect, the heated area is around each needle. In addition, Na effect is invented based on countless trials and the results definitely improve existing problems.

[31] According to Na-Effect, the temperature is raised is around the tip of each needle, not between needles. It is a significantly different method, possible by controlling electrical factors or distance between needles. This method enables users to determine number of treatments in target areas by controlling the dissipated energy.

[32] According to Na-Effect, a higher temperature is concentrated in dermis, not epidermis, enabling the use of non-insulated needles. This technology is a definite advantage over the existing technology by solving problems caused by using insulated needles. Na-Effect does not require insulated needles except for special cases. Applying Na-Effect even in extreme treatment cases, insulating the needle area where it comes in contact with epidermis may be necessary, but it is not required.

[33] The required components for both Na-Effect and Na-Plus effect are bipolarity of needles, alternating current (AC), and high frequency. The distance between electrodes is important for Na-Effect because if the distance between electrodes is too close, the heated area around the tip of each needle may overlap, preventing Na-Effect. However, Na-Plus effect is not interfered by the close distance between needles.

[34] Another required component of Na-Effect and Na-Plus effect is the use of non-insulated needles. This is an important differentiator from the existing technologies. The existing technologies require the use of insulated needles, decreasing the effectiveness of treatments significantly.

[35] A recommended component to Na-Effect and Na-Plus effect is for needles to form a net shape when linked at the tip of needles. Theoretically, it requires the number of needles is to be four and more. However, assuming needles are on a rectangular plane, it is recommended to have at least four needles on each quadrant.

[36] Another required component of Na-Effect and Na-Plus effect is to establish an opposite polarity of (+) and (-) of neighboring needles as shown in Figure 6.

The Effect of the Invention

[37] The most significant effect of this invention is that it resolves the problems of the existing technologies.

[38] The most serious side effect of the existing technology is the burning of both dermis and epidermis between needles, causing a permanent damage to skin and this can be resolved by using any device applying Na-Effect and Na-Plus effect.

[39] Unlike the existing technology that raises temperature between needles, in Na-Effect, the oval shaped heated area is around the end of tip of needles in dermis. The temperature is minimally raised in epidermis as shown in Figure 5. This method is significantly different, possible by controlling electrical factors or distance between needles. Both Na-Effect and Na-Plus effect are breakthroughs in medical treatment.

[40] A danger of the existing technology is scars created by burned epidermis and a further damage caused by more treatments trying to improve the scars. A rare burning of epidermis in Na-Effect and Na-Plus effect is a significant improvement as shown in the drawings.

[41] Compared to the most of existing technologies require insulation of needles except at

the tip area in dermis, insulated needles prevent Na-Effect and Na-Plus effect to take place. Insulation causes needles to be thicker, causing more pain and leaving insertion marks. More seriously, if insulation comes off the needles, that could cause serious side effects.

Brief Explanations of the Drawings

[42] FIG. 1 is a functional diagram of the device according to Na-Effect and Na-Plus Effect application.
[43] FIG. 2 is a diagram of treatment using monopole needles.
[44] FIG. 3 is a diagram of treatment using non-insulated bipolar needles.
[45] FIG. 4 is a diagram of treatment using insulated bipolar needles, except at the tip of the needles.
[46] FIG. 5 is a diagram of treatment using non insulated needles according to Na-Effect.
[47] FIG. 6 is a diagram of illustrating a polarity change of needles according to Na-Effect.
[48] FIG. 7 is a diagram of treatment according to Na-Plus Effect.
[49] FIG. 8 is a diagram of treatment according to Na-Plus Effect.
[50] FIG. 9 is a diagram of treatment according to Na-Plus Effect.
[51] FIG. 10 is another diagram of illustrating a polarity change of needles according to Na-Effect.
[52] FIG. 11 is a simplified diagram illustrating distance between two needles.
[53]
[54] <Detailed Explanation of the Drawings>
[55] 100: fixture holding needles 200: skin
[56] 201: epidermis 202: dermis
[57] 300: pin/needle/electrode 301: needle area penetrating skin
[58] 302: end of needle area penetrating into dermis
[59] 400: patient's hand receiving treatment using monopole method
[60] 500, 600: electrical wire
[61] 700: insulated area of needle
[62] 901: the picture of area where the temperature is raised when using monopole electrode
[63] 902: the picture of area where the temperature is raised when using non-insulated bipolar needles for the existing technology

[64] 903: the picture of area where the temperature is raised using insulated needles except at the tip for the existing technology
[65] 909, 919, 929: the picture of area where the temperature is raised using non-insulated needles in Na-Effect or Na-Plus effect.
[66] 939: the picture of area where the temperature is raised using partially insulated needles in epidermis in Na-effect or Na-Plus effect.

Configuration for Practicing the Invention

[67] The following is to explain an embodiment of this invention in detail.

[68] This invention pursues Na-Effect and Na-Plus effect. Na-Effect and Na-Plus effect are related, Na-Effect being the foundation. Technological components of Na-effect and Na-Plus effect are similar. Na-Plus effect appears as the properties of Na-Effect based on voltage, current, application time, needle thickness, resistance, AC frequency, high frequency, conductivity, and needle penetration depth expand.

[69] The required components for Na-Effect and Na-Plus effect are bipolarity, AC and high frequency. The distance between needles is important for Na-Effect and Na-Plus effect. For Na-Effect, it is not desired to have needles in proximity to each other because if the distance between electrodes is too close, the heated area of each needle will be connected. However, it does not affect the Na-Plus effect. Na-Plus effect happens when the heated areas of Na-Effect in dermis expand and are connected in dermis, not in epidermis as shown in Figure 7 and 8.

[70] Alternating current (AC) is the current that changes magnitude and direction periodically. Sine wave is a typical waveform and it can be modified to triangular or square wave. It has many different characteristics from direct current (DC) that flows in one direction. AC is used at either 50Hz or 60 Hz worldwide.

[71] AC is the most critical factor for generate Na-Effect and Na-Plus effect. Unless the frequency is extremely high as in hundreds of Hz, it is considered not problematic. In case of high frequency, decreasing the distance between needles can compensate the impact of high frequency. Low frequency can cause a problem to realize Na-Effect. However, at a frequency higher than 20Hz (including 20Hz), Na-Effect can be realized by

controlling other factors in Na-Effect. Those control factors will be discussed later in the text.

[72] Based on research, Na-Effect and Na-Plus effect are not realized without high frequency. Na-Effect and Na-Plus effect were not realized with low and medium frequencies, ultrasonic waves, and ion.

[73] Na-Effect and Na-Plus effect are realized at above 0.5MHz. The ideal frequency was found to be at around 2MHz. The working frequency range of Na-Effect and Na-Plus effect is 0.5 to 10MHz, more precise and ideal working range being 1 to 4MHz and 1.5 – 2.5MHz, respectively. The frequency range may vary depending on the factors affecting Na-Effect and Na-Plus effect.

[74] To explain this in depth, if you do perform electricity conductivity experiment for dry skin and wet skin with 2 MHz and 1 MHz, dry skin has 0.037102 at 2 MHz and 0.013237 at 1 MHz, wet skin has 0.26649 at 2MHz and 0.2214 at 1 MHz. Consequently, flow of RF energy is smoother at 2 MHz, and the same energy is applied on dry skin, the probability for spark at 1MHz can be varied by other variables, but when comparing arithmetical electricity conductivity, it is three times higher.

[75] To describe this in detail, when electric current flows, a high frequency creates an energy field closer to electrode. In case of the energy field at a low frequency with the same electrical current, the energy field created around the electrode is large.

[76] For example, when below 0.5MHz (including 0.5MHz), even with the electrodes spaced far from each other, the impacted area created by energy is broad and it could result in scars in epidermis due to burning. Also, for areas where a precise treatment is required such as around eyelid, the broad energy field can have a harmful impact on an eye. Conversely, when above 10MHz (including 10MHz), the energy field is too narrow and it causes an increase in treatment time. It is also difficult to create an energy field for most effective treatment.

[77] Na-Effect and Na-Plus effect are greatly related to the distance between needles. The distance between needles is related to all the other components of Na-Effect and Na-Plus effect as well. For example, the distance between needles decreased as the

value of frequency increased and conversely, the distance between needles increased as the value of frequency decreased. At 2MHz, it was found that the ideal distance between needles was 2mm.

[78] Insulation of needles is an important factor that affects Na-Effect and Na-Plus effect. Insulation of needles is not necessary for Na-effect and Na-Plus effect to occur where the temperature is raised around the tip of needles in an oval shape in dermis, and minimally raised in epidermis, as shown in Figure 5, 7, 8 and 9. However, unless the coating of needles is for electrical insulation, it is not expected the coating prevents Na-Effect and Na-Plus effect to take place. Needles can be plated with other precious metals or heat-treated to achieve higher conductivity and hardness and that does not affect Na-Effect and Na-Plus effect.

[79] To maximize the effect of Na-Effect and Na-Plus effect, it is ideal not to insulate needles. If insulation is required, it is ideal not to insulate the area of needle that comes in contact with dermis. It is to note that needle insulation does not entirely prevent Na-Effect and Na-Plus effect to occur. For example, using the monopole method with insulated needle (except at the tip), one can achieve a similar shape of raised temperature area. However, it is important to note that the similarity is only in shape, the effect is different based on a different application process.

[80] Another component closely related to Na-Effect and Na-Plus effect is the arrangement of needles. In Na-Effect and Na-Plus effect, neighboring needles exhibit an opposite polarity as shown in Figure 6. This arrangement is made up of squares with a needle on each corner exhibiting an opposite polarity to the neighboring needle. Because of AC, the polarity of each needle changes 50-60 times per second and enables the neighboring needle to have an opposite polarity as shown in Figure 6. It is an important principle of this invention that each needle exhibits an opposite polarity to the closest neighboring needles as in (+) and (-) to each direction.

[81] It was verified that the square is ideal, but Na-Effect and Na-Plus effect can also take place in shapes like rhombus, rectangle, or quadrangle as long as the neighboring needles exhibit an opposite polarity.

[82] In some cases, non-conductive needles can be placed or needles can be removed in

particular positions to achieve Na-Effect and Na-Plus effect. In Na-Effect and Na-Plus effect, the closest neighboring needles have an opposite polarity, crossing in each direction as in (+) and (-). In terms of placement, shape and corresponding polarity, all above mentioned examples are required for Na-Effect and Na-Plus effect to take place.

[83] Another example of an arrangement allowing Na-Effect and Na-Plus effect to take place is shown in Figure 10. As shown in Figure 10, if one of the closest needles in any direction has a different polarity, Na-Effect and Na-Plus effect can be realized.

[84] A variety of combination of needle placement and needle fixture shape can be used in designing a device that employs Na-Effect and Na-Plus effect if the polarity setting shown in Figure 6 and Figure 10 are followed.

[85] To achieve Na-Effect and Na-Plus effect, a minimum number of needles is 4, but it is recommended to have a minimum of 9 needles with identical arrangement mentioned above for Na-Effect and Na-Plus effect to take place.

[86] To avoid infringement of this technology, others apply different arrangements of needles but it is not a different technology as needles can be arranged in a certain pattern to realize Na-effect and Na-Plus effect.

[87] Another important component is voltage. Voltage is an important factor determining the distance between needles and it is also directly related to safety of this device. Applied voltage to skin is measured in this invention.

[88] Another important component is voltage. Voltage is an important factor determining the distance between needles and it is also directly related to safety of this device. Applied voltage to skin is recommended to be measured in this invention.

[89] The meaning of "the applied voltage to skin" and the possibility of measurement are as follows:

[90] The actual voltage applied to skin is the voltage between the surface of a needle and the skin the needle comes in contact with. The value of the actual voltage can vary depending on device resistance, needle resistance and skin resistance. It could also vary

on different positions of needle due to possible difference in skin resistance. The applied voltage to needle is constant, but due to resistance of skin, the measured voltage can be different.

[91] The resistance value varies under skin, but negligible. This invention measured the voltage of needle surface while penetrated.

[92] The voltage applied is directly related to the amount of energy created. The voltage applied should not exceed 100V. A recommended range of operating voltage is between 10 to 60V, ideal being 20 to 40V. Na-effect and Na-Plus effect can be realized with operating voltage higher than 100V. In a rare circumstance, 100V could be used in Na-effect and Na=Plus effect, but there is a risk of burning the skin so it is not recommended to use the operating voltage higher than 100V (including 100V) in skin treatment.

[93] The actual voltage on skin and the operating voltage of the device can be controlled by modifying the electronics of the device.

[94] Another variable is the electric current. It varies depending on voltage and resistance, but it is possible to compute the value of the electric current when device resistance, needle resistance, and skin resistance values are determined.

[95] V=I*R

[96] The value of resistance is largely identified as three types; device resistance, needles resistance and skin resistance.

[97] Another important component is energy delivery time. It takes a minimum of 0.02 second for high frequency energy to reach its stability so if the duration of energy is less than 0.02 second, the effect cannot be measured. It was found that the retention time should be more than 0.05 second (including 0.05). A major advantage of this invention is a relatively short energy retention time; the longest retention time measured was 0.8 second. It is possible to extend the energy retention time by increasing the distance between needles and lowering the voltage, but under the ideal condition, the energy retention time was between 0.05 to 0.8 second.

[98] The acceptable energy delivery time is between 0.1 to 0.4 second, the ideal range being 0.1 to 0.2 second. It was after a discovery of Na-Effect that using high frequency and low voltage, it is possible to generate energy for effective skin treatment. However, desirable time lies between 0.1 - 0.4 seconds, and optimal time is measured as 0.1 - 0.2 seconds. It was much more difficult to find the time than expected, and required countless trials and errors with insight. Because only after Na-Effect was invented, it was possible to imagine having this short overload time using this high frequency and alternating currency with low voltage.

[99] Comparing to the existing devices (like Polaris) that apply energy onto skin via electrodes at a high voltage for longer than 0.5 second, this invention generates energy in a short period of time.

[100] The length and thickness of needle are important features as well. The thickness of needle affects the distance between needles. A needle should have strength to withstand a repetitive penetration into skin. It is note that thicker the needle, it may involve more pain and bigger scars.

[101] Sizes of needle currently in use for this invention are 0.25mm and 0.30mm. Needle thickness could vary and have a minimal impact to realizing Na-Effect and Na-Plus effect.

[102] The length of a needle can vary depending on design of the device. It can also depend on the thickness of the skin and the purpose of treatment.

[103] In general, the depth of epidermis is between 0.2mm and 1mm, and the depth of dermis is between 1mm and 4mm. Therefore, the length of a needle to reach the top of dermis must be at least 0.2mm and the maximum length to reach the bottom of dermis is 5mm. Considering safety, it can be said that the ideal depth for treatment is 1mm - 5mm. Total length of a needle can vary depending on the type on type of devices, but the length of a needle penetrating the skin should be between 1mm to 4mm.

[104] Using Na-Effect, epidermis consists of stratum corneum, stratum granulosum, stratum spinosum, stratum basale with different resistance level, can be treated under

the depth of 1mm (including 1mm). Also, there is a case of needles reaching the depth of 6mm into subcutaneous layer. Therefore, it is conceivable to design a device with the needle penetration depth between 1mm to 6mm.

[105] As mentioned before, one of the most critical requirements in designing a device based on Na-Effect and NA-Plus effect is the distance between needles. The definition of the distance between needles for this invention is shown in figure 11.

[106] Na-Effect and Na-Plus effect can be realized with a minimum distance between needles of 1.3mm. The ideal distance between needles is observed to be between 1.3 - 3.0mm, and by controlling the amount of current or by decreasing the resistance, it is possible to realize Na-Effect and Na-Plus effect with greater distance between needles.

[107] To explain this in more detail, there is a risk of scar or burn from unexpected excessive heat if the distance between closest neighboring needles is shorter than 1.3mm. If the distance is greater than 3.0mm, the treatment time increases as the treatment efficiency decreases significantly.

[108] However, the distance between needles are subjected to change depending on multiple variables.

[109] Under the premise of gaining proper Na-Effect and Na-Plus effect, factors that affect the distance between needles are as follows:

[110] As energy increases or the needle's thickness increases, the distance between needles should be expanded. Energy is voltage multiplied by current and time. Therefore, the distance between needles must be expanded if any combination of voltage, current, needle thickness, and conductivity increases.

[111] Na-Effect and Na-Plus effect can be realized by shortening the distance between needles if the value of resistance, AC frequency, high frequency, and penetrated depth of needle increases in any combination.

[112] Mathematically, the distance between needles can be explained as follows:

[113] $$\text{Distance} = N * \frac{(\text{Power = energy}) * (\text{Needle Thickness}) * (\text{Conductivity})}{(\text{Resistance}) * (\text{AC Frequency}) * (\text{High Frequency}) * (\text{Penetrated Needle Depth})}$$

[114] N: Proportional constant

[115] Resistance: Device resistance, needle resistance, skin resistance

[116] Energy (Joule) = W * t (W = Watt, t = time)

[117] Energy (Joule) = V * I * t (W = V * I)

[118] Energy (Joule) = I^2 * R * t (V = I * R)

[119] So,

[120] $$\text{Distance} = N * \frac{V * I * t * (\text{Needle Thickness}) * (\text{Conductivity})}{(\text{Resistance}) * (\text{AC Frequency}) * (\text{High Frequency}) * (\text{Penetrated Needle Depth})}$$

[121] Could be another equation to calculate the distance between needles.

[122] Needle fixture mentioned for this invention prevents needles to move freely; it does not mean it prevents any movement within the confined space of the fixture.

Claims

What is claimed is:

[Claim 1]

Multiple needles with sharp ends;

A fixture that needles are embedded onto;

A drive system that drives movement directly or indirectly to the fixture for the above needles to be inserted into skin; and

An electric transmission that is connected to the above needles electrically is also included.

The applied electricity is alternating current, the form of signal is high frequency and the needles are bipolar, and this device aims to apply energy in a shape described in Na-effect to achieve coagulation on treated area of skin.

[Claim 2]

Multiple needles with sharp ends;

A fixture that needles are embedded onto;

A drive system that drives movement directly or indirectly to the fixture for the above needles to be inserted into skin; and

An electric transmission that is connected to the above needles electrically is also included.

The applied electricity is alternating current and the needles are bipolar, the polarity of a minimum of 9 neighboring needles is different, alternating between (+) and (-), the form of signal is high frequency, and this device aims to apply energy in a shape described in Na-effect to achieve coagulation on treated area of skin.

[Claim 3]

Multiple needles with sharp ends;

A fixture that needles are embedded onto;

A drive system that drives movement directly or indirectly to the fixture for the above needles to be inserted into skin; and

An electric transmission that is connected to the above needles electrically is also included.

The applied electricity is alternating current and the needles are bipolar, the closest distance between neighboring needles is between 1.3 – 3.0 mm, the form of signal is high frequency, and this device aims to apply energy in a shape described in Na-effect to achieve coagulation on treated area of skin.

[Claim 4]

Multiple needles with sharp ends;

A fixture that needles are embedded onto;

A drive system that drives movement directly or indirectly to the fixture for the above needles to be inserted into skin; and

An electric transmission that is connected to the above needles electrically is also included.

The applied electricity is alternating current and the needles are bipolar, the closest distance between neighboring needles is between 1.3 – 3.0 mm, the polarity of a minimum of 9 neighboring needles is different, alternating between (+) and (-), the form of signal is high frequency, and this device aims to apply energy in a shape described in Na-effect to achieve coagulation on treated area of skin.

[Claim 5]

Multiple needles with sharp ends;

A fixture that needles are embedded onto;

A drive system that drives movement directly or indirectly to the fixture for the above needles to be inserted into skin; and

An electric transmission that is connected to the above needles electrically is also included.

The applied electricity is alternating current, the frequency of alternating current is higher than 20Hz including 20Hz, the needles are bipolar, the closest distance between neighboring needles is between 1.3 – 3.0 mm, the needles in the dermis area are not insulated, the voltage applied to the

needles is below 100V, including 100V, and the current flowing time through needles is between 0.05 to 0.8 seconds, and this device aims to apply energy in a shape described in Na-effect to achieve coagulation on treated area of skin.

[Claim 6]

Multiple needles with sharp ends;

A fixture that needles are embedded onto;

A drive system that drives movement directly or indirectly to the fixture for the above needles to be inserted into skin; and

An electric transmission that is connected to the above needles electrically is also included.

The applied electricity is alternating current, and the needles are bipolar, the closest distance between neighboring needles is between 1.3 – 3.0 mm, the polarity of a minimum of 9 neighboring needles is different, alternating between (+) and (-), the closest distance between neighboring needles is between 1.3 – 3.0 mm, and this device aims to apply energy in a shape described in Na-effect to achieve coagulation on treated area of skin.

[Claim 7]

Multiple needles with sharp ends;

A fixture that needles are embedded onto;

A drive system that drives movement directly or indirectly to the fixture for the above needles to be inserted into skin; and

An electric transmission that is connected to the above needles electrically is also included.

The applied electricity is alternating current; the frequency of alternating current is higher than 20Hz including 20Hz. The needles are bipolar and the closest distance between neighboring needles is between 1.3 – 3.0 mm. The needles in the dermis area are not insulated, the applied volatge is below 100V, including 100V, the device has the current flowing time between 0.05 and 0.8 seconds, and this device aims to apply energy in a shape described in Na-effect to achieve coagulation on treated area of skin.

[Claim 8]

Within claims from 1 to 7, the device has the high frequency range of 0.5 – 10 MHz.

[Claim 9]
Within claims from 1 to 7, the device has the high frequency range of 1 – 4 MHz.

[Claim 10]
Within claims from 1 to 7, the device has the high frequency range of 1.5 – 2.5 MHz.

[Claim 11]
Within claims from 1 to 7, the device has needles with the maximum diameter of 0.25 mm or 0.3 mm. The penetration depth of needle into skin is 1 mm - 5 mm.

[Claim 12]
Within claims from 1 to 7, the device has needles with the maximum diameter of 0.25 mm or 0.3 mm. The penetration depth of needle into skin is 0.1 mm - 1 mm.

[Claim 13]
Within claims from 1 to 7, the device has the applied voltage of 10 – 60V.

[Claim 14]
Within claims from 1 to 7, the device has the applied voltage of 20 – 40V.

[Claim 15]
Within any claims from 1 to 7, the device has the current flowing time between 0.1 and 0.4 seconds.

[Claim 16]
Within any claims from 1 to 7, the device has the current flowing time between 0.1 and 0.2 seconds.

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TRANSMITTAL FORM *(to be used for all correspondence after initial filing)*		Application Number	14/006,930
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ENCLOSURES ***(Check all that apply)***

☐ Fee Transmittal Form	☐ Drawing(s)	☐ After Allowance communication to TC
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EFS ID:	16945012
Application Number:	14006930
International Application Number:	
Confirmation Number:	2283
Title of Invention:	ELECTRICALLY BASED MEDICAL TREATMENT DEVICE AND METHOD
First Named Inventor/Applicant Name:	Jong ju Na
Customer Number:	26338
Filer:	Merle W. Richman
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Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Preliminary Amendment	na002us-supplemental-preliminary-amendment.pdf	84389 2ae081868665b06b2f7abfc8ab2418b80e13da84	no	9

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2	Specification	na002us-translated-application-corrected-claims.pdf	123649 e90196b5bdbba9a96bda1d0f7dee2e28f7b219f7	no	19
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3	Transmittal Letter	na002us-transmittal-amended-translation.pdf	101424 bf33bd4a2c6ab290f563c51f81f8d6ea69918f05	no	1
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 14/006,930	Filing Date 11/29/2013	☐ To be Mailed

ENTITY: ☐ LARGE ☒ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	RATE ($)	FEE ($)
☒ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	**140**
☒ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	**300**
☒ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	**360**
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	**800**

APPLICATION AS AMENDED – PART II

AMENDMENT **09/24/2013**

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	* 26	Minus	** 16	= 10	X $40 =	400
Independent (37 CFR 1.16(h))	* 1	Minus	***7	= 0	X $210 =	0
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	**400**

AMENDMENT

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =	
Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =	
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	

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This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**
If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 14/006,930

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	140		N/A	
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	240		N/A	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	360		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	26 minus 20 =	* 6	x 40 =	240	OR		
INDEPENDENT CLAIMS (37 CFR 1.16(h))	1 minus 3 =	*	x 210 =	0.00			
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			0.00			
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				0.00			
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	980		TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
AMENDMENT A	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE($)	ADDITIONAL FEE($)		RATE($)	ADDITIONAL FEE($)
AMENDMENT B	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.

MULTIPLE DEPENDENT CLAIM FEE CALCULATION SHEET

Substitute for Form PTO-1360
(For use with Form PTO/SB/06)

Application Number	Filing Date
14006930	

Applicant(s) Jong NA

* May be used for additional claims or amendments

CLAIMS	AS FILED		AFTER FIRST AMENDMENT		AFTER SECOND AMENDMENT	
	Indep	Depend	Indep	Depend	Indep	Depend
1	1		---	---		
2	1		---	---		
3	1		---	---		
4	1		---	---		
5	1		---	---		
6	1		---	---		
7	1		---	---		
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Total Indep	7		1		0	
Total Depend	63	↵	25	↵	0	↵
Total Claims	70		26		0	

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UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

U.S. APPLICATION NUMBER NO.	FIRST NAMED APPLICANT	ATTY. DOCKET NO.
14/006,930	Jong ju NA	NA002US

26338
MERLE W. RICHMAN, III
P.O. BOX 3333
LA JOLLA, CA 92038

INTERNATIONAL APPLICATION NO.	
PCT/KR2012/004695	
I.A. FILING DATE	PRIORITY DATE
06/14/2012	06/14/2011

CONFIRMATION NO. 2283
371 FORMALITIES LETTER



Date Mailed: 11/07/2013

NOTIFICATION OF MISSING REQUIREMENTS UNDER 35 U.S.C. 371 IN THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US)

The following items have been submitted by the applicant or the IB to the United States Patent and Trademark Office as a Designated Office (37 CFR 1.495).

- Indication of Small Entity Status
- Priority Document
- Copy of the International Application filed on 09/23/2013
- English Translation of the IA filed on 09/24/2013
- Copy of the International Search Report filed on 09/23/2013
- Preliminary Amendments filed on 09/24/2013
- Inventor's Oath or Declaration filed on 09/23/2013
- Small Entity Statement filed on 09/23/2013
- Request for Immediate Examination filed on 09/23/2013
- U.S. Basic National Fees filed on 09/23/2013
- Substitute Specification filed on 09/23/2013
- Priority Documents filed on 09/23/2013
- Application Data Sheet (37 CFR 1.76) filed on 09/23/2013

The following items **MUST** be furnished within the period set forth below in order to complete the requirements for acceptance under 35 U.S.C. 371:

- Oath or declaration of the inventors, in compliance with 37 CFR 1.497(a) and (b), identifying the application by the International application number and international filing date. The current oath or declaration does not comply with 37 CFR 1.497(a) and (b) in that it:
  - is not executed in accordance with either 37 CFR 1.66 or 37 CFR 1.68.
  - Inventor Gu Jeong Gwak did not sign the declaration.

ALL OF THE ITEMS SET FORTH ABOVE MUST BE SUBMITTED WITHIN TWO (2) MONTHS FROM THE DATE OF THIS NOTICE OR BY 32 MONTHS FROM THE PRIORITY DATE FOR THE APPLICATION, WHICHEVER IS LATER. FAILURE TO PROPERLY RESPOND WILL RESULT IN ABANDONMENT.

The time period set above may be extended by filing a petition and fee for extension of time under the provisions of 37 CFR 1.136(a).

Applicant is reminded that any communications to the United States Patent and Trademark Office must be mailed to the address given in the heading and include the U.S. application no. shown above (37 CFR 1.5)

ENDYMED EXHIBIT 1002 - 229/509

Registered users of EFS-Web may alternatively submit their reply to this notice via EFS-Web.
https://sportal.uspto.gov/authenticate/AuthenticateUserLocalEPF.html

For more information about EFS-Web please call the USPTO Electronic Business Center at **1-866-217-9197** or visit our website at http://www.uspto.gov/ebc.

If you are not using EFS-Web to submit your reply, you must include a copy of this notice.

WINSTON M ALVARADO

Telephone: (703) 756-1466

ENDYMED EXHIBIT 1002 - 230/509

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Na, et al.	
Application No.: 14/006,930	
Filed: 9/23/2013	Art Unit:
Title: ELECTRICALLY BASED MEDICAL TREATMENT DEVICE AND METHOD	
Attorney Docket No.: NA002US	

RESPONSE TO NOTIFICATION OF MISSING REQUIREMENTS UNDER 35 USC 371

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This is in response to a Notification of Missing Requirements under 35 USC 371. Enclosed are the following documents and fees to complete the filing requirements of the above-identified application.

(X) Executed Declaration identifying the application by the International application number and international filing date. The above-identified application is the same application which the inventor executed by signing the enclosed declaration.

( ) A Petition for Extension of Time for reply to Notice of Missing Parts is attached.
- ( ) one month ($100.00)
- ( ) two months ($300.00)
- ( ) three months ($700.00)
- ( ) four months ($1100.00)

I hereby certify that this Correspondence is being deposited with the Unitec States Postal service with sufficient postage for first class mail in an envelope addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, or the correspondence is being electronically transmitted to the USPTO, on the date indicated below.

Date of Deposit: 11/28/2013

Typed Name: Merle W Richman

Signature: /mwresq/_____

Respectfully submitted,

By /mwresq/
Merle Richman, Patent Attorney

Reg No. 38282

Date: 11/28/2013

Telephone No. 858 320-2030

PTO/SB/01A (09-12)
Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of Invention	ELECTRICALLY BASED MEDICAL TREATMENT DEVICE AND METHOD

As the below named inventor(s), I/we declare that:

This declaration is directed to:

- ☐ The attached application, or
- ☒ United States Application or PCT international application number PCT/KR2012/004695 filed on 06/14/2012
  - ☐ As amended on _____ (if applicable);

I/we believe that I/we am/are the original and first inventor(s) of the subject matter which is claimed and for which a patent is sought;

I/we have reviewed and understand the contents of the above-identified application, including the claims, as amended by any amendment specifically referred to above;

I/we acknowledge the duty to disclose to the United States Patent and Trademark Office all information known to me/us to be material to patentability as defined in 37 CFR 1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application. The above-identified application was made or authorized to be made by me/us.

WARNING:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

All statements made herein of my/own knowledge are true, all statements made herein on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001, and may jeopardize the validity of the application or any patent issuing thereon. I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5), or both.

FULL NAME OF INVENTOR(S)

Inventor one: Jong ju Na Date: 11 / 23 / 2013

Signature: _____ Citizen of: KR

Inventor two: Jeong Gu Gwak Date: 11/23/2013

Signature: _____ Citizen of: KR

☐ Additional inventors or a legal representative are being named on _____ additional form(s) attached hereto.

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 1 minute to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Electronic Acknowledgement Receipt

EFS ID:	17530128
Application Number:	14006930
International Application Number:	
Confirmation Number:	2283
Title of Invention:	ELECTRICALLY BASED MEDICAL TREATMENT DEVICE AND METHOD
First Named Inventor/Applicant Name:	Jong ju NA
Customer Number:	26338
Filer:	Merle W. Richman
Filer Authorized By:	
Attorney Docket Number:	NA002US
Receipt Date:	29-NOV-2013
Filing Date:	
Time Stamp:	00:03:51
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Applicant Response to Pre-Exam Formalities Notice	na002us-response-missing-requirements.pdf	66375 bba5026babfc41fc3b0ddd8c75191f3d2001512d	no	1

Warnings:	
Information:	

2	Oath or Declaration filed	na002us-declaration-executed.pdf	1141233 11d66b35c5d400ae77326536a9862d562410a7ec	no	1

Warnings:	
Information:	
Total Files Size (in bytes):	1207608

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Document code: WFEE

United States Patent and Trademark Office
Sales Receipt for Accounting Date: 12/02/2013

WALVARAD RF #30137165 Mailroom Dt: 12/02/2013 14006930

Credit Card Refund Total: $60.00

Master Card XXXXXXXXXXXX0593

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

U.S. APPLICATION NUMBER NO.	FIRST NAMED APPLICANT	ATTY. DOCKET NO.
14/006,930	Jong ju NA	NA002US

26338
MERLE W. RICHMAN, III
P.O. BOX 3333
LA JOLLA, CA 92038

INTERNATIONAL APPLICATION NO.	
PCT/KR2012/004695	
I.A. FILING DATE	PRIORITY DATE
06/14/2012	06/14/2011

CONFIRMATION NO. 2283
371 ACCEPTANCE LETTER

OC000000065294715

Date Mailed: 12/03/2013

NOTICE OF ACCEPTANCE OF APPLICATION UNDER 35 U.S.C 371 AND 37 CFR 1.495

The applicant is hereby advised that the United States Patent and Trademark Office, in its capacity as a Designated / Elected Office (37 CFR 1.495), has ACCEPTED the above identified international application for national patentability examination in the United States Patent and Trademark Office.

The United States Application Number assigned to the application is shown above and the relevant dates are:

11/29/2013	11/29/2013
DATE OF RECEIPT OF 35 U.S.C. 371(c)(1) and (c)(2) REQUIREMENTS	DATE OF COMPLETION OF ALL 35 U.S.C. 371 REQUIREMENTS

A Filing Receipt (PTO-103X) will be issued for the present application in due course. **THE DATE APPEARING ON THE FILING RECEIPT AS THE " FILING DATE" IS THE DATE ON WHICH THE LAST OF THE 35 U.S.C. 371 (c)(1), (c)(2) and (c)(4) REQUIREMENTS HAS BEEN RECEIVED IN THE OFFICE. THIS DATE IS SHOWN ABOVE.** *The filing date of the above identified application is the international filing date of the international application (Article 11(3) and 35 U.S.C. 363).*

The following items have been received:

- Indication of Small Entity Status
- Copy of the International Application filed on 09/23/2013
- English Translation of the IA filed on 09/24/2013
- Copy of the International Search Report filed on 09/23/2013
- Preliminary Amendments filed on 09/24/2013
- Inventor's Oath or Declaration filed on 11/29/2013
- Small Entity Statement filed on 09/23/2013
- Request for Immediate Examination filed on 09/23/2013
- U.S. Basic National Fees filed on 09/23/2013
- Substitute Specification filed on 09/23/2013
- Priority Documents filed on 09/23/2013
- Application Data Sheet (37 CFR 1.76) filed on 09/23/2013

ENDYMED EXHIBIT 1002 - 236/509

Applicant is reminded that any communications to the United States Patent and Trademark Office must be mailed to the address given in the heading and include the U.S. application no. shown above (37 CFR 1.5)

WINSTON M ALVARADO

Telephone: (703) 756-1466

ENDYMED EXHIBIT 1002 - 237/509

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
14/006,930	11/29/2013		980	NA002US	26	1

CONFIRMATION NO. 2283

26338
MERLE W. RICHMAN, III
P.O. BOX 3333
LA JOLLA, CA 92038

FILING RECEIPT

OC00000065294714

Date Mailed: 12/03/2013

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Inventor(s)

Jong ju NA, Songpa-Gu, KOREA, REPUBLIC OF;
Jeong Gu Gwak, Songpa-Gu, KOREA, REPUBLIC OF;

Applicant(s)

Jong ju NA, Songpa-Gu, KOREA, REPUBLIC OF;
Jeong Gu Gwak, Songpa-Gu, KOREA, REPUBLIC OF;

Power of Attorney: The patent practitioners associated with Customer Number 26338

Domestic Priority data as claimed by applicant

This application is a 371 of PCT/KR2012/004695 06/14/2012

Foreign Applications (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.)
REPUBLIC OF KOREA 10-2011-0557691 06/14/2011
REPUBLIC OF KOREA 10-2011-0057692 06/14/2011

If Required, Foreign Filing License Granted: 11/30/2013

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 14/006,930**

Projected Publication Date: 03/13/2014

Non-Publication Request: No

Early Publication Request: No
**** SMALL ENTITY ****

ENDYMED EXHIBIT 1002 - 238/509

Title

ELECTRICALLY BASED MEDICAL TREATMENT DEVICE AND METHOD

Preliminary Class

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where

the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign AssetsControl, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

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The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The U.S. offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to promote and facilitate business investment. SelectUSA provides information assistance to the international investor community; serves as an ombudsman for existing and potential investors; advocates on behalf of U.S. cities, states, and regions competing for global investment; and counsels U.S. economic development organizations on investment attraction best practices. To learn more about why the United States is the best country in the world to develop technology, manufacture products, deliver services, and grow your business, visit http://www.SelectUSA.gov or call +1-202-482-6800.

ENDYMED EXHIBIT 1002 - 240/509

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 14/006,930

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	140		N/A	
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	240		N/A	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	360		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	26 minus 20 =	* 6	x 40 =	240	OR		
INDEPENDENT CLAIMS (37 CFR 1.16(h))	1 minus 3 =	*	x 210 =	0.00			
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			0.00			
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				0.00			
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	980		TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
AMENDMENT A	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
AMENDMENT B	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Na, et al. Application No.: 14/006,930 Filed: 9/23/2013 Title: ELECTRICALLY BASED MEDICAL TREATMENT DEVICE AND METHOD Attorney Docket No.: NA002US	Art Unit:

Petition to Correct Inventorship 1.48(b) Nonprovisional Applicant – fewer inventors due to amendment or cancellation of claims

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Pursuant to 37 CFR 1.48(b) Nonprovisional application—fewer inventors due to amendment or cancellation of claims, it is requested that Jeong Gu Gwak be deleted as an inventor in the present application due to claim amendments as filed in the preliminary amendment with the application filing on September 23, 2013.

(X) The processing fee as set forth in 1.17(i) is being paid via www.uspto.gov.

The petition is being executed by the patent practitioner of record, a party as set forth in section 1.33(b).

I hereby certify that this Correspondence is being deposited with the Unitec States Postal service with sufficient postage for first class mail in an envelope addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, or the correspondence is being electronically transmitted to the USPTO, on the date indicated below.

Date of Deposit: 12/7/2013

Typed Name: Merle W Richman

Signature: /mwresq/

Respectfully submitted,

By /mwresq/
Merle Richman, Patent Attorney

Reg No. 38282

Date: 12/7/2013

Telephone No. 858 320-2030

Electronic Patent Application Fee Transmittal

Application Number:	14006930
Filing Date:	29-Nov-2013
Title of Invention:	ELECTRICALLY BASED MEDICAL TREATMENT DEVICE AND METHOD
First Named Inventor/Applicant Name:	Jong ju NA
Filer:	Merle W. Richman
Attorney Docket Number:	NA002US

Filed as Small Entity

U.S. National Stage under 35 USC 371 Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
PROCESSING FEE, EXCEPT PROV. APPLS.	2830	1	70	70
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
		Total in USD ($)		**70**

Electronic Acknowledgement Receipt

EFS ID:	17596212
Application Number:	14006930
International Application Number:	
Confirmation Number:	2283
Title of Invention:	ELECTRICALLY BASED MEDICAL TREATMENT DEVICE AND METHOD
First Named Inventor/Applicant Name:	Jong ju NA
Customer Number:	26338
Filer:	Merle W. Richman
Filer Authorized By:	
Attorney Docket Number:	NA002US
Receipt Date:	07-DEC-2013
Filing Date:	29-NOV-2013
Time Stamp:	17:01:23
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$70
RAM confirmation Number	8101
Deposit Account	
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1	Petition for review by the Office of Petitions.	na002us-petition-correct-inventorship.pdf	73077 713f01e173694dc8b1d0a3f8b195b28b1e8f3bcc	no	1
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30538 3173a67714f33db7ee0e38e16cba807b259e19ce	no	2
Warnings:					
Information:					
			Total Files Size (in bytes):	103615	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

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United States Patent and Trademark Office
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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/006,930	11/29/2013	Jong ju NA	NA002US

CONFIRMATION NO. 2283

26338
MERLE W. RICHMAN, III
P.O. BOX 3333
LA JOLLA, CA 92038

PUBLICATION NOTICE

OC000000067139404

Title:ELECTRICALLY BASED MEDICAL TREATMENT DEVICE AND METHOD

Publication No.US-2014-0074203-A1
Publication Date:03/13/2014

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publically available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently http://www.uspto.gov/patft/.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Office of Public Records. The Office of Public Records can be reached by telephone at (703) 308-9726 or (800) 972-6382, by facsimile at (703) 305-8759, by mail addressed to the United States Patent and Trademark Office, Office of Public Records, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at www.uspto.gov using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently http://pair.uspto.gov/. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

Further assistance in electronically accessing the publication, or about PAIR, is available by calling the Patent Electronic Business Center at 1-866-217-9197.

Office of Data Managment, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

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UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/006,930	11/29/2013	Jong ju NA	NA002US	2283

26338 7590 05/13/2015

MERLE W. RICHMAN, III
P.O. BOX 3333
LA JOLLA, CA 92038

EXAMINER
EDWARDS, PHILIP CHARLES

ART UNIT	PAPER NUMBER
3762	

MAIL DATE	DELIVERY MODE
05/13/2015	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 14/006,930	Applicant(s) NA ET AL.	
	Examiner PHILIP EDWARDS	Art Unit 3762	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 2 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *9/24/2013*.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5)☒ Claim(s) *17-42* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☐ Claim(s) _____ is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☒ Claim(s) *17-42* are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

DETAILED ACTION

1. The present application is being examined under the pre-AIA first to invent provisions.

Election/Restrictions

1. REQUIREMENT FOR UNITY OF INVENTION

As provided in 37 CFR 1.475(a), a national stage application shall relate to one invention only or to a group of inventions so linked as to form a single general inventive concept ("requirement of unity of invention"). Where a group of inventions is claimed in a national stage application, the requirement of unity of invention shall be fulfilled only when there is a technical relationship among those inventions involving one or more of the same or corresponding special technical features. The expression "special technical features" shall mean those technical features that define a contribution which each of the claimed inventions, considered as a whole, makes over the prior art.

The determination whether a group of inventions is so linked as to form a single general inventive concept shall be made without regard to whether the inventions are claimed in separate claims or as alternatives within a single claim. See 37 CFR 1.475(e).

WHEN CLAIMS ARE DIRECTED TO MULTIPLE CATEGORIES OF INVENTIONS

As provided in 37 CFR 1.475(b), a national stage application containing claims to different categories of invention will be considered to have unity of invention if the claims are drawn only to one of the following combinations of categories:

(1) A product and a process specially adapted for the manufacture of said product; or

(2) A product and process of use of said product; or

(3) A product, a process specially adapted for the manufacture of the said product, and a use of the said product; or

(4) A process and an apparatus or means specifically designed for carrying out the said process; or

(5) A product, a process specially adapted for the manufacture of the said product, and an apparatus or means specifically designed for carrying out the said process.

Otherwise, unity of invention might not be present. See 37 CFR 1.475(c).

2. This application contains claims directed to more than one species of the generic invention. These species are deemed to lack unity of invention because they are not so linked as to form a single general inventive concept under PCT Rule 13.1.

The species are as follows:

Species A: Claims 17, 18, 23, and 42

Species B: Claims 17, 19-21, 24-27, 29-33, and 41

Species C: Claims 17, 22, 28, and 34-40

Applicant is required, in reply to this action, to elect a single species to which the claims shall be restricted if no generic claim is finally held to be allowable. The reply must also identify the claims readable on the elected species, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered non-responsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise require all the limitations of an allowed generic claim. Currently, the following claim(s) are generic: Claim 17.

3. The groups of inventions listed above do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:

Species A, B, and C lack unity of invention because even though the inventions of these groups require the technical feature of a plurality of needles in combination with a signal generation module as disclosed in claim 17, this technical feature is not a special technical feature as it does not make a contribution over the prior art in view of Manstein (Pub. No.: US 2011/0046615 A1). Please see figures 3 and 4, [0031]-[0032], [0040]-[0042].

4. A telephone call was made to Merle Richman on 4/30/2015 to request an oral election to the above restriction requirement, but did not result in an election being made.

Applicant is advised that the reply to this requirement to be complete must include (i) an election of a species or invention to be examined even though the requirement may be traversed (37 CFR 1.143) and (ii) identification of the claims encompassing the elected invention.

The election of an invention or species may be made with or without traverse. To preserve a right to petition, the election must be made with traverse. If the reply does not distinctly and specifically point out supposed errors in the restriction requirement, the election shall be treated as an election without traverse. Traversal must be presented at the time of election in order to be considered timely. Failure to timely traverse the requirement will result in the loss of right to petition under 37 CFR 1.144. If claims are added after the election, applicant must indicate which of these claims are readable on the elected invention or species.

Should applicant traverse on the ground that the inventions have unity of invention (37 CFR 1.475(a)), applicant must provide reasons in support thereof. Applicant may submit evidence or identify such evidence now of record showing the inventions to be obvious variants or clearly admit on the record that this is the case. Where such evidence or admission is provided by applicant, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be corrected in compliance with 37 CFR 1.48(a) if one or more of the currently named inventors is no longer an inventor of at least one claim

remaining in the application. A request to correct inventorship under 37 CFR 1.48(a) must be accompanied by an application data sheet in accordance with 37 CFR 1.76 that identifies each inventor by his or her legal name and by the processing fee required under 37 CFR 1.17(i).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PHILIP EDWARDS whose telephone number is (571)270-1804. The examiner can normally be reached on Monday thru Friday, 9:00 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christopher D. Koharski can be reached on 571-272-7230. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/PHILIP EDWARDS/
Examiner, Art Unit 3762

/Amanda Patton/
Primary Examiner, Art Unit 3762

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Na, et al. Application No.: 14/006,930 Filed: 9/23/2013 Title: SKIN TREATMENT APPARATUS AND METHOD Attorney Docket No.: NA002US	Art Unit: 3762 Examiner: Phillip Charles Edwards

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

RESPONSE UNDER 37 CFR 1.111

Dear Sir:

In response to the Office Action of May 13, 2015, please consider the following amendments and remarks.

In the Title:

~~Electrically Based Medical~~ Skin Treatment ~~Device~~ Apparatus and Method

Amendment to the Claims begins on page 2 of this paper

Remarks begin on page 8 of this paper.

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

17. (Currently Amended) A ~~medical~~ skin treatment apparatus, comprising:

a set ~~plurality~~ of bipolar ~~needles~~ electrodes~~; the needles not coupled to a body ground, separated by a distance, and having a length sufficient to reach a desired region of a human body when inserted into a human body~~; and

a signal generation module, the signal generation module electrically coupled to the ~~plurality~~ set of bipolar electrodes ~~needles~~ and providing ~~electrical energy~~ high frequency signals to the ~~plurality~~ set of bipolar electrodes ~~needles~~ to ~~form an independent, substantially non-intersecting energy field about two or more of the needle tips~~ that enable non-intersecting coagulation about each electrode of the bipolar set.

18. (Cancelled).

19. (Currently Amended) The ~~medical~~ skin treatment apparatus of claim 17, including a plurality of sets of bipolar electrodes and wherein ~~the signal generation module applies a first alternating current electrical energy signal with a first polarity to a first subset of needles and applies a second alternating current electrical energy signal with a second, opposite polarity to a second subset of needles~~ immediately adjacent electrodes of different sets of bipolar electrodes have opposite polarities.

20. (Currently Amended) The ~~medical~~ skin treatment apparatus of claim ~~19~~ 17, wherein ~~energy field formed about the two or more needle tips is substantially~~ the coagulation area about

each electrode is oval in shape.

21. (Cancelled).

22. (Currently Amended) The ~~medical~~ skin treatment apparatus of claim 17, wherein the ~~medical treatment apparatus is a skin treatment apparatus and~~ each electrode of the ~~plurality~~ set of bipolar electrodes ~~needles~~ has a length sufficient to reach skin dermis ~~of a human body~~ when inserted into ~~the~~ skin ~~of a human body region~~.

23. (Cancelled).

24. (Currently Amended) The ~~medical~~ skin treatment apparatus of claim ~~19~~ 17, including a plurality of sets of bipolar electrodes ~~wherein the first subset and second subset of needles comprise the plurality of needles and the first subset of needles are evenly interspersed between the second subset of needles~~.

25. (Cancelled).

26. (Currently Amended) The ~~medical~~ skin treatment apparatus of claim ~~19~~ 17, wherein the ~~first and the second alternating current electrical signals have a~~ high frequency signals have a frequency from 0.5 to 10 Mhz.

27. (Cancelled).

28. (Currently Amended) The ~~medical~~ skin treatment apparatus of claim 17, wherein ~~each of~~

~~the plurality of needles has a cross sectional shape of one of a square, rhombus, and rectangle~~ the electrodes are needles.

29. (Cancelled).

30. (Cancelled).

31. (Currently Amended) The ~~medical~~ skin treatment apparatus of claim ~~19~~ 17, wherein the signal generation module ~~applies a first alternating current electrical energy signal with a first polarity to a first subset of needles for 0.05 to 0.8 seconds and applies a second alternating current electrical energy signal with a second, opposite polarity to a second subset of needles~~ provides high frequency signals to the set of bipolar electrodes for 0.05 to 0.8 seconds.

32. (Cancelled).

33. (Cancelled).

34. (Currently Amended) The ~~medical~~ skin treatment apparatus of claim 17, wherein ~~the needles have a length from 0.1mm to 5.0mm and a~~ the electrodes of the set of bipolar electrodes are ~~separation~~ separated by a distance of ~~between adjacent needles from about 1.0~~ 1.3mm to 3.0mm.

35. (Cancelled).

36. (Currently Amended) The ~~medical~~ skin treatment apparatus of claim 17, wherein each electrode of the set of bipolar electrodes ~~of the plurality of needles~~ has a ~~cross-sectional~~ diameter ~~of about~~ from 0.25mm to 0.30mm.

37. (Currently Amended) The ~~medical~~ skin treatment apparatus of claim 17, wherein each electrode of the set of bipolar electrodes ~~of the plurality of needles~~ is ~~substantially~~ non-insulated.

38. (Currently Amended) The ~~medical~~ skin treatment apparatus of claim 17, wherein a section of each electrode of the set of bipolar electrodes configured to be in skin dermis is ~~each of the plurality of needles includes an insulated section and~~ non-insulated ~~section~~.

39. (Currently Amended) The ~~medical~~ skin treatment apparatus of claim ~~38~~ 17, wherein each electrode of the set of bipolar electrodes is ~~the insulated section is longer than the non-~~ insulated ~~section along the needle length~~ except at its tip.

40. (Cancelled).

41. (Cancelled).

42. (Cancelled).

43. (Newly Added) A method of treating skin, comprising:

placing a set of bipolar electrodes on skin to be treated; and

employing a signal generation module electrically coupled to the set of bipolar electrodes to provide high frequency signals to the set of bipolar electrodes to enable non-intersecting coagulation about each electrode of the bipolar set.

44. (Newly Added) The method of treating skin of claim 43, including a plurality of sets of bipolar electrodes and wherein immediately adjacent electrodes of different sets of bipolar electrodes have opposite polarities.

45. (Newly Added) The method of treating skin of claim 43, wherein the coagulation area about each electrode is oval in shape.

46. (Newly Added) The method of treating skin of claim 43, wherein each electrode of the set of bipolar electrodes has a length sufficient to reach skin dermis when inserted into skin.

47. (Newly Added) The method of treating skin of claim 43, including placing a plurality of sets of bipolar electrodes on skin to be treated.

48. (Newly Added) The method of treating skin of claim 43, employing the signal generation module to provide a high frequency signal have a frequency from 0.5 to 10 Mhz.

49. (Newly Added) The method of treating skin of claim 43, wherein the electrodes are needles.

50. (Newly Added) The method of treating skin of claim 43, employing the signal generation module to provide high frequency signals to the set of bipolar electrodes for 0.05 to 0.8 seconds.

51. (Newly Added) The method of treating skin of claim 43, wherein the electrodes of the set of bipolar electrodes are separated by a distance of 1.3mm to 3.0mm.

52. (Newly Added) The method of treating skin of claim 43, wherein each electrode of the set of bipolar electrodes from 0.25mm to 0.30mm.

53. (Newly Added) The method of treating skin of claim 43, wherein each electrode of the set of bipolar electrodes is non-insulated.

54. (Newly Added) The method of treating skin of claim 43, including placing a section of each electrode of the set of bipolar electrodes in skin dermis.

55. (Newly Added) The method of treating skin of claim 43, wherein each electrode of the set of bipolar electrodes is insulated except at its tip.

REMARKS

Status of the claims

- Claims in issue before this Amendment: 17-42
- List of claims amended: 17, 19, 20, 22, 24, 26, 28, 31, 34, and 36-39
- List of claims canceled: 18, 21, 23, 25, 27, 29, 30, 32, 33, 35, and 40-42
- List of claims added: 43-55
- Claims in issue as of this Amendment: 17, 19, 20, 22, 24, 26, 28, 31, 34, 36-39, and 43-55
- No new matter has been added.

Restriction Requirement

The Examiner has issued a restriction requirement stating the invention includes three species:

A. Directed to Claims 17, 18, 23, and 42;

B. Directed to Claims 17, 19-21, 24-27, 29-33, and 41; and

C. Directed to Claims 17, 22, 28, and 34-40.

Applicants hereby elect species C without traverse. Claims 17, 22, 28, and 34-40 were directed to a skin treatment apparatus. Applicants have amended claims 17, 19, 20, 22, 24, 26, 28, 31, 34, and 36-39, cancelled claims 18, 21, 23, 25, 27, 29, 30, 32, 33, 35, and 40-42, and added claims 43-55 to read on species C. Entry is respectfully requested.

The undersigned Attorney respectfully requests that the Examiner contact him with any questions or issues with this response.

Respectfully Submitted,

6/22/2015 _/mwresq/_____
Date Merle Richman
Attorney/Agent for Applicant(s)
Reg. No. 38282

Merle Richman
Patent Attorney
Customer ID - 26338
PO Box 3333
La Jolla, CA 92038-3333
Tel. 858 320-2030

Doc Code: TRAN.LET
Document Description: Transmittal Letter

PTO/SB/21 (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paper Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

TRANSMITTAL FORM *(to be used for all correspondence after initial filing)*		Application Number	14/006,930
		Filing Date	Sep 23, 2013
		First Named Inventor	Na, Jongju
		Art Unit	3762
		Examiner Name	Phillip Charles Edwards
Total Number of Pages in This Submission	10	Attorney Docket Number	NA002US

ENCLOSURES *(Check all that apply)*

☐ Fee Transmittal Form	☐ Drawing(s)	☐ After Allowance Communication to TC
☐ Fee Attached	☐ Licensing-related Papers	☐ Appeal Communication to Board of Appeals and Interferences
☒ Amendment / Reply (9 pages)	☐ Petition	☐ Appeal Communication to TC **(Appeal Notice, Brief, Reply Brief)**
☐ After Final	☐ Petition to Convert to a Provisional Application	☐ Proprietary Information
☐ Affidavits/declaration(s)	☐ Power of Attorney, Revocation Change of Correspondence Address	☐ Status Letter
☐ Extension of Time Request	☐ Terminal Disclaimer	☐ Other Enclosure(s) (please identify below):
☐ Express Abandonment Request	☐ Request for Refund	
☐ Information Disclosure Statement	☐ CD, Number of CD(s) _____	
	☐ Landscape Table on CD	
☐ Certified Copy of Priority Document(s)		
☐ Reply to Missing Parts/ Incomplete Application	Remarks	
☐ Reply to Missing Parts under 37 CFR 1.52 or 1.53		

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name	Merle W. Richman, Cust ID - 26338		
Signature	/mwresq/		
Printed name	Merle Richman		
Date	June 25, 2015	Reg. No.	38282

CERTIFICATE OF TRANSMISSION/MAILING

I hereby certify that this correspondence is being electronically transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below.

Signature	/mwresq/		
Typed or printed name	Merle Richman	Date	June 25, 2015

This collection of information is required by 37 CFR 1.5. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

In you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Electronic Acknowledgement Receipt

EFS ID:	22746317
Application Number:	14006930
International Application Number:	
Confirmation Number:	2283
Title of Invention:	ELECTRICALLY BASED MEDICAL TREATMENT DEVICE AND METHOD
First Named Inventor/Applicant Name:	Jong ju NA
Customer Number:	26338
Filer:	Merle W. Richman
Filer Authorized By:	
Attorney Docket Number:	NA002US
Receipt Date:	25-JUN-2015
Filing Date:	29-NOV-2013
Time Stamp:	18:11:09
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Response to Election / Restriction Filed	na002us-roa-2015-05-13.pdf	254812 247683c8efb3f3e26bd07d7308738d117d30bc18	no	9

Warnings:	
Information:	

2	Transmittal Letter	na002us-roa-2015-05-13-transmittal.pdf	209319 60ee9f0409eb6adb7f3b9915c611013f2f7d3f03	no	1

Warnings:	
Information:	
Total Files Size (in bytes):	464131

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/20GLBL (04-15)
Approved for use through 04/30/2018. OMB 0651-0058
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Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

REQUEST FOR PARTICIPATION IN THE GLOBAL/IP5 PATENT PROSECUTION HIGHWAY (PPH) PILOT PROGRAM IN THE USPTO

Application No.:	14/006,930	First Named Inventor:	Jongju Na
Filing Date:	9/23/2013	Attorney Docket No.:	NA002US
Title of the Invention:	SKIN TREATMENT APPARATUS AND METHOD		

THIS REQUEST FOR PARTICIPATION IN THE PPH PILOT PROGRAM ALONG WITH THE REQUIRED DOCUMENTS MUST BE SUBMITTED VIA EFS-WEB. INFORMATION REGARDING EFS-WEB IS AVAILABLE AT HTTP://WWW.USPTO.GOV/PATENTS-APPLICATION-PROCESS/FILING-ONLINE/ABOUT-EFS-WEB.

APPLICANT HEREBY REQUESTS PARTICIPATION IN THE PATENT PROSECUTION HIGHWAY (PPH) PILOT PROGRAM AND PETITIONS TO MAKE THE ABOVE-IDENTIFIED APPLICATION SPECIAL UNDER THE PPH PILOT PROGRAM.

Office of earlier examination (OEE): Russia (Russian Federal Service for Intellectual Property, Patent and Trademarks)

OEE application number: 1312053/26RU

Both the OEE application and the above-identified U.S. application have the following earliest date (filing or priority date): 2011-06-14

Type of OEE work product relied upon: Decision to grant a patent

Mailing date of OEE work product: 2015-04-27

Supporting Documents

One or more of the required documents below may be available electronically from the Dossier Access System or PATENTSCOPE (see https://www.jpo.go.jp/ppph-portal/filewrapper.htm). If the applicant requests the USPTO to attempt to obtain a document electronically and such attempt is unsuccessful, the applicant will be required to supply the document. Accordingly, to avoid dismissal of the initial PPH request and potential denial of participation in the PPH program, the applicant should verify that the document is actually available via the Dossier Access System or PATENTSCOPE before requesting retrieval. If the applicant is unable to verify availability, then the applicant should submit the document with the PPH request.

1. OEE Work Product and Translation

A copy of the OEE work product and translation if not already in English:

☐ Attached ☐ Previously submitted ☐ Not required because the decision to grant a patent was the first office action

☒ Applicant requests the USPTO to attempt to obtain the document(s) from the Dossier Access System or PATENTSCOPE

2. References Cited in OEE Work Product

A listing of references cited in the OEE work product and document copies (except U.S. patents and U.S. published patent applications):

☐ Attached ☐ Previously Submitted ☐ Not required because no references were cited in the OEE work product

☒ Applicant requests the USPTO to attempt to obtain the document(s) from the Dossier Access System or PATENTSCOPE

This collection of information is required by 35 U.S.C. 119, 37 CFR 1.55, and 37 CFR 1.102(d). The information is required to obtain or retain a benefit by the public, which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS.

REQUEST FOR PARTICIPATION IN THE GLOBAL/IP5 PPH PILOT PROGRAM IN THE USPTO
(continued)

Application No.:	14/006,930	First Named Inventor:	Jongju Na

3. Claims Correspondence Certification Statement

All of the claims in this application sufficiently correspond to the patentable/allowable claims in the OEE application.

4. Claims Correspondence Table

Claims in US Application	Patentable Claims in OEE Application	Explanation regarding the correspondence
17, 19, & 28	1	US claims combine to correspond to OEE claim
43, 44, 49	1	US method claims combine to correspond to OEE claim
20	3	US claim corresponds to OEE claim
45	3	US method claim corresponds to OEE claim
22	4	US claim corresponds to OEE claim
46	4	US method claim corresponds to OEE claim
54	4	US method claim corresponds to OEE claim
24	5	US claim corresponds to OEE claim
47	5	US method claim corresponds to OEE claim
26	6	US claim corresponds to OEE claim
48	6	US method claim corresponds to OEE claim
31	7	US claim corresponds to OEE claim
50	7	US method claim corresponds to OEE claim
34	8	US claim corresponds to OEE claim
51	8	US method claim corresponds to OEE claim
36	9	US claim corresponds to OEE claim
52	9	US method claim corresponds to OEE claim
37	10	US claim corresponds to OEE claim
53	10	US method claim corresponds to OEE claim
38	4 & 11	US claim corresponds to combined OEE claims

Signature /mwresq/	Date 06/25/2015
Name (Print/Typed) Merle W Richman	Registration Number 38282

ENDYMED EXHIBIT 1002 - 269/509

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Acknowledgement Receipt

EFS ID:	22747822
Application Number:	14006930
International Application Number:	
Confirmation Number:	2283
Title of Invention:	ELECTRICALLY BASED MEDICAL TREATMENT DEVICE AND METHOD
First Named Inventor/Applicant Name:	Jong ju NA
Customer Number:	26338
Filer:	Merle W. Richman
Filer Authorized By:	
Attorney Docket Number:	NA002US
Receipt Date:	25-JUN-2015
Filing Date:	29-NOV-2013
Time Stamp:	20:46:02
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Petition to make special under Patent Prosecution Hwy	na002us-pph-global.pdf	230900 b84e2364a9feb68c048825ee15cfe6354ff9e8ce	no	3

Warnings:	
Information:	

Total Files Size (in bytes):	230900

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
U.S. Patent and Trademark Office
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P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

26338 e 2015-06-29

MERLE W. RICHMAN, III
P.O. BOX 3333
LA JOLLA, CA 92038

Paper No.

Application No.:	**14/006,930**	**Date Mailed:**	**2015-06-29**
First Named Inventor:	Jong ju NA	Examiner:	EDWARDS, PHILIP CHARLES
Attorney Docket No.:	NA002US	Art Unit:	3762
Confirmation No.:	2283	Filing Date:	11/29/2013

Please find attached an Office communication concerning this application or proceeding.

Commissioner for Patents

PTO-90c (Rev.08-06)

Notice of Non-Compliant Amendment (37 CFR 1.121)	Application No. 14/006,930	Applicant(s) NA ET AL.
		Art Unit 2800

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

The amendment document filed on *25 June, 2015* is considered non-compliant because it has failed to meet the requirements of 37 CFR 1.121 or 1.4. In order for the amendment document to be compliant, correction of the following item(s) is required.

THE FOLLOWING MARKED (X) ITEM(S) CAUSE THE AMENDMENT DOCUMENT TO BE NON-COMPLIANT:

- ☐ 1. Amendments to the specification:
  - ☐ A. Amended paragraph(s) do not include markings.
  - ☐ B. New paragraph(s) should not be underlined.
  - ☐ C. Other _____.
- ☐ 2. Abstract:
  - ☐ A. Not presented on a separate sheet. 37 CFR 1.72.
  - ☐ B. Other _____.
- ☐ 3. Amendments to the drawings:
  - ☐ A. The drawings are not properly identified in the top margin as "Replacement Sheet," "New Sheet," or "Annotated Sheet" as required by 37 CFR 1.121(d).
  - ☐ B. The practice of submitting proposed drawing correction has been eliminated. Replacement drawings showing amended figures, without markings, in compliance with 37 CFR 1.84 are required.
  - ☐ C. Other _____.
- ☒ 4. Amendments to the claims:
  - ☒ A. A complete listing of all of the claims is not present.
  - ☐ B. The listing of claims does not include the text of all pending claims (including withdrawn claims)
  - ☐ C. Each claim has not been provided with the proper status identifier, and as such, the individual status of each claim cannot be identified. Note: the status of every claim must be indicated after its claim number by using one of the following status identifiers: (Original), (Currently amended), (Canceled), (Previously presented), (New), (Not entered), (Withdrawn) and (Withdrawn-currently amended).
  - ☐ D. The claims of this amendment paper have not been presented in ascending numerical order.
  - ☒ E. Other: *Cancel claims 1 - 16 is missing*.
- ☐ 5. Other (e.g., the amendment is unsigned or not signed in accordance with 37 CFR 1.4): For further explanation of the amendment format required by 37 CFR 1.121, see MPEP § 714.

TIME PERIODS FOR FILING A REPLY TO THIS NOTICE:

1. Applicant is given **no new time period if the non-compliant amendment is an** after-final amendment or an amendment filed after allowance, or a drawing submission (only) If applicant wishes to resubmit the non-compliant after-final amendment with corrections, the **entire corrected amendment** must be resubmitted.

2. Applicant is given **two months** from the mail date of this notice to supply the correction, if the non-compliant amendment is one of the following: a preliminary amendment, a non-final amendment (including a submission for a request for continued examination (RCE) under 37 CFR 1.114), a supplemental amendment filed within a suspension period under 37 CFR 1.103(a) or (c), and an amendment filed in response to a Quayle action. If any of above boxes 1 to 4 are checked, the correction required is only the corrected section of the non-compliant amendment in compliance with 37 CFR 1.121.

Extensions of time are available under 37 CFR 1.136(a) only if the non-compliant amendment is a non-final amendment or an amendment filed in response to a *Quayle* action.

Failure to timely respond to this notice will result in:

Abandonment of the application if the non-compliant amendment is a non-final amendment or an amendment filed in response to a *Quayle* action; or

Non-entry of the amendment if the non-compliant amendment is a preliminary amendment or supplemental amendment.

Legal Instruments Examiner (LIE), if applicable /RENEE HAWKINS/ Telephone No: (571)272-1581

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 14/006,930	Filing Date 11/29/2013	☐ To be Mailed

ENTITY: ☐ LARGE ☒ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

	(Column 1)	(Column 2)		
FOR	NUMBER FILED	NUMBER EXTRA	RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED – PART II

		(Column 1)		(Column 2)	(Column 3)		
AMENDMENT	06/25/2015	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 26	Minus	** 26	= 0	X $40 =	0
	Independent (37 CFR 1.16(h))	* 2	Minus	***3	= 0	X $210 =	0
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	0

		(Column 1)		(Column 2)	(Column 3)		
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

LIE
/RENEE HAWKINS/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**
If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

PTO/SB/06 (09-11)
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 14/006,930	Filing Date 11/29/2013	☐ To be Mailed

ENTITY: ☐ LARGE ☒ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT	06/29/2015	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 26	Minus	** 26	= 0	X $40 =	0
	Independent (37 CFR 1.16(h))	* 2	Minus	***3	= 0	X $210 =	0
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	0

AMENDMENT		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

LIE
/NICOLLE L. SCRIVNER/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Na, et al. Application No.: 14/006,930 Filed: 9/23/2013 Title: SKIN TREATMENT APPARATUS AND METHOD Attorney Docket No.: NA002US	Art Unit: 3762 Examiner: Phillip Charles Edwards

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

RESPONSE UNDER 37 CFR 1.111

Dear Sir:

In response to the Office Action of May 13, 2015 and notice of non-compliant Amendment dated June 29, 2015, please consider the following amendments and remarks.

In the Title:

~~Electrically Based Medical~~ Skin Treatment ~~Device~~ Apparatus and Method

Amendment to the Claims begins on page 2 of this paper

Remarks begin on page 9 of this paper.

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Cancelled).
2. (Cancelled).
3. (Cancelled).
4. (Cancelled).
5. (Cancelled).
6. (Cancelled).
7. (Cancelled).
8. (Cancelled).
9. (Cancelled).
10. (Cancelled).
11. (Cancelled).
12. (Cancelled).
13. (Cancelled).
14. (Cancelled).
15. (Cancelled).
16. (Cancelled).

17. (Currently Amended) A ~~medical~~ skin treatment apparatus, comprising:

a set ~~plurality~~ of bipolar ~~needles~~ electrodes~~; the needles not coupled to a body ground, separated by a distance, and having a length sufficient to reach a desired region of a human body when inserted into a human body~~; and

a signal generation module, the signal generation module electrically coupled to the ~~plurality~~ set of bipolar electrodes ~~needles~~ and providing ~~electrical energy~~ high frequency signals to the ~~plurality~~ set of bipolar electrodes ~~needles~~ to ~~form an independent, substantially non-intersecting energy field about two or more of the needle tips~~ that enable non-intersecting coagulation about each electrode of the bipolar set.

18. (Cancelled).

19. (Currently Amended) The ~~medical~~ skin treatment apparatus of claim 17, including a plurality of sets of bipolar electrodes and wherein ~~the signal generation module applies a first alternating current electrical energy signal with a first polarity to a first subset of needles and applies a second alternating current electrical energy signal with a second, opposite polarity to a second subset of needles~~ immediately adjacent electrodes of different sets of bipolar electrodes have opposite polarities.

20. (Currently Amended) The ~~medical~~ skin treatment apparatus of claim ~~19~~ 17, wherein ~~energy field formed about the two or more needle tips is substantially~~ the coagulation area about each electrode is oval in shape.

21. (Cancelled).

22. (Currently Amended) The ~~medical~~ skin treatment apparatus of claim 17, wherein the ~~medical treatment apparatus is a skin treatment apparatus and~~ each electrode of the ~~plurality~~ set of bipolar electrodes ~~needles~~ has a length sufficient to reach skin dermis ~~of a human body~~ when inserted into ~~the~~ skin ~~of a human body region~~.

23. (Cancelled).

24. (Currently Amended) The ~~medical~~ skin treatment apparatus of claim ~~19~~ 17, including a plurality of sets of bipolar electrodes ~~wherein the first subset and second subset of needles comprise the plurality of needles and the first subset of needles are evenly interspersed between the second subset of needles~~.

25. (Cancelled).

26. (Currently Amended) The ~~medical~~ skin treatment apparatus of claim ~~19~~ 17, wherein the ~~first and the second alternating current electrical signals have a~~ high frequency signals have a frequency from 0.5 to 10 Mhz.

27. (Cancelled).

28. (Currently Amended) The ~~medical~~ skin treatment apparatus of claim 17, wherein ~~each of the plurality of needles has a cross sectional shape of one of a square, rhombus, and rectangle~~ the electrodes are needles.

29. (Cancelled).

30. (Cancelled).

31. (Currently Amended) The ~~medical~~ skin treatment apparatus of claim ~~19~~ 17, wherein the signal generation module ~~applies a first alternating current electrical energy signal with a first polarity to a first subset of needles for 0.05 to 0.8 seconds and applies a second alternating current electrical energy signal with a second, opposite polarity to a second subset of needles~~ provides high frequency signals to the set of bipolar electrodes for 0.05 to 0.8 seconds.

32. (Cancelled).

33. (Cancelled).

34. (Currently Amended) The ~~medical~~ skin treatment apparatus of claim 17, wherein ~~the needles have a length from 0.1mm to 5.0mm and a~~ the electrodes of the set of bipolar electrodes are ~~separation~~ separated by a distance of ~~between adjacent needles from about 1.0~~ 1.3mm to 3.0mm.

35. (Cancelled).

36. (Currently Amended) The ~~medical~~ skin treatment apparatus of claim 17, wherein each electrode of the set of bipolar electrodes ~~of the plurality of needles~~ has a ~~cross-sectional~~ diameter ~~of about~~ from 0.25mm to 0.30mm.

37. (Currently Amended) The ~~medical~~ skin treatment apparatus of claim 17, wherein each electrode of the set of bipolar electrodes ~~of the plurality of needles~~ is ~~substantially~~ non-insulated.

38. (Currently Amended) The ~~medical~~ skin treatment apparatus of claim 17, wherein a section of each electrode of the set of bipolar electrodes configured to be in skin dermis is ~~each of the plurality of needles includes an insulated section and~~ non-insulated ~~section~~.

39. (Currently Amended) The ~~medical~~ skin treatment apparatus of claim ~~38~~ 17, wherein each electrode of the set of bipolar electrodes is ~~the insulated section is longer than the non-~~ insulated ~~section along the needle length~~ except at its tip.

40. (Cancelled).

41. (Cancelled).

42. (Cancelled).

43. (Newly Added) A method of treating skin, comprising:

placing a set of bipolar electrodes on skin to be treated; and

employing a signal generation module electrically coupled to the set of bipolar electrodes to provide high frequency signals to the set of bipolar electrodes to enable non-intersecting coagulation about each electrode of the bipolar set.

44. (Newly Added) The method of treating skin of claim 43, including a plurality of sets of bipolar electrodes and wherein immediately adjacent electrodes of different sets of bipolar

electrodes have opposite polarities.

45. (Newly Added) The method of treating skin of claim 43, wherein the coagulation area about each electrode is oval in shape.

46. (Newly Added) The method of treating skin of claim 43, wherein each electrode of the set of bipolar electrodes has a length sufficient to reach skin dermis when inserted into skin.

47. (Newly Added) The method of treating skin of claim 43, including placing a plurality of sets of bipolar electrodes on skin to be treated.

48. (Newly Added) The method of treating skin of claim 43, employing the signal generation module to provide a high frequency signal have a frequency from 0.5 to 10 Mhz.

49. (Newly Added) The method of treating skin of claim 43, wherein the electrodes are needles.

50. (Newly Added) The method of treating skin of claim 43, employing the signal generation module to provide high frequency signals to the set of bipolar electrodes for 0.05 to 0.8 seconds.

51. (Newly Added) The method of treating skin of claim 43, wherein the electrodes of the set of bipolar electrodes are separated by a distance of 1.3mm to 3.0mm.

52. (Newly Added) The method of treating skin of claim 43, wherein each electrode of the set

of bipolar electrodes from 0.25mm to 0.30mm.

53. (Newly Added) The method of treating skin of claim 43, wherein each electrode of the set of bipolar electrodes is non-insulated.

54. (Newly Added) The method of treating skin of claim 43, including placing a section of each electrode of the set of bipolar electrodes in skin dermis.

55. (Newly Added) The method of treating skin of claim 43, wherein each electrode of the set of bipolar electrodes is insulated except at its tip.

REMARKS

Status of the claims

- Claims in issue before this Amendment: 17-42
- List of claims amended: 17, 19, 20, 22, 24, 26, 28, 31, 34, and 36-39
- List of claims canceled: 18, 21, 23, 25, 27, 29, 30, 32, 33, 35, and 40-42
- List of claims added: 43-55
- Claims in issue as of this Amendment: 17, 19, 20, 22, 24, 26, 28, 31, 34, 36-39, and 43-55
- No new matter has been added.

Restriction Requirement

The Examiner has issued a restriction requirement stating the invention includes three species:

A. Directed to Claims 17, 18, 23, and 42;

B. Directed to Claims 17, 19-21, 24-27, 29-33, and 41; and

C. Directed to Claims 17, 22, 28, and 34-40.

Applicants hereby elect species C without traverse. Claims 17, 22, 28, and 34-40 were directed to a skin treatment apparatus. Applicants have amended claims 17, 19, 20, 22, 24, 26, 28, 31, 34, and 36-39, cancelled claims 18, 21, 23, 25, 27, 29, 30, 32, 33, 35, and 40-42, and added claims 43-55 to read on species C. Entry is respectfully requested.

The undersigned Attorney respectfully requests that the Examiner contact him with any questions or issues with this response.

Respectfully Submitted,

7/7/2015 _/mwresq/_____
Date Merle Richman
Attorney/Agent for Applicant(s)
Reg. No. 38282

Merle Richman
Patent Attorney
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Tel. 858 320-2030

Doc Code: TRAN.LET
Document Description: Transmittal Letter

PTO/SB/21 (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
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TRANSMITTAL FORM *(to be used for all correspondence after initial filing)*			
		Application Number	14/006,930
		Filing Date	Sep 23, 2013
		First Named Inventor	Na, Jongju
		Art Unit	3762
		Examiner Name	Phillip Charles Edwards
Total Number of Pages in This Submission	10	Attorney Docket Number	NA002US

ENCLOSURES *(Check all that apply)*

- [ ] Fee Transmittal Form
- [ ] Fee Attached
- [X] Amendment / Reply (10 pages)
- [ ] After Final
- [ ] Affidavits/declaration(s)
- [ ] Extension of Time Request
- [ ] Express Abandonment Request
- [ ] Information Disclosure Statement
- [ ] Certified Copy of Priority Document(s)
- [ ] Reply to Missing Parts/ Incomplete Application
- [ ] Reply to Missing Parts under 37 CFR 1.52 or 1.53
- [ ] Drawing(s)
- [ ] Licensing-related Papers
- [ ] Petition
- [ ] Petition to Convert to a Provisional Application
- [ ] Power of Attorney, Revocation Change of Correspondence Address
- [ ] Terminal Disclaimer
- [ ] Request for Refund
- [ ] CD, Number of CD(s) _____
- [ ] Landscape Table on CD
- [ ] After Allowance Communication to TC
- [ ] Appeal Communication to Board of Appeals and Interferences
- [ ] Appeal Communication to TC **(Appeal Notice, Brief, Reply Brief)**
- [ ] Proprietary Information
- [ ] Status Letter
- [ ] Other Enclosure(s) (please identify below):

Remarks: Response to Notice of Non-Compliant Amendment dated 6-29-2015

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name	Merle W. Richman, Cust ID - 26338		
Signature	/mwresq/		
Printed name	Merle Richman		
Date	July 7, 2015	Reg. No.	38282

CERTIFICATE OF TRANSMISSION/MAILING

I hereby certify that this correspondence is being electronically transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below.

Signature	/mwresq/		
Typed or printed name	Merle Richman	Date	July 7, 2015

This collection of information is required by 37 CFR 1.5. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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Electronic Acknowledgement Receipt

EFS ID:	22845675
Application Number:	14006930
International Application Number:	
Confirmation Number:	2283
Title of Invention:	ELECTRICALLY BASED MEDICAL TREATMENT DEVICE AND METHOD
First Named Inventor/Applicant Name:	Jong ju NA
Customer Number:	26338
Filer:	Merle W. Richman
Filer Authorized By:	
Attorney Docket Number:	NA002US
Receipt Date:	07-JUL-2015
Filing Date:	29-NOV-2013
Time Stamp:	15:26:07
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Response to Election / Restriction Filed	na002us-rnca-2015-06-29.pdf	255644 e28135ba2b38c1ee57f1f10fee146b6d43f43ea6	no	10

Warnings:	
Information:	

2	Transmittal Letter	na002us-rnca-2015-06-29-transmittal.pdf	209463 21dd6b444a1b81f32dc85a02db1703a9bdb746fb	no	1

Warnings:	
Information:	
Total Files Size (in bytes):	465107

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/006,930	11/29/2013	Jong ju NA	NA002US	2283

26338 7590 08/04/2015

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EXAMINER
EDWARDS, PHILIP CHARLES

ART UNIT	PAPER NUMBER
3762	

MAIL DATE	DELIVERY MODE
08/04/2015	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 14/006,930	Applicant(s) NA ET AL.	
	Examiner PHILIP EDWARDS	Art Unit 3762	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *7/7/2015*.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5)☒ Claim(s) *17,19,20,22,24,26,28,31,34,36-39 and 43-55* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *17,19,20,22,24,26,28,31,34,36-39 and 43-55* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☒ The drawing(s) filed on *9/23/2013* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☒ All b)☐ Some** c)☐ None of the:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

DETAILED ACTION

The present application is being examined under the pre-AIA first to invent provisions.

Election/Restrictions

Applicant's election without traverse of Species C, claims 17, 22, 28, and 34-40 in the reply filed on 7/7/2015 is acknowledged.

Claim Objections

Claim 52 is objected to because of the following informalities: Claim 52 appears to be missing the phrase "has a diameter" per claim 36. Appropriate correction is required.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112(a):

> (a) IN GENERAL.—The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor or joint inventor of carrying out the invention.

The following is a quotation of the first paragraph of pre-AIA 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 17 and 43 are rejected under 35 U.S.C. 112(a) or 35 U.S.C. 112 (pre-AIA), first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. In particular, it is not clear how bipolar electrodes can be used with non-intersecting coagulation or non-intersecting energy fields. The energy flow path must be connected between the bipolar electrodes. The applicant's specification does not describe how energy can flow through the tissue without causing coagulation.

3. Claims 17 and 43 are rejected under 35 U.S.C. 112(a) or 35 U.S.C. 112 (pre-AIA), first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor or a joint inventor, or for pre-AIA the inventor(s), at the time the application was filed, had possession of the claimed invention. Along the same lines, the applicant's specification appears not to disclose the use of bipolar electrodes in conjunction with non-intersecting coagulation or non-intersecting energy fields. The bipolar electrodes are disclosed in [0029] and [0030] in reference to figures 3 and 4. The non-intersecting coagulation is detailed in figures 5 and 9B. [0042] first discloses bipolar electrodes, then refers to figure 2. However, it is not clear the 2 are used in conjunction. If they are used together, there is no description of how this is achieved.

Claim Rejections - 35 USC § 102

4. In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the statutory basis for the rejection will not be considered a new ground of rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.

5. The following is a quotation of the appropriate paragraphs of pre-AIA 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 17, 19, 20, 22, 24, 28, 31, 34, 36-39, 43-47, and 49-55 are rejected under pre-AIA 35 U.S.C. 102(b) as being anticipated by Manstein (Pub. No.: US 2005/0222565 A1).

7. Regarding claims 17 and 43, Manstein discloses a set of bipolar electrodes (e.g. see elements 410 and 415); a signal generation module (e.g. see elements 320 and 330), the signal generation module electrically coupled to the set of bipolar electrodes and providing high frequency signals (e.g. see [0039]) to the set of bipolar electrodes to enable non-intersecting coagulation about each electrode of the bipolar set (e.g. see element 370).

8. Regarding claims 19 and 44, Manstein discloses a plurality of sets of bipolar electrodes and wherein immediately adjacent electrodes of different sets of bipolar electrodes have opposite polarities (e.g. see [0077]).

9. Regarding claims 20 and 45, Manstein discloses the coagulation area about each electrode is oval in shape (e.g. see element 425).

10. Regarding claims 22 and 46, Manstein discloses each electrode of the set of bipolar electrodes has a length sufficient to reach skin dermis when inserted into skin (e.g. see [0016], [0030], [0043], [0051], [0052]).

11. Regarding claims 24 and 47, Manstein discloses placing a plurality of sets of bipolar electrodes on skin to be treated (e.g. see [0077]).

12. Regarding claims 28 and 49, Manstein discloses the electrodes are needles (e.g. see elements 350, 410, and 415).

13. Regarding claims 31 and 50, Manstein discloses employing the signal generation module to provide high frequency signals to the set of bipolar electrodes for 0.05 to 0.8 seconds (e.g. see [0032]).

14. Regarding claims 34 and 51, Manstein discloses the electrodes of the set of bipolar electrodes are separated by a distance of 1.3 mm to 3.0 mm (e.g. see [0044]).

15. Regarding claims 36 and 52, Manstein discloses each electrode of the set of bipolar electrodes has a diameter from 0.25 mm to 0.30 mm (e.g. see [0043]).

16. Regarding claims 37 and 53, Manstein discloses each electrode of the set of bipolar electrodes is non-insulated (e.g. see elements 410 and 415, tip portion).

17. Regarding claims 38 and 54, Manstein discloses placing a section of each electrode of the set of bipolar electrodes in skin dermis (e.g. see [0016], [0030], [0043], [0051], [0052]).

18. Regarding claims 39 and 55, Manstein discloses each electrode of the set of bipolar electrodes is insulated except at its tip (e.g. see element 420).

Claim Rejections - 35 USC § 103

19. The following is a quotation of pre-AIA 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

20. Claims 26 and 48 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Manstein in view of Yamada (Patent Number: 5,546,954).

21. Regarding claims 26 and 48, Manstein discloses the claimed invention (e.g. see [0039]) except for employing the signal generation module to provide a high frequency signal have a frequency from 0.5 to 10 Mhz. Yamada teaches that it is known to use such a frequency range as set forth in column 4 lines 16-28 to provide more robust stimulation. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system/method as taught by Manstein, with such

a frequency range as taught by Yamada, since such a modification would provide the predictable results of more robust stimulation.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PHILIP EDWARDS whose telephone number is (571)270-1804. The examiner can normally be reached on Monday thru Friday, 9:00 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christopher D. Koharski can be reached on 571-272-7230. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/PHILIP EDWARDS/ /Amanda Patton/

Examiner, Art Unit 3762 Primary Examiner, Art Unit 3762

Notice of References Cited	Application/Control No. 14/006,930	Applicant(s)/Patent Under Reexamination NA ET AL.	
	Examiner PHILIP EDWARDS	Art Unit 3762	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-5,546,954 A	08-1996	Yamada, Mamoru	600/548
*	B	US-2005/0222565 A1	10-2005	Manstein, Dieter	606/041
	C	US-			
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

UNITED STATES PATENT AND TRADEMARK OFFICE

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BIB DATA SHEET

CONFIRMATION NO. 2283

SERIAL NUMBER	FILING or 371(c) DATE RULE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
14/006,930	11/29/2013	607	3762	NA002US

APPLICANTS

INVENTORS

Jong ju NA, Songpa-Gu, KOREA, REPUBLIC OF;
Jeong Gu Gwak, Songpa-Gu, KOREA, REPUBLIC OF;

**** CONTINUING DATA ***************************

This application is a 371 of PCT/KR2012/004695 06/14/2012

**** FOREIGN APPLICATIONS ***************************

REPUBLIC OF KOREA 10-2011-0557691 06/14/2011
REPUBLIC OF KOREA 10-2011-0057692 06/14/2011

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED **** ** SMALL ENTITY **

11/30/2013

Foreign Priority claimed	☑ Yes ☐ No	☐ Met after Allowance	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
35 USC 119(a-d) conditions met	☑ Yes ☐ No		KOREA, REPUBLIC OF	7	26	1
Verified and Acknowledged	/PHILIP CHARLES EDWARDS/ Examiner's Signature	Initials				

ADDRESS

MERLE W. RICHMAN, III
P.O. BOX 3333
LA JOLLA, CA 92038
UNITED STATES

TITLE

ELECTRICALLY BASED MEDICAL TREATMENT DEVICE AND METHOD

FILING FEE RECEIVED		
980	FEES: Authority has been given in Paper No._____ to charge/credit DEPOSIT ACCOUNT No._____ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L5	1221	607/115-134.ccls. and needle with electrode	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2015/07/24 10:04
L6	80	607/115-134.ccls. and needle with electrode and frequency with Mhz	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2015/07/24 10:04
L7	21	607/115-134.ccls. and needle with electrode same skin and frequency with Mhz	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2015/07/24 10:05
L8	4	"5546954".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2015/07/24 10:06
L9	5330	607/116.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2015/07/24 10:41
L10	2654	9 AND ((A61N1/05 OR A61N1/0534 OR A61N1/0551).CPC.)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2015/07/24 10:43
L11	90	((Jong) near2 (NA)).INV.	US-PGPUB; USPAT	ADJ	ON	2015/07/24 10:44
L12	1	(("Jeong Gu") near2 (Gwak)).INV.	US-PGPUB; USPAT	ADJ	ON	2015/07/24 10:44
S1	1	"14006930"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2015/07/22 12:43
S2	13	"2011046615"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2015/07/22 13:04
S3	5	"20110046615"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2015/07/22 13:06
S4	2	"20080281389"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2015/07/22 13:07
S5	2	"20060293725"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2015/07/22 13:08

ENDYMED EXHIBIT 1002 - 301/509

S6	7	"20100055292"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2015/07/22 13:09
S7	6	"11098030"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2015/07/23 14:11
S8	3	"20050222565"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2015/07/23 14:17

EAST Search History (Interference)

< This search history is empty>

7/24/2015 10:48:49 AM
C:\Users\pedwards2\Documents\EAST\Workspaces\14,006,930.wsp

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14006930	NA ET AL.
	Examiner	Art Unit
	PHILIP EDWARDS	3762

CPC- SEARCHED		
Symbol	Date	Examiner
A61N1/05 OR A61N1/0534 OR A61N1/0551	7/24/2015	PCE

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
607	116	7/24/2015	PCE

SEARCH NOTES		
Search Notes	Date	Examiner
Inventor Search	7/24/2015	PCE
see attached EAST search history	7/24/2015	PCE

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

/PHILIP EDWARDS/ Examiner.Art Unit 3762	

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INTERNATIONAL PATENT LEGAL ADM.

MERLE W. RICHMAN, III
P.O. BOX 3333
LA JOLLA CA 92038

In re Application of
NA, JONG HYUN, et al.
Application No.: 14/006930
Earliest Filing Date: 23 September 2013
Attorney Docket No.: NA002US
For: ELECTRICALLY BASED MEDICAL TREATMENT DEVICE AND METHOD

: DECISION ON REQUEST TO
: PARTICIPATE IN THE PATENT
: PROSECUTION HIGHWAY
: PROGRAM AND PETITION
: TO MAKE SPECIAL UNDER
: 37 CFR 1.102(a)

This is a decision on the request to participate in the Patent Prosecution Highway (PPH) program and the petition under 37 CFR 1.102(a), filed 25 June 2015, to make the above-identified application special.

The request and petition are **DENIED**.

Examination of the above-identified U.S. application has begun and therefore the request from applicant to participate in the PPH program is denied. A Non Final Rejection Office Action was mailed 04 August 2015 in the above-identified application.

Telephone inquiries concerning this decision should be directed to Dale Hall at (571) 272-3586.

All other inquiries concerning the examination or status of the application is accessible in the PAIR system at http://www.uspto.gov/ebc/index.html.

John Cottingham
Acting Director
Office of Petitions

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/006,930	11/29/2013	Jong ju NA	NA002US	2283

26338 7590 10/15/2015

MERLE W. RICHMAN, III
P.O. BOX 3333
LA JOLLA, CA 92038

EXAMINER
EDWARDS, PHILIP CHARLES

ART UNIT	PAPER NUMBER
3762	

MAIL DATE	DELIVERY MODE
10/15/2015	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Applicant-Initiated Interview Summary	Application No.	Applicant(s)	
	14/006,930	NA ET AL.	
	Examiner	Art Unit	
	PHILIP EDWARDS	3762	

All participants (applicant, applicant's representative, PTO personnel):

(1) *PHILIP EDWARDS*. (3)_____.

(2) *Merle Richman*. (4)_____.

Date of Interview: *09 October 2015*.

Type: ☒ Telephonic ☐ Video Conference
☐ Personal [copy given to: ☐ applicant ☐ applicant's representative]

Exhibit shown or demonstration conducted: ☐ Yes ☒ No.
If Yes, brief description: _____.

Issues Discussed ☐101 ☒112 ☒102 ☐103 ☐Others
(For each of the checked box(es) above, please describe below the issue and detailed description of the discussion)

Claim(s) discussed: *17*.

Identification of prior art discussed: *Manstein*.

Substance of Interview
(For each issue discussed, provide a detailed description and indicate if agreement was reached. Some topics may include: identification or clarification of a reference or a portion thereof, claim interpretation, proposed amendments, arguments of any applied references etc...)

Proposed claim amendments were discussed. Topics discussed included claiming ranges, AC signal, and subject matter from claim 6 involving electrodes switching polarity.

Applicant recordation instructions: The formal written reply to the last Office action must include the substance of the interview. (See MPEP section 713.04). If a reply to the last Office action has already been filed, applicant is given a non-extendable period of the longer of one month or thirty days from this interview date, or the mailing date of this interview summary form, whichever is later, to file a statement of the substance of the interview

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

☐ Attachment

/PHILIP EDWARDS/ Examiner, Art Unit 3762	

Summary of Record of Interview Requirements

Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record
A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews
Paragraph (b)

In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

37 CFR §1.2 Business to be transacted in writing.
All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiners Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:
- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case. It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

A complete and proper recordation of the substance of any interview should include at least the following applicable items:
1) A brief description of the nature of any exhibit shown or any demonstration conducted,
2) an identification of the claims discussed,
3) an identification of the specific prior art discussed,
4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
5) a brief identification of the general thrust of the principal arguments presented to the examiner,
   (The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
6) a general indication of any other pertinent matters discussed, and
7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

Examiner to Check for Accuracy

If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiner's version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, "Interview Record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Na, et al. Application No.: 14/006,930 Filed: 9/23/2013 Title: SKIN TREATMENT APPARATUS AND METHOD Attorney Docket No.: NA002US	Art Unit: 3762 Examiner: Phillip Charles Edwards

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

RESPONSE UNDER 37 CFR 1.111

Dear Sir:

In response to the Office Action of August 8, 2015, please consider the following amendments and remarks.

Amendment to the Claims begins on page 2 of this paper

Remarks begin on page 8 of this paper.

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

17. (Currently Amended) A skin treatment apparatus that enables non-intersecting coagulation of skin dermis about electrodes, comprising:

~~a set~~ at least three ~~of bipolar~~ electrodes configured to be insertable into skin to be treated; and

a signal generation module, the signal generation module electrically coupled to the at least three ~~set of bipolar~~ electrodes and providing a high frequency Alternating Current (AC) ~~signals~~ signal for a predetermined time interval to the at least three ~~set of bipolar~~ electrodes to form bipolar pairs between electrodes of the at least three electrodes ~~to that enable non-intersecting coagulation about each electrode of the bipolar set~~.

18. (cancelled).

19. (Currently Amended) The skin treatment apparatus of claim 17, including ~~a plurality of sets of bipolar~~ an odd number of electrodes ~~and wherein immediately adjacent electrodes of different sets of bipolar electrodes have opposite polarities~~.

20. (Currently Amended) The skin treatment apparatus of claim 17, wherein the predetermined time interval is from 0.05 to 0.8 seconds ~~the coagulation area about each electrode is oval in shape~~.

21. (Cancelled).

22. (Currently Amended) The skin treatment apparatus of claim 17, wherein ~~the~~ each electrode of the at least three ~~set of bipolar~~ electrodes has a length sufficient to reach skin dermis when inserted into skin and the predetermined time interval is from 0.05 to 0.8 seconds.

23. (Cancelled).

24. (Currently Amended) The skin treatment apparatus of claim ~~17~~22, wherein the signal generation module provides a high frequency Alternating Current (AC) signal to the at least three electrodes to form bipolar pairs between each adjacent electrode set of the at least three electrodes ~~including a plurality of sets of bipolar electrodes~~.

25. (Cancelled).

26. (Currently Amended) The skin treatment apparatus of claim 17, wherein the high frequency AC ~~signals~~ signal ~~have~~ has a frequency ~~from 0.5 to 10~~ about 2.0 Mhz and the non-intersecting coagulation of skin dermis about the electrodes is oval shaped.

27. (Cancelled).

28. (Currently Amended) The skin treatment apparatus of claim 17, wherein the electrodes are needles and have a diameter from 0.25mm to 0.30mm.

29. (Cancelled).

30. (Cancelled).

31. (Currently Amended) The skin treatment apparatus of claim ~~17~~19, wherein the ~~signal generation module provides high frequency signals to the set of bipolar electrodes for~~ predetermined time interval is from 0.05 to 0.8 seconds and the high frequency AC signal has a frequency of about 2.0MHz.

32. (Cancelled).

33. (Cancelled).

34. (Previously Presented) The skin treatment apparatus of claim 17, wherein ~~the~~ adjacent electrodes of the at least three ~~set of bipolar~~ electrodes are separated by a distance of 1.3mm to 3.0mm.

35. (Cancelled).

36. (Currently Amended) The skin treatment apparatus of claim ~~17~~28, wherein the needles have a length from 1mm to 4mm ~~each electrode of the set of bipolar electrodes has a diameter from 0.25mm to 0.30mm~~.

37. (Currently Amended) The skin treatment apparatus of claim 17, wherein ~~each electrode of~~ the at least three ~~set of bipolar~~ electrodes ~~is~~ are non-insulated.

38. (Currently Amended) The skin treatment apparatus of claim ~~17~~22, wherein a section of each electrode of the at least three ~~set of bipolar~~ electrodes ~~configured to be in skin dermis~~ is non-insulated.

39. (Currently Amended) The skin treatment apparatus of claim 17, wherein each electrode of the at least three ~~set of bipolar~~ electrodes is insulated except at its tip.

40. (Cancelled).

41. (Cancelled).

42. (Cancelled).

43. (Currently Amended) A method of treating skin, comprising:

~~placing~~ inserting at least three ~~a set of bipolar~~ electrodes into ~~on~~ a section of skin to be treated; and

~~employing a signal generation module electrically coupled to the set of bipolar electrodes to provide~~ applying a high frequency Alternating Current (AC) ~~signals~~ signal to the at least three electrodes to form bipolar pairs between electrodes of the at least three electrodes for a predetermined time interval to form non-intersecting coagulation of skin sections about each electrode that form bipolar electrode pairs ~~set of bipolar electrodes to the set of bipolar electrodes to enable non-intersecting coagulation about each electrode of the bipolar set~~.

44. (Currently Amended) The method of treating skin of claim 43, including inserting ~~a plurality of sets of bipolar~~ an odd number greater than one of electrodes into a section of skin to be treated ~~and wherein immediately adjacent electrodes of different sets of bipolar electrodes have opposite polarities~~.

45. (Currently Amended) The method of treating skin of claim 43, wherein the predetermined time interval is from 0.05 to 0.8 seconds ~~the coagulation area about each electrode is oval in shape~~.

46. (Currently Amended) The method of treating skin of claim 43, wherein the skin segment to be treated is skin dermis and each electrode of the at least three ~~set of bipolar~~ electrodes has a length sufficient to reach skin dermis when inserted into skin and the predetermined time interval is from 0.05 to 0.8 seconds.

47. (Currently Amended) The method of treating skin of claim ~~43~~ 46, ~~including placing a plurality of sets of bipolar electrodes on skin to be treated~~ providing a high frequency Alternating Current (AC) signal to the at least three electrodes to form bipolar pairs between each adjacent electrode set of the at least three electrodes.

48. (Currently Amended) The method of treating skin of claim 43, ~~employing the signal generation module to provide a~~ wherein the high frequency AC signal ~~have~~ has a frequency ~~from 0.5 to 10~~ about 2.0 Mhz and the coagulation of skin dermis about each electrode is oval shaped.

49. (Currently Amended) The method of treating skin of claim 43, wherein the electrodes are needles and have a diameter from 0.25mm to 0.30mm.

50. (Currently Amended) The method of treating skin of claim 43, wherein the high frequency signals have a frequency from 0.5 to 10Mhz and the predetermined time interval is from 0.05 to 0.8 seconds ~~employing the signal generation module to provide high frequency signals to the set of bipolar electrodes for 0.05 to 0.8 seconds~~.

51. (Currently Amended) The method of treating skin of claim 43, wherein ~~the~~ adjacent electrodes of the at least three ~~set of bipolar~~ electrodes are separated by a distance of 1.3mm to 3.0mm.

52. (Currently Amended) The method of treating skin of claim ~~43~~ 49, wherein ~~each~~ the ~~electrode~~ needles have a length from 1mm to 4mm ~~of the set of bipolar electrodes has a from 0.25mm to 0.30mm~~.

53. (Currently Amended) The method of treating skin of claim 43, wherein the at least three electrodes are ~~each electrode of the set of bipolar electrodes is~~ non-insulated.

54. (Currently Amended) The method of treating skin of claim 43, ~~including placing~~ wherein a section of each electrode of the at least three ~~set of bipolar~~ electrodes ~~in skin dermis~~ is non-insulated.

55. (Currently Amended) The method of treating skin of claim 43, wherein each electrode of the at least three ~~set of bipolar~~ electrodes is insulated except at its tip.

REMARKS

Status of the claims

- Claims in issue before this Amendment: 17, 19, 20, 22, 24, 26, 28, 31, 34, 36-39, and 43-55
- List of claims amended: 17, 19, 20, 22, 24, 26, 28, 31, 34, 36-39, and 43-55
- List of claims canceled: *None*
- List of claims added: *None*
- Claims in issue as of this Amendment: 17, 19, 20, 22, 24, 26, 28, 31, 34, 36-39, and 43-55
- No new matter has been added.

A telephonic interview was conducted with the Examiner and the undersigned Attorney on October 9, 2015. The prior art references were discussed in view of proposed claims and a non-final Office Action dated August 4, 2015. The undersigned Attorney thanks the Examiner for his time and consideration during the telephonic interview.

Non-Prior Claim Objections and Rejections

Claim 52 was objected to and claims 17 and 43 were rejected under 35 USC 112(a). As amended, claims 17, 43, and 52 respectfully do not include the noted issues. Reconsideration is respectfully requested.

Prior Art Rejections

The previously pending claims were rejected as anticipated or obvious in view of US Publication 20050222565 to Manstein and US Patent 5,546,954 to Yamada. Reconsideration is respectfully requested in view of the following remarks and claim amendments. As discussed during the telephonic interview, the Manstein reference only teaches creating intersecting tissue damage via

bipolar electrodes. Further, the Manstein reference does not teach applying a high frequency Alternating Current signal to bipolar electrodes. The Manstein reference also does not teach applying a high frequency signal to 3 or more electrodes, the electrodes configured to be inserted or inserted into skin to form bipolar pairs between the 3 or more electrodes.

The Manstein reference is also silent on the actual frequency of the mentioned RF signals. As noted, Manstein shows and teaches creating non-intersecting tissue damage via monopolar configurations only. Reconsideration is respectfully requested in view of the amendments to independent claims 17 and 43. The dependent claims include other limitations not taught by Manstein, Yamada, or a combination of both references.

The undersigned Attorney thanks the Examiner again for his time and consideration during the telephonic interview and respectfully requests the Examiner contact the undersigned Attorney if any issues remain with the amended claims.

Respectfully Submitted,

10/18/2015 _/mwresq/_____
Date Merle Richman
Attorney/Agent for Applicant(s)
Reg. No. 38282

Merle Richman
Patent Attorney
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Doc Code: TRAN.LET
Document Description: Transmittal Letter

PTO/SB/21 (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
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TRANSMITTAL FORM *(to be used for all correspondence after initial filing)*		Application Number	14/006,930
		Filing Date	Sep 23, 2013
		First Named Inventor	Na, Jongju
		Art Unit	3762
		Examiner Name	Phillip Charles Edwards
Total Number of Pages in This Submission		Attorney Docket Number	NA002US

ENCLOSURES *(Check all that apply)*

☐ Fee Transmittal Form	☐ Drawing(s)	☐ After Allowance Communication to TC
☐ Fee Attached	☐ Licensing-related Papers	☐ Appeal Communication to Board of Appeals and Interferences
☒ Amendment / Reply – 9 pages	☐ Petition	☐ Appeal Communication to TC **(Appeal Notice, Brief, Reply Brief)**
☐ After Final	☐ Petition to Convert to a Provisional Application	☐ Proprietary Information
☐ Affidavits/declaration(s)	☐ Power of Attorney, Revocation Change of Correspondence Address	☐ Status Letter
☐ Extension of Time Request	☐ Terminal Disclaimer	☐ Other Enclosure(s) (please identify below):
☐ Express Abandonment Request	☐ Request for Refund	
☐ Information Disclosure Statement	☐ CD, Number of CD(s) _____	
	☐ Landscape Table on CD	
☐ Certified Copy of Priority Document(s)		
☐ Reply to Missing Parts/ Incomplete Application	Remarks	
☐ Reply to Missing Parts under 37 CFR 1.52 or 1.53		

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name	Merle W. Richman, Cust ID - 26338		
Signature	/mwresq/		
Printed name	Merle Richman		
Date	October 18, 2015	Reg. No.	38282

CERTIFICATE OF TRANSMISSION/MAILING

I hereby certify that this correspondence is being electronically transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below.

Signature	/mwresq/.		
Typed or printed name	Merle Richman	Date	October 18, 2015

This collection of information is required by 37 CFR 1.5. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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Electronic Acknowledgement Receipt

EFS ID:	23815765
Application Number:	14006930
International Application Number:	
Confirmation Number:	2283
Title of Invention:	ELECTRICALLY BASED MEDICAL TREATMENT DEVICE AND METHOD
First Named Inventor/Applicant Name:	Jong ju NA
Customer Number:	26338
Filer:	Merle W. Richman
Filer Authorized By:	
Attorney Docket Number:	NA002US
Receipt Date:	18-OCT-2015
Filing Date:	29-NOV-2013
Time Stamp:	22:59:44
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Amendment/Req. Reconsideration-After Non-Final Reject	na002us-roa-2015-08-04-filed.pdf	389371 3fa6795fcfea60d54d861a382e4691436487 7edf	no	9

Warnings:	
Information:	

2	Transmittal Letter	na002us-transmital.pdf	348539 65ab4f52f3d3deaf45ef38c7bb2b2938d3bf47ec	no	1

Warnings:	
Information:	
Total Files Size (in bytes):	737910

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 14/006,930	Filing Date 11/29/2013	☐ To be Mailed

ENTITY: ☐ LARGE ☒ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT **10/18/2015**

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	* 26	Minus	** 26	= 0	X $40 =	0
Independent (37 CFR 1.16(h))	* 2	Minus	***3	= 0	X $210 =	0
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	0

AMENDMENT

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =	
Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =	
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

LIE
/GLORIA ANTHONY/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/006,930	11/29/2013	Jong ju NA	NA002US	2283

26338 7590 01/22/2016

MERLE W. RICHMAN, III
P.O. BOX 3333
LA JOLLA, CA 92038

EXAMINER
EDWARDS, PHILIP CHARLES

ART UNIT	PAPER NUMBER
3762	

MAIL DATE	DELIVERY MODE
01/22/2016	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 14/006,930	Applicant(s) NA ET AL.	
	Examiner PHILIP C. EDWARDS	Art Unit 3762	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10/18/2015*.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5)☒ Claim(s) *17,19,20,22,24,26,28,31,34,36-39 and 43-55* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *17,19,20,22,24,26,28,31,34,36-39 and 43-55* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☒ The drawing(s) filed on *9/23/2013* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☒ All b)☐ Some** c)☐ None of the:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

DETAILED ACTION

The present application is being examined under the pre-AIA first to invent provisions.

Response to Arguments

Applicant's arguments filed 10/18/2015 have been considered but are moot in view of the new ground(s) of rejection as necessitated by the applicant's claim amendments.

Claim Rejections - 35 USC § 102

1. In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the statutory basis for the rejection will not be considered a new ground of rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.

2. The following is a quotation of the appropriate paragraphs of pre-AIA 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 17, 19, 20, 22, 24, 28, 34, 37-39, 43-47, and 49, 51, 53-55 are rejected under pre-AIA 35 U.S.C. 102(b) as being anticipated by Manstein (Pub. No.: US 2005/0222565 A1).

4. Regarding claims 17 and 43, Manstein discloses a skin treatment apparatus (e.g. see element 300) that enables non-intersecting coagulation of skin dermis about electrodes (Note: This is a functional use recitation of a system claim. The examiner's position is that the prior art is configured to meet this limitation), comprising: at least three electrodes (e.g. see [0047], [0077], figure 4, elements 410, 415, and 440) configured to be insertable into skin to be treated; a signal generation module (e.g. see elements 320 and 330), the signal generation module electrically coupled to the at least three electrodes and providing a high frequency Alternating Current (AC) signal (e.g. see [0032], [0063]) for a predetermined time interval (e.g. see [0032]) to the at least three electrodes to form bipolar pairs between electrodes of the at least three electrodes (e.g. see [0041], [0042], [0077]).

5. Regarding claims 19 and 44, Manstein discloses an odd number of electrodes (e.g. see [0047], [0077], figure 4, elements 410, 415, and 440).

6. Regarding claims 20 and 45, Manstein discloses the predetermined time interval is from 0.05 to 0.8 seconds (e.g. see [0032]).

7. Regarding claims 22 and 46, Manstein discloses each electrode of the set of the at least three electrodes has a length sufficient to reach skin dermis when inserted into skin (e.g. see [0047], [0077], figure 4, elements 410, 415, and 440) and the predetermined time interval is from 0.05 to 0.8 seconds (e.g. see [0032]).

8. Regarding claims 24 and 47, Manstein discloses the signal generation module provides a high frequency Alternating Current (AC) signal to the at least three electrodes to form bipolar pairs between each adjacent electrode set of the at least three electrodes (e.g. see [0032], [0063]).

9. Regarding claims 28 and 49, Manstein discloses the electrodes are needles (e.g. see elements 350, 410, and 415) and have a diameter from 0.25 mm to 0.30 mm (e.g. see [0043]).

10. Regarding claims 34 and 51, Manstein discloses adjacent electrodes of the at least three electrodes are separated by a distance of 1.3 mm to 3.0 mm (e.g. see [0044]).

11. Regarding claims 37 and 53, Manstein discloses the at least three electrodes are non-insulated (e.g. see elements 410 and 415, tip portion).

12. Regarding claims 38 and 54, Manstein discloses a section of each electrode of the at least three electrodes is non-insulated (e.g. see elements 410 and 415).

13. Regarding claims 39 and 55, Manstein discloses each electrode of the set of bipolar electrodes is insulated except at its tip (e.g. see element 420).

Claim Rejections - 35 USC § 103

14. The following is a quotation of pre-AIA 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

15. Claims 36 and 52 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Manstein.

16. Regarding claims 36 and 52, Manstein discloses the claimed invention except for the needle length. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system/method as taught by Manstein, with the specific needle length since it was known in the art that such a modification is used to provide the predictable results of more precise tissue targeting.

17. Claims 26, 31, 48, and 50 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Manstein in view of Yamada (Patent Number: 5,546,954).

18. Regarding claims 26, 31, 48, and 50, Manstein discloses the oval shaped coagulation (e.g. see element 425) but is silent as to the frequency of 2.0 Mhz. Yamada teaches that it is known to use such a frequency range as set forth in column 4 lines 16-28 to provide more robust stimulation. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system/method as taught by Manstein, with such a frequency range as taught by Yamada, since such a modification would provide the predictable results of more robust stimulation.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PHILIP EDWARDS whose telephone number is (571)270-1804. The examiner can normally be reached on Monday thru Friday, 9:00 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christopher D. Koharski can be reached on 571-272-7230. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/PHILIP EDWARDS/
Examiner, Art Unit 3762

/Amanda Patton/
Primary Examiner, Art Unit 3762

Notice of References Cited	Application/Control No. 14/006,930	Applicant(s)/Patent Under Reexamination NA ET AL.	
	Examiner PHILIP C. EDWARDS	Art Unit 3762	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-5,546,954 A	08-1996	Yamada, Mamoru	600/548
*	B	US-2005/0222565 A1	10-2005	Manstein, Dieter	606/041
	C	US-			
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S1	1	"14006930"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2015/07/22 12:43
S2	13	"2011046615"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2015/07/22 13:04
S3	5	"20110046615"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2015/07/22 13:06
S4	2	"20080281389"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2015/07/22 13:07
S5	2	"20060293725"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2015/07/22 13:08
S6	7	"20100055292"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2015/07/22 13:09
S7	6	"11098030"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2015/07/23 14:11
S8	3	"20050222565"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2015/07/23 14:17
S9	1221	607/115-134.ccls. and needle with electrode	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2015/07/24 10:04
S10	80	607/115-134.ccls. and needle with electrode and frequency with Mhz	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2015/07/24 10:04

S11	21	607/115-134.ccls. and needle with electrode same skin and frequency with Mhz	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2015/07/24 10:05
S12	4	"5546954".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2015/07/24 10:06
S13	5330	607/116.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2015/07/24 10:41
S14	2654	S13 AND ((A61N1/05 OR A61N1/0534 OR A61N1/0551).CPC.)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2015/07/24 10:43
S15	90	((Jong) near2 (NA)).INV.	US-PGPUB; USPAT	ADJ	ON	2015/07/24 10:44
S16	1	(("Jeong Gu") near2 (Gwak)).INV.	US-PGPUB; USPAT	ADJ	ON	2015/07/24 10:44
S17	6	(US-20140074203-$ or US-20080281389-$ or US-20060293725-$ or US-20080082090-$ or US-20050222565-$).did. or (US-5546954-$).did.	US-PGPUB; USPAT	ADJ	ON	2016/01/12 20:25
S18	3	S17 and (AC or alternating current or alternating-current)	US-PGPUB; USPAT	ADJ	ON	2016/01/12 20:26
S19	6	(US-20140074203-$ or US-20080281389-$ or US-20060293725-$ or US-20080082090-$ or US-20050222565-$).did. or (US-5546954-$).did.	US-PGPUB; USPAT	ADJ	ON	2016/01/13 10:01
S20	6	S19 and (mm or millimeter with needle)	US-PGPUB; USPAT	ADJ	ON	2016/01/13 10:01
S21	4	S19 and (mm or millimeter) with needle	US-PGPUB; USPAT	ADJ	ON	2016/01/13 10:01
S22	219	607/115-134.ccls. and (mm or millimeter) with needle	US-PGPUB; USPAT	ADJ	ON	2016/01/13 10:04
S23	55	607/115-134.ccls. and (mm or millimeter) with needle with length	US-PGPUB; USPAT	ADJ	ON	2016/01/13 10:04
S24	6	S19 and second	US-PGPUB; USPAT	ADJ	ON	2016/01/13 10:16
S25	6	(US-20140074203-$ or US-20080281389-$ or US-20060293725-$ or US-20080082090-$ or US-20050222565-$).did. or (US-5546954-$).did.	US-PGPUB; USPAT	ADJ	ON	2016/01/13 15:02
S26	6	S25 and seconds	US-PGPUB; USPAT	ADJ	ON	2016/01/13 15:02

EAST Search History (Interference)

ENDYMED EXHIBIT 1002 - 331/509

< This search history is empty>

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Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14006930	NA ET AL.
	Examiner	Art Unit
	PHILIP EDWARDS	3762

CPC- SEARCHED		
Symbol	Date	Examiner
A61N1/05 OR A61N1/0534 OR A61N1/0551	7/24/2015	PCE

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
607	116	7/24/2015	PCE

SEARCH NOTES		
Search Notes	Date	Examiner
Inventor Search	7/24/2015	PCE
see attached EAST search history	7/24/2015	PCE
see updated EAST search history	1/13/2016	PCE

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

/PHILIP EDWARDS/ Examiner.Art Unit 3762	

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Na, et al. Application No.: 14/006,930 Filed: 9/23/2013 Title: SKIN TREATMENT APPARATUS AND METHOD Attorney Docket No.: NA002US	Art Unit: 3762 Examiner: Phillip Charles Edwards

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

RESPONSE UNDER 37 CFR 1.111

Dear Sir:

In response to the Final Office Action of January 22, 2016, please consider the following amendments and remarks. A request for entry into the After Final Consideration Pilot Program 2.0 is also enclosed. Applicants contend that review of the proposed amendment is possible in the limited time provided by the program given the arguments and explanations provided below.

Amendment to the Claims begins on page 2 of this paper

Remarks begin on page 8 of this paper.

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

17. (Currently Amended) A skin treatment apparatus ~~that enables non-intersecting coagulation of skin dermis about electrodes~~, comprising:

~~at least three~~ a plurality of electrodes, the electrodes being bipolar and configured to be insertable into skin to be treated; and

a ~~signal~~ radio frequency (RF) generation module, the ~~signal~~ RF generation module electrically coupled to the ~~at least three~~ plurality of electrodes and configured to ~~providing~~ provide ~~a high frequency~~ an Alternating Current (AC) RF signal ~~for a predetermined time interval to the at least three~~to the plurality of electrodes to ~~form bipolar pairs between electrodes of the at least three electrodes~~coagulate around each electrode rather than coagulating between the electrodes.

18. (cancelled).

19. (Currently Amended) The skin treatment apparatus of claim 17, ~~including an odd number of electrodes~~ wherein the RF generation module is configured to provide an AC RF signal to the plurality of electrodes for a predetermined time interval.

20. (Currently Amended) The skin treatment apparatus of claim ~~17~~19, wherein the predetermined time interval is from 0.05 to 0.8 seconds.

21. (Cancelled).

22. (Currently Amended) The skin treatment apparatus of claim ~~17~~19, wherein each electrode of the ~~at least three~~ plurality of electrodes has a length sufficient to reach skin dermis when inserted into skin and the predetermined time interval is from 0.05 to 0.8 seconds.

23. (Cancelled).

24. (Currently Amended) The skin treatment apparatus of claim 22, wherein the ~~signal generation module provides a high frequency Alternating Current (AC) signal to the at least three electrodes to form bipolar pairs between each adjacent electrode set of the at least three electrodes~~ closest neighboring electrodes have opposite polarities.

25. (Cancelled).

26. (Currently Amended) The skin treatment apparatus of claim 17, wherein the ~~high frequency AC signal has a frequency~~ RF is about 2.0 MHz and the ~~non-intersecting coagulation of skin dermis~~coagulated area around each ~~about the~~ electrodes is oval shaped.

27. (Cancelled).

28. (Previously Presented) The skin treatment apparatus of claim 17, wherein the electrodes are needles and have a diameter from 0.25mm to 0.30mm.

29. (Cancelled).

30. (Cancelled).

31. (Currently Amended) The skin treatment apparatus of claim 19, wherein the predetermined time interval is from 0.05 to 0.8 seconds and the ~~high frequency AC signal has a frequency of~~ RF is about 2.0MHz.

32. (Cancelled).

33. (Cancelled).

34. (Previously Presented) The skin treatment apparatus of claim 17, wherein the closest neighboring electrodes ~~adjacent electrodes of the at least three electrodes~~ are separated by a distance of 1.3mm to 3.0mm.

35. (Cancelled).

36. (Previously Presented) The skin treatment apparatus of claim 28, wherein the needles have a length from 1mm to 4mm.

37. (Currently Amended) The skin treatment apparatus of claim 17, wherein the ~~at least three~~ plurality of electrodes are non-insulated.

38. (Currently Amended) The skin treatment apparatus of claim 22, wherein a section of each electrode of the ~~at least three~~ plurality of electrodes is non-insulated.

39. (Currently Amended) The skin treatment apparatus of claim 17, wherein each electrode of the ~~at least three~~plurality of electrodes is insulated except at its tip.

40. (Cancelled).

41. (Cancelled).

42. (Cancelled).

43. (Currently Amended) A method of treating skin, comprising:

inserting a plurality of ~~at least three~~ electrodes, the electrodes being bipolar into a section of skin to be treated; and

applying a ~~high frequency~~ Alternating Current (AC) Radio Frequency (RF) signal to the ~~at least three~~ plurality of electrodes to ~~form bipolar pairs between electrodes of the at least three electrodes for a predetermined time interval to form non-intersecting coagulation of skin sections about each electrode that form bipolar electrode pairs~~ coagulate around each electrode rather than coagulating between the electrodes.

44. (Currently Amended) The method of treating skin of claim 43, including providing an AC RF signal to the plurality of electrodes for a predetermined time interval ~~inserting an odd number greater than one of electrodes into a section of skin to be treated~~.

45. (Currently Amended) The method of treating skin of claim ~~43~~ 44, wherein the predetermined time interval is from 0.05 to 0.8 seconds.

46. (Currently Amended) The method of treating skin of claim ~~43~~ 44, wherein the skin segment to be treated is skin dermis and each electrode of the ~~at least three~~ plurality of electrodes has a length sufficient to reach skin dermis when inserted into skin and the predetermined time interval is from 0.05 to 0.8 seconds.

47. (Currently Amended) The method of treating skin of claim 46, ~~providing a high frequency Alternating Current (AC) signal to the at least three electrodes to form bipolar pairs between each adjacent electrode set of the at least three electrodes~~ wherein the closest neighboring electrodes have opposite polarities.

48. (Currently Amended) The method of treating skin of claim 43, wherein the ~~high frequency AC signal has a frequency~~ RF is about 2.0 MHz and the ~~coagulation of skin dermis about~~ coagulated area around each electrode is oval shaped.

49. (Previously Presented) The method of treating skin of claim 43, wherein the electrodes are needles and have a diameter from 0.25mm to 0.30mm.

50. (Currently Amended) The method of treating skin of claim 43, wherein the ~~high frequency signals have a frequency~~ RF is from 0.5 to 10Mhz and the predetermined time interval is from 0.05 to 0.8 seconds.

51. (Currently Amended) The method of treating skin of claim 43, wherein ~~adjacent electrodes of the at least three electrodes~~ the closest neighboring electrodes are separated by a distance of 1.3mm to 3.0mm.

52. (Previously Presented) The method of treating skin of claim 49, wherein the needles have a length from 1mm to 4mm.

53. (Currently Amended) The method of treating skin of claim 43, wherein the ~~at least three~~ plurality of electrodes are non-insulated.

54. (Currently Amended) The method of treating skin of claim 43, wherein a section of each electrode of the ~~at least three electrodes~~ plurality of electrodes is non-insulated.

55. (Currently Amended) The method of treating skin of claim 43, wherein each electrode of the ~~at least three~~ plurality of electrodes is insulated except at its tip.

REMARKS

Status of the claims

- Claims in issue before this Amendment: 17, 19, 20, 22, 24, 26, 28, 31, 34, 36-39, and 43-55
- List of claims amended: 17, 19, 20, 22, 24, 26, 31, 37-39, 43-48, 50, 51, and 53-55
- List of claims canceled: *None*
- List of claims added: *None*
- Claims in issue as of this Amendment: 17, 19, 20, 22, 24, 26, 28, 31, 34, 36-39, and 43-55
- No new matter has been added.

A request for entry into the After Final Consideration Pilot Program 2.0 is also enclosed. Applicants contend that review of the proposed amendment is possible in the limited time provided by the program given the arguments and explanations provided below.

Prior Art Rejections

The previously pending claims were rejected as anticipated or obvious in view of US Publication 20050222565 to Manstein and US Patent 5,546,954 to Yamada. Applicants contend that the present rejections are not proper and the final action should be withdrawn. The Examiner has incorrectly construed the Manstein reference. In particular, the Examiner has stated that Manstein teaches providing a high frequency AC signal and references paragraphs 0032 and 0063 of Manstein for support. Manstein, critically however, teaches providing a RF signal in one embodiment ***OR*** an AC or DC signal in another embodiment. Further, Manstein only uses the term "AC" twice in the entire specification, in paragraph 0032, which addresses two, different embodiments providing different energy sources and in claim 5. Manstein clearly does not teach or suggest providing a high frequency AC signal to bipolar electrodes. This rejection is clear error.

Paragraph 0032 from Manstein reads:

> ***In one exemplary embodiment***, the energy source 320 is a radio frequency (RF) device capable of outputting signals having frequencies in a desired range. ***In another exemplary embodiment***, the energy source is capable of outputting an AC or DC electric current. The control module 330 provides application-specific settings to the energy source 320. The energy source 320 receives these settings, and generates a current directed to and from specified needles for selectable or predetermined durations, intensities, and sequences based on these settings. (Emphasis Added).

Paragraph 0063 from Manstein is a claim, claim 5 that reads "The apparatus of any one of paragraphs 1 to 4 wherein the energy source is capable of outputting an AC or DC electric current".

This clear error is compounded by the rejection of claim 43. Manstein, in its FIG. 3 shows non-intersecting thermal damage regions 370. Manstein teaches in its paragraph 0037, repeated below that this form of non-intersecting damage 370 is formed by a ***monopolar configuration***. Applicants' Claims 43 and 17 clearly require a bipolar configuration. This rejection is clear error. Monopolar configurations are significantly different than bipolar configurations (as required in our claims). Monopolar configurations can be extremely dangerous to a patient. A monopolar configuration requires a grounding contact, usually far from the area being treated. In such a configuration, a signal pathway is formed from the grounding contact to monopolar needles. This pathway can cause severe burning and potential heart issues including arrhythmia due to the large electrical signal prorogating through the patient's body.

Paragraph 0037 from Manstein reads:

> In a preferred embodiment of the present invention, the shafts of conductive needles 350 are electrically insulated except for the portion of the needle near the tip. In the apparatus of FIG. 3, application of RF current to the needles 350 causes heating in the exposed tip region, inducing thermal damage regions 370 around the tip of each needle. Thermal damage regions 370 result from operation of the apparatus in ***monopolar configuration***, in which a remote grounding electrode, not shown in FIG. 3, is attached to a remote part of the patient's body to complete the circuit of electricity conveyed to needles 350 by energy source 320. In this monopolar configuration, RF current causes heating of the tip regions of the needles 350, generating thermal damage in tissue regions 370 adjacent to the needle tips that are approximately spherical or slightly elongated in shape. (Emphasis added).

Manstein, actually teaches and notes that its bipolar configuration generates intersecting damage (reference 425) as discussed in its paragraph 0041 (repeated below) and shown in its FIG. 4.

Paragraph 0043 from Manstein reads:

> Needles 410 and 415 are shown operating in ***bipolar mode*** in another embodiment of the present invention. Needle 410 is a ***positive electrode*** delivering RF or other current to the tip region of the needle from the energy source via conductor 430. Needle 415 functions as a ***grounding electrode*** that is connected to the ground of the energy source via conductor 431. In this configuration the applied current will travel through the tissue between the tips of needles 410 and 415, generating an ***elongated region of thermal damage 425 around and between the tips of the two needles***. (Emphasis Added).

As Manstein states in their bipolar mode, one needle is a positive electrode, while the other needle is the grounding electrode. Applicant's claimed mode or configuration of bipolar electrodes, does not have a specific positive or grounding pole because of the application of the alternating current high frequency signal to their electrodes. In the Applicants' claimed apparatus and methods, the

electrodes have poles that change or alternate between being positive or negative as the current alternates.

It is the application of the combined Alternating current, high frequency signal to bipolar electrodes that enables the Applicants' apparatus or method to form non-intersecting coagulation about their bipolar electrodes similar to prior art Monopolar configurations. In particular, the application of an alternating current, high frequency signal between bipolar electrodes forms a complete circuit where during the initial conduction (before the current changes polarity and thus the electrodes change poles (from positive to negative and back)), any current density in the path between electrodes will be less than around each electrode.

In Applicants' claimed apparatus and methods, conduction may begin initially between bipolar electrodes as electrons are released from one electrode to the tissue around the electrode and then travel to the other electrode. Concentration of the electron current may be highest in the area immediately surrounding each electrode causing areas around each electrode to be heated more. Electrons have more space to travel through in the path between the electrodes, becoming less dense (spaced apart from one another) Accordingly, the path between the electrodes may heat slower than the areas immediately surrounding the electrodes. Then the current will alternate, and the process start over again, preventing or limiting the heating between electrodes.

In order to move prosecution forward and place the application in better condition for allowance, Applicants have nevertheless amended claims 17, 19, 20, 22, 24, 26, 31, 37-39, 43-48, 50, 51, and 53-55. Entry is respectfully requested. Applicants have amended the claims to note the apparatus may be configured to provide and the method may provide an alternating current (AC) RF signal

to a plurality of electrodes (that are bipolar) to coagulate around each electrode rather than coagulating between the electrodes.

The undersigned Attorney respectfully requests the Examiner contact the undersigned Attorney with any issues and as part of after final pilot program if the Examiner does not withdraw the final action.

Respectfully Submitted,

3/1/2016 _/mwresq/_____
Date Merle Richman
Attorney/Agent for Applicant(s)
Reg. No. 38282

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Doc Code: TRAN.LET
Document Description: Transmittal Letter

PTO/SB/21 (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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TRANSMITTAL FORM *(to be used for all correspondence after initial filing)*		Application Number	14/006,930
		Filing Date	Sep 23, 2013
		First Named Inventor	Na, Jongju
		Art Unit	3762
		Examiner Name	Phillip Charles Edwards
Total Number of Pages in This Submission		Attorney Docket Number	NA002US

ENCLOSURES *(Check all that apply)*

☐ Fee Transmittal Form	☐ Drawing(s)	☐ After Allowance Communication to TC
☐ Fee Attached	☐ Licensing-related Papers	☐ Appeal Communication to Board of Appeals and Interferences
☒ Amendment / Reply (12 pages)	☐ Petition	☐ Appeal Communication to TC **(Appeal Notice, Brief, Reply Brief)**
☒ After Final	☐ Petition to Convert to a Provisional Application	☐ Proprietary Information
☐ Affidavits/declaration(s)	☐ Power of Attorney, Revocation Change of Correspondence Address	☐ Status Letter
☐ Extension of Time Request	☐ Terminal Disclaimer	☒ Other Enclosure(s) (please identify below): AFCP
☐ Express Abandonment Request	☐ Request for Refund	
☐ Information Disclosure Statement	☐ CD, Number of CD(s) _____	
	☐ Landscape Table on CD	
☐ Certified Copy of Priority Document(s)		
☐ Reply to Missing Parts/ Incomplete Application		
☐ Reply to Missing Parts under 37 CFR 1.52 or 1.53		

Remarks

Request for consideration under the after final consideration pilot program 2.0

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name	Merle W. Richman, Cust ID - 26338		
Signature	/mwresq/		
Printed name	Merle Richman		
Date	March 1, 2016	Reg. No.	38282

CERTIFICATE OF TRANSMISSION/MAILING

I hereby certify that this correspondence is being electronically transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below.

Signature	/mwresq/		
Typed or printed name	Merle Richman	Date	March 1, 2016

This collection of information is required by 37 CFR 1.5. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

In you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Doc Code: A.NE.AFCP
Document Description: After Final Consideration Pilot Program Request

PTO/SB/434 (05-13)

CERTIFICATION AND REQUEST FOR CONSIDERATION UNDER THE AFTER FINAL CONSIDERATION PILOT PROGRAM 2.0

Practitioner Docket No.:	Application No.:	Filing Date:
NA002US	14/006,930	2013-09-23
First Named Inventor:	**Title:**	
NA	SKIN TREATMENT APPARATUS AND METHOD	

APPLICANT HEREBY CERTIFIES THE FOLLOWING AND REQUESTS CONSIDERATION UNDER THE AFTER FINAL CONSIDERATION PILOT PROGRAM 2.0 (AFCP 2.0) OF THE ACCOMPANYING RESPONSE UNDER 37 CFR 1.116.

1. The above-identified application is (i) an original utility, plant, or design nonprovisional application filed under 35 U.S.C. 111(a) [a continuing application (*e.g.*, a continuation or divisional application) is filed under 35 U.S.C. 111(a) and is eligible under (i)], or (ii) an international application that has entered the national stage in compliance with 35 U.S.C. 371(c).
2. The above-identified application contains an outstanding final rejection.
3. Submitted herewith is a response under 37 CFR 1.116 to the outstanding final rejection. The response includes an amendment to at least one independent claim, and the amendment does not broaden the scope of the independent claim in any aspect.
4. This certification and request for consideration under AFCP 2.0 is the only AFCP 2.0 certification and request filed in response to the outstanding final rejection.
5. Applicant is willing and available to participate in any interview requested by the examiner concerning the present response.
6. This certification and request is being filed electronically using the Office's electronic filing system (EFS-Web).
7. Any fees that would be necessary consistent with current practice concerning responses after final rejection under 37 CFR 1.116, *e.g.*, extension of time fees, are being concurrently filed herewith. [There is no additional fee required to request consideration under AFCP 2.0.]
8. By filing this certification and request, applicant acknowledges the following:
    - Reissue applications and reexamination proceedings are not eligible to participate in AFCP 2.0.
    - The examiner will verify that the AFCP 2.0 submission is compliant, *i.e.*, that the requirements of the program have been met (see items 1 to 7 above). For compliant submissions:
        - The examiner will review the response under 37 CFR 1.116 to determine if additional search and/or consideration (i) is necessitated by the amendment and (ii) could be completed within the time allotted under AFCP 2.0. If additional search and/or consideration is required but cannot be completed within the allotted time, the examiner will process the submission consistent with current practice concerning responses after final rejection under 37 CFR 1.116, *e.g.*, by mailing an advisory action.
        - If the examiner determines that the amendment does not necessitate additional search and/or consideration, or if the examiner determines that additional search and/or consideration is required and could be completed within the allotted time, then the examiner will consider whether the amendment places the application in condition for allowance (after completing the additional search and/or consideration, if required). If the examiner determines that the amendment does not place the application in condition for allowance, then the examiner will contact the applicant and request an interview.
            - The interview will be conducted by the examiner, and if the examiner does not have negotiation authority, a primary examiner and/or supervisory patent examiner will also participate.
            - If the applicant declines the interview, or if the interview cannot be scheduled within ten (10) calendar days from the date that the examiner first contacts the applicant, then the examiner will proceed consistent with current practice concerning responses after final rejection under 37 CFR 1.116.

Signature	Date
/mwresq/	3/1/2016
Name (Print/Typed)	**Practitioner Registration No.**
merle richman	38282

***Note**: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. Submit multiple forms if more than one signature is required, see below*.*

[✓] * Total of 1 forms are submitted.

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Acknowledgement Receipt

EFS ID:	25068068
Application Number:	14006930
International Application Number:	
Confirmation Number:	2283
Title of Invention:	ELECTRICALLY BASED MEDICAL TREATMENT DEVICE AND METHOD
First Named Inventor/Applicant Name:	Jong ju NA
Customer Number:	26338
Filer:	Merle W. Richman
Filer Authorized By:	
Attorney Docket Number:	NA002US
Receipt Date:	01-MAR-2016
Filing Date:	29-NOV-2013
Time Stamp:	16:36:25
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Response After Final Action	na002us-rfoa-2016-01-22.pdf	166116 893866476483d3afa290309cdaf0fd4413410ad5	no	12

Warnings:	
Information:	

2	Transmittal Letter	na002us-rfoa-2016-01-22-transmittal.pdf	111042 a7e5eeaa3fb7960360d9aa9651377758a96db288	no	1
Warnings:					
Information:					
3	After Final Consideration Program Request	na002us-sb0434.pdf	226497 7b715aed48447f688e2292f30c0bd16a82c8588b	no	2
Warnings:					
Information:					
			Total Files Size (in bytes):	503655	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 14/006,930	Filing Date 11/29/2013	☐ To be Mailed

ENTITY: ☐ LARGE ☒ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT **03/01/2016**

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	* 26	Minus	** 26	= 0	X $40 =	0
Independent (37 CFR 1.16(h))	* 2	Minus	***3	= 0	X $210 =	0
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	0

AMENDMENT

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =	
Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =	
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

LIE
/DAWN BREWER/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**
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UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/006,930	11/29/2013	Jong ju NA	NA002US	2283

26338 7590 03/09/2016

MERLE W. RICHMAN, III
P.O. BOX 3333
LA JOLLA, CA 92038

EXAMINER
EDWARDS, PHILIP CHARLES

ART UNIT	PAPER NUMBER
3762	

MAIL DATE	DELIVERY MODE
03/09/2016	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Advisory Action Before the Filing of an Appeal Brief	**Application No.** 14/006,930	**Applicant(s)** NA ET AL.	
	Examiner PHILIP C. EDWARDS	**Art Unit** 3762	**AIA (First Inventor to File) Status** No

--The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

THE REPLY FILED 3/1/2016 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE.

NO NOTICE OF APPEAL FILED

1. ☒ The reply was filed after a final rejection. No Notice of Appeal has been filed. To avoid abandonment of this application, applicant must timely file one of the following replies: (1) an amendment, affidavit, or other evidence, which places the application in condition for allowance;

   (2) a Notice of Appeal (with appeal fee) in compliance with 37 CFR 41.31; or (3) a Request for Continued Examination (RCE) in compliance with 37 CFR 1.114 if this is a utility or plant application. Note that RCEs are not permitted in design applications. The reply must be filed within one of the following time periods:

   a) ☐ The period for reply expires _____months from the mailing date of the final rejection.

   b) ☒ The period for reply expires on: (1) the mailing date of this Advisory Action; or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection.

   c) ☐ A prior Advisory Action was mailed more than 3 months after the mailing date of the final rejection in response to a first after-final reply filed within 2 months of the mailing date of the final rejection. The current period for reply expires months from the mailing date of *the prior Advisory Action* or SIX MONTHS from the mailing date of the final rejection, whichever is earlier.

   Examiner Note: If box 1 is checked, check either box (a), (b) or (c). ONLY CHECK BOX (b) WHEN THIS ADVISORY ACTION IS THE FIRST RESPONSE TO APPLICANT'S FIRST AFTER-FINAL REPLY WHICH WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. ONLY CHECK BOX (c) IN THE LIMITED SITUATION SET FORTH UNDER BOX (c). See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) or (c) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

NOTICE OF APPEAL

2. ☐ The Notice of Appeal was filed on _____. A brief in compliance with 37 CFR 41.37 must be filed within two months of the date of filing the Notice of Appeal (37 CFR 41.37(a)), or any extension thereof (37 CFR 41.37(e)), to avoid dismissal of the appeal. Since a Notice of Appeal has been filed, any reply must be filed within the time period set forth in 37 CFR 41.37(a).

AMENDMENTS

3. ☒ The proposed amendments filed after a final rejection, but prior to the date of filing a brief, will not be entered because
   a) ☒ They raise new issues that would require further consideration and/or search (see NOTE below);
   b) ☐ They raise the issue of new matter (see NOTE below);
   c) ☐ They are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or
   d) ☐ They present additional claims without canceling a corresponding number of finally rejected claims.

   NOTE: *See Continuation Sheet*. (See 37 CFR 1.116 and 41.33(a)).

4. ☐ The amendments are not in compliance with 37 CFR 1.121. See attached Notice of Non-Compliant Amendment (PTOL-324).

5. ☐ Applicant's reply has overcome the following rejection(s): _____.

6. ☐ Newly proposed or amended claim(s) _____ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).

7. ☒ For purposes of appeal, the proposed amendment(s): (a) ☒ will not be entered, or (b) ☐ will be entered, and an explanation of how the new or amended claims would be rejected is provided below or appended.

AFFIDAVIT OR OTHER EVIDENCE

8. ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

9. ☐ The affidavit or other evidence filed after final action, but before or on the date of filing a Notice of Appeal will not be entered because applicant failed to provide a showing of good and sufficient reasons why the affidavit or other evidence is necessary and was not earlier presented. See 37 CFR 1.116(e).

10. ☐ The affidavit or other evidence filed after the date of filing the Notice of Appeal, but prior to the date of filing a brief, will not be entered because the affidavit or other evidence failed to overcome all rejections under appeal and/or appellant fails to provide a showing of good and sufficient reasons why it is necessary and was not earlier presented. See 37 CFR 41.33(d)(1).

11. ☐ The affidavit or other evidence is entered. An explanation of the status of the claims after entry is below or attached.

REQUEST FOR RECONSIDERATION/OTHER

12. ☒ The request for reconsideration has been considered but does NOT place the application in condition for allowance because: See Continuation Sheet.

13. ☐ Note the attached Information *Disclosure Statement*(s). (PTO/SB/08) Paper No(s). _____

14. ☒ Other: PTO-2323.

STATUS OF CLAIMS

15. The status of the claim(s) is (or will be) as follows:

Claim(s) allowed: .
Claim(s) objected to: .
Claim(s) rejected: 17, 19, 20, 22, 24, 26, 28, 31, 34, 36-39, and 43-55.
Claim(s) withdrawn from consideration: .

/CHRISTOPHER D KOHARSKI/ Supervisory Patent Examiner, Art Unit 3766	/PHILIP C EDWARDS/ Examiner, Art Unit 3762

Continuation of 3. NOTE: The heavily amended claims and related arguments will require further search and consideration. The 2 hours afforded by the AFCP 2.0 program will not be enough time to search due to the amount of claim language changed and introduced.

Continuation of 12. does NOT place the application in condition for allowance because: The heavily amended claims and related arguments will require further search and consideration. The 2 hours afforded by the AFCP 2.0 program will not be enough time to search due to the amount of claim language changed and introduced.

ENDYMED EXHIBIT 1002 - 354/509

AFCP 2.0 Decision	Application No.	Applicant(s)
	14/006,930	NA ET AL.
	Examiner	Art Unit
	PHILIP C. EDWARDS	3762

This is in response to the After Final Consideration Pilot request filed 01 March 2016.

1. **Improper Request** – The AFCP 2.0 request is improper for the following reason(s) and the after final amendment submitted with the request will be treated under pre-pilot procedure.

   ☐ An AFCP 2.0 request form PTO/SB/434 (or equivalent document) was not submitted.

   ☐ A non-broadening amendment to at least one independent claim was not submitted.

   ☐ A proper AFCP 2.0 request was submitted in response to the most recent final rejection.

   ☐ Other:

2. **Proper Request**

   A. After final amendment submitted with the request will not be treated under AFCP 2.0.
   The after final amendment cannot be reviewed and a search conducted within the guidelines of the pilot program.

   ☒ The after final amendment will be treated under pre-pilot procedure.

   B. Updated search and/or completed additional consideration.
   The examiner performed an updated search and/or completed additional consideration of the after final amendment within the time authorized for the pilot program. The result(s) of the updated search and/or completed additional consideration are:

   ☐ 1. All of the rejections in the most recent final Office action are overcome and a Notice of Allowance is issued herewith.

   ☐ 2. The after final amendment would not overcome all of the rejections in the most recent final Office action. See attached interview summary for further details.

   ☐ 3. The after final amendment was reviewed, and it raises a new issue(s). See attached interview summary for further details.

   ☐ 4. The after final amendment raises new issues, but would overcome all of the rejections in the most recent final Office action. A decision on determining allowability could not be made within the guidelines of the pilot. See attached interview summary for further details, including any newly discovered prior art.

   ☐ 5. Other:

   Examiner Note: Please attach an interview summary when necessary as described above.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Na, et al. Application No.: 14/006,930 Filed: 9/23/2013 Title: SKIN TREATMENT APPARATUS AND METHOD Attorney Docket No.: NA002US	Art Unit: 3762 Examiner: Phillip Charles Edwards

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

RESPONSE UNDER 37 CFR 1.111

Dear Sir:

In response to the Final Office Action of January 22, 2016, please consider the following amendments and remarks. A request for entry into the After Final Consideration Pilot Program 2.0 is also enclosed. Applicants contend that review of the proposed amendment is possible in the limited time provided by the program given the arguments and explanations provided below.

Amendment to the Claims begins on page 2 of this paper

Remarks begin on page 8 of this paper.

Doc code: RCEX
Doc description: Request for Continued Examination (RCE)

PTO/SB/30EFS (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

REQUEST FOR CONTINUED EXAMINATION(RCE)TRANSMITTAL
(Submitted Only via EFS-Web)

Application Number	14006930	Filing Date	2013-09-23	Docket Number (if applicable)	NA002US	Art Unit	3762
First Named Inventor	NA			Examiner Name	Phillip Charles Edwards		

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.
Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, or to any design application. The Instruction Sheet for this form is located at WWW.USPTO.GOV

SUBMISSION REQUIRED UNDER 37 CFR 1.114

Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

☒ Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

- ☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____
- ☐ Other _____

☐ Enclosed

- ☐ Amendment/Reply
- ☐ Information Disclosure Statement (IDS)
- ☐ Affidavit(s)/ Declaration(s)
- ☐ Other _____

MISCELLANEOUS

☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of months _____ (Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

☐ Other _____

FEES

☒ **The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.**
The Director is hereby authorized to charge any underpayment of fees, or credit any overpayments, to Deposit Account No 516130

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

X Patent Practitioner Signature

Applicant Signature

PTO/SB/30EFS (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Signature of Registered U.S. Patent Practitioner			
Signature	/Merle RICHMAN/	Date (YYYY-MM-DD)	2016-03-18
Name	Merle RICHMAN	Registration Number	38282

This collection of information is required by 37 CFR 1.114. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Patent Application Fee Transmittal

Application Number:	14006930
Filing Date:	29-Nov-2013
Title of Invention:	ELECTRICALLY BASED MEDICAL TREATMENT DEVICE AND METHOD
First Named Inventor/Applicant Name:	Jong ju NA
Filer:	Merle W. Richman
Attorney Docket Number:	NA002US

Filed as Small Entity

Filing Fees for U.S. National Stage under 35 USC 371

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
Request for Continued Examination	2801	1	600	600
		Total in USD ($)		**600**

Electronic Acknowledgement Receipt

EFS ID:	25239556
Application Number:	14006930
International Application Number:	
Confirmation Number:	2283
Title of Invention:	ELECTRICALLY BASED MEDICAL TREATMENT DEVICE AND METHOD
First Named Inventor/Applicant Name:	Jong ju NA
Customer Number:	26338
Filer:	Merle W. Richman
Filer Authorized By:	
Attorney Docket Number:	NA002US
Receipt Date:	18-MAR-2016
Filing Date:	29-NOV-2013
Time Stamp:	13:40:54
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$600
RAM confirmation Number	10787
Deposit Account	
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Request for Continued Examination (RCE)	na002us-rce-2016-03.pdf	697716 95a85e0900a1bb02bf3f69b390f096cab7fbc7f7	no	3
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30828 e5479f2f25c195859579b3ea52a6c8b128f9b241	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	728544		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT **03/18/2016**

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☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	0

AMENDMENT

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =	
Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =	
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☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	

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*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
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LIE
/KIMBERLY WHITE/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/006,930	11/29/2013	Jong ju NA	NA002US	2283

26338 7590 03/21/2016

MERLE W. RICHMAN, III
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LA JOLLA, CA 92038

EXAMINER
EDWARDS, PHILIP CHARLES

ART UNIT	PAPER NUMBER
3762	

MAIL DATE	DELIVERY MODE
03/21/2016	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Applicant-Initiated Interview Summary	Application No.	Applicant(s)	
	14/006,930	NA ET AL.	
	Examiner	Art Unit	
	PHILIP C. EDWARDS	3762	

All participants (applicant, applicant's representative, PTO personnel):

(1) *PHILIP C. EDWARDS*. (3)_____.

(2) *Merle Richman*. (4)_____.

Date of Interview: *15 March 2016*.

Type: ☒ Telephonic ☐ Video Conference
☐ Personal [copy given to: ☐ applicant ☐ applicant's representative]

Exhibit shown or demonstration conducted: ☐ Yes ☒ No.
If Yes, brief description: _____.

Issues Discussed ☐101 ☐112 ☒102 ☐103 ☐Others
(For each of the checked box(es) above, please describe below the issue and detailed description of the discussion)

Claim(s) discussed: *17*.

Identification of prior art discussed: *Manstein*.

Substance of Interview
(For each issue discussed, provide a detailed description and indicate if agreement was reached. Some topics may include: identification or clarification of a reference or a portion thereof, claim interpretation, proposed amendments, arguments of any applied references etc...)

Applicant and examiner discussed claim amendments submitted in After-Final. Particularly, applicant brought to the examiner's attention that the RF and AC stimulation are used in different embodiments in the Manstein reference. Examiner indicated he will consider this point. Examiner also indicated the claim amendments will require an RCE to be considered.

Applicant recordation instructions: The formal written reply to the last Office action must include the substance of the interview. (See MPEP section 713.04). If a reply to the last Office action has already been filed, applicant is given a non-extendable period of the longer of one month or thirty days from this interview date, or the mailing date of this interview summary form, whichever is later, to file a statement of the substance of the interview

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

☐ Attachment

/PHILIP C EDWARDS/ Examiner, Art Unit 3762	/Amanda Patton/ Primary Examiner, Art Unit 3762

Summary of Record of Interview Requirements

Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record
A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews
Paragraph (b)

In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

37 CFR §1.2 Business to be transacted in writing.
All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiners Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:
- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case. It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

A complete and proper recordation of the substance of any interview should include at least the following applicable items:

1) A brief description of the nature of any exhibit shown or any demonstration conducted,
2) an identification of the claims discussed,
3) an identification of the specific prior art discussed,
4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
5) a brief identification of the general thrust of the principal arguments presented to the examiner,
   (The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
6) a general indication of any other pertinent matters discussed, and
7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

Examiner to Check for Accuracy

If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiner's version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, "Interview Record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Na, et al. Application No.: 14/006,930 Filed: 9/23/2013 Title: SKIN TREATMENT APPARATUS AND METHOD Attorney Docket No.: NA002US	Art Unit: 3762 Examiner: Phillip Charles Edwards

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

SUPPLEMENTAL RESPONSE UNDER 37 CFR 1.111

Dear Sir:

In response to the Final Office Action of January 22, 2016 and claim listing request, please consider the following amendments and remarks. A request for entry into the After Final Consideration Pilot Program 2.0 is also enclosed. Applicants contend that review of the proposed amendment is possible in the limited time provided by the program given the arguments and explanations provided below.

Amendment to the Claims begins on page 2 of this paper
Remarks begin on page 9 of this paper.

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Cancelled).
2. (Cancelled).
3. (Cancelled).
4. (Cancelled).
5. (Cancelled).
6. (Cancelled).
7. (Cancelled).
8. (Cancelled).
9. (Cancelled).
10. (Cancelled).
11. (Cancelled).
12. (Cancelled).
13. (Cancelled).
14. (Cancelled).
15. (Cancelled).
16. (Cancelled).

17. (Currently Amended) A skin treatment apparatus ~~that enables non-intersecting coagulation of skin dermis about electrodes~~, comprising:

at least three a plurality of electrodes, the electrodes being bipolar and configured to be insertable into skin to be treated; and

a ~~signal~~ radio frequency (RF) generation module, the ~~signal~~ RF generation module electrically coupled to the ~~at least three~~ plurality of electrodes and configured to ~~providing~~ provide ~~a high frequency~~ an Alternating Current (AC) RF signal ~~for a predetermined time interval to the at least three~~to the plurality of electrodes to ~~form bipolar pairs between electrodes of the at least three electrodes~~coagulate around each electrode rather than coagulating between the electrodes.

18. (cancelled).

19. (Currently Amended) The skin treatment apparatus of claim 17, ~~including an odd number of electrodes~~ wherein the RF generation module is configured to provide an AC RF signal to the plurality of electrodes for a predetermined time interval.

20. (Currently Amended) The skin treatment apparatus of claim ~~17~~19, wherein the predetermined time interval is from 0.05 to 0.8 seconds.

21. (Cancelled).

22. (Currently Amended) The skin treatment apparatus of claim ~~17~~19, wherein each electrode of the ~~at least three~~ plurality of electrodes has a length sufficient to reach skin dermis when inserted into skin and the predetermined time interval is from 0.05 to 0.8 seconds.

23. (Cancelled).

24. (Currently Amended) The skin treatment apparatus of claim 22, wherein the ~~signal generation module provides a high frequency Alternating Current (AC) signal to the at least three electrodes to form bipolar pairs between each adjacent electrode set of the at least three electrodes~~ closest neighboring electrodes have opposite polarities.

25. (Cancelled).

26. (Currently Amended) The skin treatment apparatus of claim 17, wherein the ~~high frequency AC signal has a frequency~~ RF is about 2.0 MHz and the ~~non-intersecting coagulation of skin dermis~~coagulated area around each ~~about the~~ electrodes is oval shaped.

27. (Cancelled).

28. (Previously Presented) The skin treatment apparatus of claim 17, wherein the electrodes are needles and have a diameter from 0.25mm to 0.30mm.

29. (Cancelled).

30. (Cancelled).

31. (Currently Amended) The skin treatment apparatus of claim 19, wherein the predetermined time interval is from 0.05 to 0.8 seconds and the ~~high frequency AC signal has a frequency~~

~~of~~ RF is about 2.0MHz.

32. (Cancelled).

33. (Cancelled).

34. (Previously Presented) The skin treatment apparatus of claim 17, wherein the closest neighboring electrodes ~~adjacent electrodes of the at least three electrodes~~ are separated by a distance of 1.3mm to 3.0mm.

35. (Cancelled).

36. (Previously Presented) The skin treatment apparatus of claim 28, wherein the needles have a length from 1mm to 4mm.

37. (Currently Amended) The skin treatment apparatus of claim 17, wherein the ~~at least three~~ plurality of electrodes are non-insulated.

38. (Currently Amended) The skin treatment apparatus of claim 22, wherein a section of each electrode of the ~~at least three~~ plurality of electrodes is non-insulated.

39. (Currently Amended) The skin treatment apparatus of claim 17, wherein each electrode of the ~~at least three~~plurality of electrodes is insulated except at its tip.

40. (Cancelled).

41. (Cancelled).

42. (Cancelled).

43. (Currently Amended) A method of treating skin, comprising:

inserting a plurality of ~~at least three~~ electrodes, the electrodes being bipolar into a section of skin to be treated; and

applying a ~~high frequency~~ Alternating Current (AC) Radio Frequency (RF) signal to the ~~at least three~~ plurality of electrodes to ~~form bipolar pairs between electrodes of the at least three electrodes for a predetermined time interval to form non-intersecting coagulation of skin sections about each electrode that form bipolar electrode pairs~~ coagulate around each electrode rather than coagulating between the electrodes.

44. (Currently Amended) The method of treating skin of claim 43, including providing an AC RF signal to the plurality of electrodes for a predetermined time interval ~~inserting an odd number greater than one of electrodes into a section of skin to be treated~~.

45. (Currently Amended) The method of treating skin of claim ~~43~~ 44, wherein the predetermined time interval is from 0.05 to 0.8 seconds.

46. (Currently Amended) The method of treating skin of claim ~~43~~ 44, wherein the skin segment to be treated is skin dermis and each electrode of the ~~at least three~~ plurality of electrodes has a length sufficient to reach skin dermis when inserted into skin and the predetermined time interval is from 0.05 to 0.8 seconds.

47. (Currently Amended) The method of treating skin of claim 46, ~~providing a high frequency Alternating Current (AC) signal to the at least three electrodes to form bipolar pairs between each adjacent electrode set of the at least three electrodes~~ wherein the closest neighboring electrodes have opposite polarities.

48. (Currently Amended) The method of treating skin of claim 43, wherein the ~~high frequency AC signal has a frequency~~ RF is about 2.0 MHz and the ~~coagulation of skin dermis about~~ coagulated area around each electrode is oval shaped.

49. (Previously Presented) The method of treating skin of claim 43, wherein the electrodes are needles and have a diameter from 0.25mm to 0.30mm.

50. (Currently Amended) The method of treating skin of claim 43, wherein the ~~high frequency signals have a frequency~~ RF is from 0.5 to 10Mhz and the predetermined time interval is from 0.05 to 0.8 seconds.

51. (Currently Amended) The method of treating skin of claim 43, wherein ~~adjacent electrodes of the at least three electrodes~~ the closest neighboring electrodes are separated by a distance of 1.3mm to 3.0mm.

52. (Previously Presented) The method of treating skin of claim 49, wherein the needles have a length from 1mm to 4mm.

53. (Currently Amended) The method of treating skin of claim 43, wherein the ~~at least three~~ plurality of electrodes are non-insulated.

54. (Currently Amended) The method of treating skin of claim 43, wherein a section of each electrode of the ~~at least three electrodes~~ plurality of electrodes is non-insulated.

55. (Currently Amended) The method of treating skin of claim 43, wherein each electrode of the ~~at least three~~ plurality of electrodes is insulated except at its tip.

REMARKS

Status of the claims

- Claims in issue before this Amendment: 17, 19, 20, 22, 24, 26, 28, 31, 34, 36-39, and 43-55
- List of claims amended: 17, 19, 20, 22, 24, 26, 31, 37-39, 43-48, 50, 51, and 53-55
- List of claims canceled: *None*
- List of claims added: *None*
- Claims in issue as of this Amendment: 17, 19, 20, 22, 24, 26, 28, 31, 34, 36-39, and 43-55
- No new matter has been added.

Cancelled claims 1-16 have been added to claim recitations per patent office protocol. A request for entry into the After Final Consideration Pilot Program 2.0 is also enclosed. Applicants contend that review of the proposed amendment is possible in the limited time provided by the program given the arguments and explanations provided below.

Prior Art Rejections

The previously pending claims were rejected as anticipated or obvious in view of US Publication 20050222565 to Manstein and US Patent 5,546,954 to Yamada. Applicants contend that the present rejections are not proper and the final action should be withdrawn. The Examiner has incorrectly construed the Manstein reference. In particular, the Examiner has stated that Manstein teaches providing a high frequency AC signal and references paragraphs 0032 and 0063 of Manstein for support. Manstein, critically however, teaches providing a RF signal in one embodiment ***OR*** an AC or DC signal in another embodiment. Further, Manstein only uses the term "AC" twice in the entire specification, in paragraph 0032, which addresses two, different

embodiments providing different energy sources and in claim 5. Manstein clearly does not teach or suggest providing a high frequency AC signal to bipolar electrodes. This rejection is clear error.

Paragraph 0032 from Manstein reads:

> ***In one exemplary embodiment***, the energy source 320 is a radio frequency (RF) device capable of outputting signals having frequencies in a desired range. ***In another exemplary embodiment***, the energy source is capable of outputting an AC or DC electric current. The control module 330 provides application-specific settings to the energy source 320. The energy source 320 receives these settings, and generates a current directed to and from specified needles for selectable or predetermined durations, intensities, and sequences based on these settings. (Emphasis Added).

Paragraph 0063 from Manstein is a claim, claim 5 that reads "The apparatus of any one of paragraphs 1 to 4 wherein the energy source is capable of outputting an AC or DC electric current".

This clear error is compounded by the rejection of claim 43. Manstein, in its FIG. 3 shows non-intersecting thermal damage regions 370. Manstein teaches in its paragraph 0037, repeated below that this form of non-intersecting damage 370 is formed by a ***monopolar configuration***. Applicants' Claims 43 and 17 clearly require a bipolar configuration. This rejection is clear error. Monopolar configurations are significantly different than bipolar configurations (as required in our claims). Monopolar configurations can be extremely dangerous to a patient. A monopolar configuration requires a grounding contact, usually far from the area being treated. In such a configuration, a signal pathway is formed from the grounding contact to monopolar needles. This pathway can cause severe burning and potential heart issues including arrhythmia due to the large electrical signal prorogating through the patient's body.

Paragraph 0037 from Manstein reads:

> In a preferred embodiment of the present invention, the shafts of conductive needles 350 are electrically insulated except for the portion of the needle near the tip. In the apparatus of FIG. 3, application of RF current to the needles 350 causes heating in the exposed tip region, inducing thermal damage regions 370 around the tip of each needle. Thermal damage regions 370 result from operation of the apparatus in ***monopolar configuration***, in which a remote grounding electrode, not shown in FIG. 3, is attached to a remote part of the patient's body to complete the circuit of electricity conveyed to needles 350 by energy source 320. In this monopolar configuration, RF current causes heating of the tip regions of the needles 350, generating thermal damage in tissue regions 370 adjacent to the needle tips that are approximately spherical or slightly elongated in shape. (Emphasis added).

Manstein, actually teaches and notes that its bipolar configuration generates intersecting damage (reference 425) as discussed in its paragraph 0041 (repeated below) and shown in its FIG. 4.

Paragraph 0043 from Manstein reads:

> Needles 410 and 415 are shown operating in ***bipolar mode*** in another embodiment of the present invention. Needle 410 is a ***positive electrode*** delivering RF or other current to the tip region of the needle from the energy source via conductor 430. Needle 415 functions as a ***grounding electrode*** that is connected to the ground of the energy source via conductor 431. In this configuration the applied current will travel through the tissue between the tips of needles 410 and 415, generating an ***elongated region of thermal damage 425 around and between the tips of the two needles***. (Emphasis Added).

As Manstein states in their bipolar mode, one needle is a positive electrode, while the other needle is the grounding electrode. Applicant's claimed mode or configuration of bipolar electrodes, does not have a specific positive or grounding pole because of the application of the alternating current high frequency signal to their electrodes. In the Applicants' claimed apparatus and methods, the

electrodes have poles that change or alternate between being positive or negative as the current alternates.

It is the application of the combined Alternating current, high frequency signal to bipolar electrodes that enables the Applicants' apparatus or method to form non-intersecting coagulation about their bipolar electrodes similar to prior art Monopolar configurations. In particular, the application of an alternating current, high frequency signal between bipolar electrodes forms a complete circuit where during the initial conduction (before the current changes polarity and thus the electrodes change poles (from positive to negative and back)), any current density in the path between electrodes will be less than around each electrode.

In Applicants' claimed apparatus and methods, conduction may begin initially between bipolar electrodes as electrons are released from one electrode to the tissue around the electrode and then travel to the other electrode. Concentration of the electron current may be highest in the area immediately surrounding each electrode causing areas around each electrode to be heated more. Electrons have more space to travel through in the path between the electrodes, becoming less dense (spaced apart from one another) Accordingly, the path between the electrodes may heat slower than the areas immediately surrounding the electrodes. Then the current will alternate, and the process start over again, preventing or limiting the heating between electrodes.

In order to move prosecution forward and place the application in better condition for allowance, Applicants have nevertheless amended claims 17, 19, 20, 22, 24, 26, 31, 37-39, 43-48, 50, 51, and 53-55. Entry is respectfully requested. Applicants have amended the claims to note the apparatus may be configured to provide and the method may provide an alternating current (AC) RF signal

to a plurality of electrodes (that are bipolar) to coagulate around each electrode rather than coagulating between the electrodes.

The undersigned Attorney respectfully requests the Examiner contact the undersigned Attorney with any issues and as part of after final pilot program if the Examiner does not withdraw the final action.

Respectfully Submitted,

5/5/2016 _/mwresq/_____
Date Merle Richman
Attorney/Agent for Applicant(s)
Reg. No. 38282

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La Jolla, CA 92038-3333
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Doc Code: TRAN.LET
Document Description: Transmittal Letter

PTO/SB/21 (07-09)
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TRANSMITTAL FORM *(to be used for all correspondence after initial filing)*		Application Number	14/006,930
		Filing Date	Sep 23, 2013
		First Named Inventor	Na, Jongju
		Art Unit	3762
		Examiner Name	Phillip Charles Edwards
Total Number of Pages in This Submission		Attorney Docket Number	NA002US

ENCLOSURES *(Check all that apply)*

☐ Fee Transmittal Form	☐ Drawing(s)	☐ After Allowance Communication to TC
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☒ Supplemental Amendment / Reply (13 pages)	☐ Petition	☐ Appeal Communication to TC **(Appeal Notice, Brief, Reply Brief)**
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☐ Reply to Missing Parts under 37 CFR 1.52 or 1.53		

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name	Merle W. Richman, Cust ID - 26338		
Signature	/mwresq/		
Printed name	Merle Richman		
Date	May 5, 2016	Reg. No.	38282

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Signature	/mwresq/		
Typed or printed name	Merle Richman	Date	May 5, 2016

This collection of information is required by 37 CFR 1.5. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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EFS ID:	25691895
Application Number:	14006930
International Application Number:	
Confirmation Number:	2283
Title of Invention:	ELECTRICALLY BASED MEDICAL TREATMENT DEVICE AND METHOD
First Named Inventor/Applicant Name:	Jong ju NA
Customer Number:	26338
Filer:	Merle W. Richman
Filer Authorized By:	
Attorney Docket Number:	NA002US
Receipt Date:	05-MAY-2016
Filing Date:	29-NOV-2013
Time Stamp:	11:23:52
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Supplemental Response or Supplemental Amendment	na002us-srfoa-2016-01-22.pdf	166926 e93e99610f6fdfd78181fb91133dbb088b648f6c	no	13
Warnings:					
Information:					

2	Supplemental Response or Supplemental Amendment	na002us-srfoa-2016-01-22-transmittal.pdf	110972 96361a45efa7fe0048c6eb8648487bb8d46c8d0c	no	1

Warnings:	
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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

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New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 14/006,930	Filing Date 11/29/2013	☐ To be Mailed

ENTITY: ☐ LARGE ☒ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT **05/05/2016**

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	* 26	Minus	** 26	= 0	X $40 =	0
Independent (37 CFR 1.16(h))	* 3	Minus	***3	= 0	X $210 =	0
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	0

AMENDMENT

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =	
Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =	
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

LIE
/DORRETTA BROOKS/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**
If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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Alexandria, Virginia 22313-1450
www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

26338 7590 05/18/2016

MERLE W. RICHMAN, III
P.O. BOX 3333
LA JOLLA, CA 92038

EXAMINER
EDWARDS, PHILIP CHARLES

ART UNIT	PAPER NUMBER
3762	

DATE MAILED: 05/18/2016

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/006,930	11/29/2013	Jong ju NA	NA002US	2283

TITLE OF INVENTION: ELECTRICALLY BASED MEDICAL TREATMENT DEVICE AND METHOD

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$480	$0	$0	$480	08/18/2016

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

26338 7590 05/18/2016
MERLE W. RICHMAN, III
P.O. BOX 3333
LA JOLLA, CA 92038

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission
I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/006,930	11/29/2013	Jong ju NA	NA002US	2283

TITLE OF INVENTION: ELECTRICALLY BASED MEDICAL TREATMENT DEVICE AND METHOD

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$480	$0	$0	$480	08/18/2016

EXAMINER	ART UNIT	CLASS-SUBCLASS
EDWARDS, PHILIP CHARLES	3762	607-116000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).
- ❑ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ❑ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.
1 _____
2 _____
3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ❑ Individual ❑ Corporation or other private group entity ❑ Government

4a. The following fee(s) are submitted:
- ❑ Issue Fee
- ❑ Publication Fee (No small entity discount permitted)
- ❑ Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**
- ❑ A check is enclosed.
- ❑ Payment by credit card. Form PTO-2038 is attached.
- ❑ The director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)
- ❑ Applicant certifying micro entity status. See 37 CFR 1.29 — NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.
- ❑ Applicant asserting small entity status. See 37 CFR 1.27 — NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.
- ❑ Applicant changing to regular undiscounted fee status. — NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

ENDYMED EXHIBIT 1002 - 386/509

UNITED STATES PATENT AND TRADEMARK OFFICE

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/006,930	11/29/2013	Jong ju NA	NA002US	2283

26338 7590 05/18/2016

MERLE W. RICHMAN, III
P.O. BOX 3333
LA JOLLA, CA 92038

EXAMINER	
EDWARDS, PHILIP CHARLES	
ART UNIT	**PAPER NUMBER**
3762	

DATE MAILED: 05/18/2016

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

ENDYMED EXHIBIT 1002 - 387/509

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Notice of Allowability	Application No. 14/006,930	Applicant(s) NA ET AL.	
	Examiner PHILIP C. EDWARDS	Art Unit 3762	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *supplemental amendment filed 5/5/2016*.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on_____.
2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
3. ☒ The allowed claim(s) is/are *17,19,20,22,24,26,28,31,34,36-39, and 43-55*. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov .
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   Certified copies:

   a) ☒ All b) ☐ Some *c) ☐ None of the:
   1. ☒ Certified copies of the priority documents have been received.
   2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
   3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
5. ☒ Examiner's Amendment/Comment
6. ☒ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

/PHILIP C EDWARDS/ Examiner, Art Unit 3762	/AMANDA PATTON/ Primary Examiner, Art Unit 3762

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Merle Richman on 5/5/2016.

The application has been amended as follows:

Claim 17 has been amended to replace "signal to the plurality of electrodes to coagulate around each electrode" with "signal to the plurality of electrodes configured to cause coagulation around each electrode".

Claim 43 has been amended to replace "signal to the plurality of electrodes to coagulate around each electrode" with "signal to the plurality of electrodes configured to cause coagulation around each electrode".

REASONS FOR ALLOWANCE

The following is an examiner's statement of reasons for allowance: The examiner agrees that with the applicant's argument that the AC signal and RF signal are applied in different embodiments in the prior art (e.g. see [0032] of Manstein) and that there would be no motivation to combine the embodiments. [0052] of the applicant's specification is where the applicant discloses the RF AC signal being implemented in one embodiment.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 3/1/2016 has been entered.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PHILIP C. EDWARDS whose telephone number is (571)270-1804. The examiner can normally be reached on Monday-Friday, 9AM - 5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christopher Koharski can be reached on 571-272-7230. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/PHILIP C EDWARDS/
Examiner, Art Unit 3762

/Amanda Patton/
Primary Examiner, Art Unit 3762

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14006930	NA ET AL.
	Examiner	Art Unit
	PHILIP EDWARDS	3762

CPC- SEARCHED		
Symbol	Date	Examiner
A61N1/05 OR A61N1/0534 OR A61N1/0551	7/24/2015	PCE

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
607	116	7/24/2015	PCE

SEARCH NOTES		
Search Notes	Date	Examiner
Inventor Search	7/24/2015	PCE
see attached EAST search history	7/24/2015	PCE
see updated EAST search history	1/13/2016	PCE

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner
a61n1	all	4/25/2016	PCE

/PHILIP EDWARDS/ Examiner.Art Unit 3762	

UNITED STATES PATENT AND TRADEMARK OFFICE

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United States Patent and Trademark Office
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Alexandria, Virginia 22313-1450
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BIB DATA SHEET

CONFIRMATION NO. 2283

SERIAL NUMBER	FILING or 371(c) DATE RULE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
14/006,930	11/29/2013	607	3762	NA002US

APPLICANTS

INVENTORS

Jong ju NA, Songpa-Gu, KOREA, REPUBLIC OF;
Jeong Gu Gwak, Songpa-Gu, KOREA, REPUBLIC OF;

**** CONTINUING DATA ***************************

This application is a 371 of PCT/KR2012/004695 06/14/2012

**** FOREIGN APPLICATIONS ***************************

REPUBLIC OF KOREA 10-2011-0557691 06/14/2011
REPUBLIC OF KOREA 10-2011-0057692 06/14/2011

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED **** ** SMALL ENTITY **

11/30/2013

Foreign Priority claimed	☑ Yes ☐ No	☐ Met after Allowance	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
35 USC 119(a-d) conditions met	☑ Yes ☐ No		KOREA, REPUBLIC OF	7	26	2
Verified and Acknowledged	/PHILIP CHARLES EDWARDS/ Examiner's Signature	Initials				

ADDRESS

MERLE W. RICHMAN, III
P.O. BOX 3333
LA JOLLA, CA 92038
UNITED STATES

TITLE

ELECTRICALLY BASED MEDICAL TREATMENT DEVICE AND METHOD

FILING FEE RECEIVED		
980	FEES: Authority has been given in Paper No._____ to charge/credit DEPOSIT ACCOUNT No._____ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S1	1	"14006930"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2015/07/22 12:43
S2	13	"2011046615"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2015/07/22 13:04
S3	5	"20110046615"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2015/07/22 13:06
S4	2	"20080281389"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2015/07/22 13:07
S5	2	"20060293725"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2015/07/22 13:08
S6	7	"20100055292"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2015/07/22 13:09
S7	6	"11098030"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2015/07/23 14:11
S8	3	"20050222565"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2015/07/23 14:17
S9	1221	607/115-134.ccls. and needle with electrode	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2015/07/24 10:04
S10	80	607/115-134.ccls. and needle with electrode and frequency with Mhz	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2015/07/24 10:04

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S11	21	607/115-134.ccls. and needle with electrode same skin and frequency with Mhz	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2015/07/24 10:05
S12	4	"5546954".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2015/07/24 10:06
S13	5330	607/116.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2015/07/24 10:41
S14	2654	S13 AND ((A61N1/05 OR A61N1/0534 OR A61N1/0551).CPC.)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2015/07/24 10:43
S15	90	((Jong) near2 (NA)).INV.	US-PGPUB; USPAT	ADJ	ON	2015/07/24 10:44
S16	1	(("Jeong Gu") near2 (Gwak)).INV.	US-PGPUB; USPAT	ADJ	ON	2015/07/24 10:44
S17	6	(US-20140074203-$ or US-20080281389-$ or US-20060293725-$ or US-20080082090-$ or US-20050222565-$).did. or (US-5546954-$).did.	US-PGPUB; USPAT	ADJ	ON	2016/01/12 20:25
S18	3	S17 and (AC or alternating current or alternating-current)	US-PGPUB; USPAT	ADJ	ON	2016/01/12 20:26
S19	6	(US-20140074203-$ or US-20080281389-$ or US-20060293725-$ or US-20080082090-$ or US-20050222565-$).did. or (US-5546954-$).did.	US-PGPUB; USPAT	ADJ	ON	2016/01/13 10:01
S20	6	S19 and (mm or millimeter with needle)	US-PGPUB; USPAT	ADJ	ON	2016/01/13 10:01
S21	4	S19 and (mm or millimeter) with needle	US-PGPUB; USPAT	ADJ	ON	2016/01/13 10:01
S22	219	607/115-134.ccls. and (mm or millimeter) with needle	US-PGPUB; USPAT	ADJ	ON	2016/01/13 10:04
S23	55	607/115-134.ccls. and (mm or millimeter) with needle with length	US-PGPUB; USPAT	ADJ	ON	2016/01/13 10:04
S24	6	S19 and second	US-PGPUB; USPAT	ADJ	ON	2016/01/13 10:16
S25	6	(US-20140074203-$ or US-20080281389-$ or US-20060293725-$ or US-20080082090-$ or US-20050222565-$).did. or (US-5546954-$).did.	US-PGPUB; USPAT	ADJ	ON	2016/01/13 15:02
S26	6	S25 and seconds	US-PGPUB; USPAT	ADJ	ON	2016/01/13 15:02

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	1	a61n1/$.cpc. and non-intersecting with needle tips.clm.	US-PGPUB; USPAT	ADJ	ON	2016/04/25 14:55

4/25/2016 2:56:02 PM
C:\Users\pedwards2\Documents\EAST\Workspaces\14,006,930.wsp

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14006930	NA ET AL.
	Examiner	**Art Unit**
	PHILIP C EDWARDS	3762

CPC							
Symbol						**Type**	**Version**
A61N		1	/	0502		F	2013-01-01
A61B		18	/	1477		I	2013-01-01
A61B		2018	/	0047		A	2013-01-01
A61B		2018	/	00589		A	2013-01-01
A61B		2018	/	00452		A	2013-01-01
A61B		2018	/	00726		A	2013-01-01
A61B		2018	/	00732		A	2013-01-01
A61B		2018	/	00767		A	2013-01-01
A61B		2018	/	126		A	2013-01-01
A61B		2018	/	143		A	2013-01-01
A61B		2018	/	1475		A	2013-01-01
			/				
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			/				
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CPC Combination Sets								
Symbol					**Type**	**Set**	**Ranking**	**Version**
			/					
			/					

/PHILIP C EDWARDS/ Examiner.Art Unit 3762	04/25/2016	**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	26	
/AMANDA PATTON/ Primary Examiner.Art Unit 3762	04/29/2016	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	5

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14006930	NA ET AL.
	Examiner	**Art Unit**
	PHILIP C EDWARDS	3762

US ORIGINAL CLASSIFICATION		INTERNATIONAL CLASSIFICATION										
CLASS	SUBCLASS	CLAIMED					NON-CLAIMED					
607	116	A	6	1	N	1 / 00 (2006.0)						

CROSS REFERENCE(S)					
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)				

/PHILIP C EDWARDS/ Examiner.Art Unit 3762	04/25/2016	**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	26	
/AMANDA PATTON/ Primary Examiner.Art Unit 3762	04/29/2016	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	5

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14006930	NA ET AL.
	Examiner	**Art Unit**
	PHILIP C EDWARDS	3762

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
1	17	17	46												
2	19	18	47												
3	20	19	48												
4	22	20	49												
5	24	22	50												
8	26	23	51												
9	28	21	52												
7	31	24	53												
11	34	25	54												
10	36	26	55												
12	37														
6	38														
13	39														
14	43														
15	44														
16	45														

/PHILIP C EDWARDS/ Examiner.Art Unit 3762	04/25/2016	**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	26	
/AMANDA PATTON/ Primary Examiner.Art Unit 3762	04/29/2016	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	5

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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
14/006,930	11/29/2013	3762	980	NA002US	26	1

CONFIRMATION NO. 2283

CORRECTED FILING RECEIPT

26338
MERLE W. RICHMAN, III
P.O. BOX 3333
LA JOLLA, CA 92038

OC000000083431739

Date Mailed: 06/06/2016

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Inventor(s)

Jong ju NA, Songpa-Gu, KOREA, REPUBLIC OF;
Jeong Gu Gwak, Songpa-Gu, KOREA, REPUBLIC OF;

Applicant(s)

Jong ju NA, Songpa-Gu, KOREA, REPUBLIC OF;
Jeong Gu Gwak, Songpa-Gu, KOREA, REPUBLIC OF;

Power of Attorney: The patent practitioners associated with Customer Number 26338

Domestic Priority data as claimed by applicant

This application is a 371 of PCT/KR2012/004695 06/14/2012

Foreign Applications (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.)
REPUBLIC OF KOREA 10-2011-0057691 06/14/2011
REPUBLIC OF KOREA 10-2011-0057692 06/14/2011

Permission to Access Application via Priority Document Exchange: No

Permission to Access Search Results: No

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 11/30/2013

ENDYMED EXHIBIT 1002 - 401/509

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 14/006,930**

Projected Publication Date: Not Applicable

Non-Publication Request: No

Early Publication Request: No
**** SMALL ENTITY ****
Title

SKIN TREATMENT APPARATUS AND METHOD

Preliminary Class

607

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

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Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

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Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/006,930	11/29/2013	Jong ju NA	NA002US	2283

26338 7590 06/07/2016

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EXAMINER	
EDWARDS, PHILIP CHARLES	

ART UNIT	PAPER NUMBER
3762	

MAIL DATE	DELIVERY MODE
06/07/2016	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

ENDYMED EXHIBIT 1002 - 404/509

UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

Application No. : 14006930
Applicant : Na
Filing Date : 11/29/2013
Date Mailed : 06/07/2016

NOTICE TO FILE CORRECTED APPLICATION PAPERS

Notice of Allowance Mailed

This application has been accorded an Allowance Date and is being prepared for issuance. The application, however, is incomplete for the reasons below.

Applicant is given two (2) months from the mail date of this Notice within which to respond. This time period for reply is extendable under 37 CFR 1.136(a) for only TWO additional MONTHS.

The informalities requiring correction are indicated in the attachment(s). If the informality pertains to the abstract, specification (including claims) or drawings, the informality must be corrected with an amendment in compliance with 37 CFR 1.121 (or, if the application is a reissue application, 37 CFR 1.173). Such an amendment may be filed after payment of the issue fee if limited to correction of informalities noted herein. See Waiver of 37 CFR 1.312 for Documents Required by the Office of Patent Publication, 1280 Off. Gaz. Patent Office 918 (March 23, 2004). In addition, if the informality is not corrected until after payment of the issue fee, for purposes of 35 U.S.C. 154(b)(1)(iv), "all outstanding requirements" will be considered to have been satisfied when the informality has been corrected. A failure to respond within the above-identified time period will result in the application being ABANDONED.

See attachment(s).

A copy of this notice MUST be returned with the reply. Please address response to "Mail Stop Issue Fee, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450".

/Vermel Wilson/
Publication Branch
Office of Data Management
(571) 272-4200

Application No. 14006930

IDENTIFICATION OF APPLICATION DEFICIENCIES IN APPLICATION FILED BEFORE SEPTEMBER 16, 2012

☐ Applicant must provide legible text for the following item(s).

- ☐ Specification filed , page(s) .
- ☐ Claims filed , claim(s) .
- ☐ Other:

☒ Applicant must provide missing information on the following page(s) of the specification by amending the specification to add the missing text. No new matter may be added.
Page/line no(s). Page 16: Please verify if data is missing from paragraph 0077.

☐ The specification refers to one or more applications by attorney docket number and does not show the U.S. application number(s). Applicant must supply the U.S. application number in place of each attorney docket number.
Page/line no(s).

☐ Applicant must provide an Abstract of the Disclosure.

☐ The Application Data Sheet (ADS dated) did not show the inventor's residence at all, or did not show both a city and state in the U.S. inventor's residence, or did not show both a city and country in the non-U.S. inventor's residence. Applicant must supply a Supplemental Application Data Sheet (ADS) that shows each U.S. inventor's city and state of residence and each non-U.S. inventor's city and country of residence. To be in compliance with 37 CFR 1.76, the Supplemental Application Data Sheet must identify the information being changed by using underlining for additions and strikethroughs or brackets for deletions.

☐ Other:

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Na, et al. Application No.: 14/006,930 Filed: 9/23/2013 Title: SKIN TREATMENT APPARATUS AND METHOD Attorney Docket No.: NA002US	Art Unit: 3762 Examiner: Phillip Charles Edwards

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

AMENDMENT AFTER NOTICE OF ALLOWANCE AND NOTICE TO FILE CORRECTED APPLICATION PAPERS

Dear Sir:

In response to the Notice of Allowance dated May 18, 2016 and the Notice to File Corrected Application Papers dated June 7, 2016, Applicants are adding restricted claims from the restriction dated May 13, 2015 where the generic claim 17 has been allowed and the Examiner indicated that the restricted species would be permitted if the generic claim 17 was allowed and amending the specification to address the notice to file corrected application papers.

In the Specification:

Please delete the empty paragraph 0077.

Amendment to the Claims begins on page 2 of this paper

Remarks begin on page 9 of this paper.

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Cancelled).
2. (Cancelled).
3. (Cancelled).
4. (Cancelled).
5. (Cancelled).
6. (Cancelled).
7. (Cancelled).
8. (Cancelled).
9. (Cancelled).
10. (Cancelled).
11. (Cancelled).
12. (Cancelled).
13. (Cancelled).
14. (Cancelled).
15. (Cancelled).
16. (Cancelled).

17. (Previously Presented) A skin treatment apparatus, comprising:

a plurality of electrodes, the electrodes being bipolar and configured to be insertable into skin to be treated; and

a radio frequency (RF) generation module, the RF generation module electrically coupled to the plurality of electrodes and configured to provide an Alternating Current (AC) RF signal to the plurality of electrodes to coagulate around each electrode rather than coagulating between the electrodes.

18. (cancelled).

19. (Previously Presented) The skin treatment apparatus of claim 17, wherein the RF generation module is configured to provide an AC RF signal to the plurality of electrodes for a predetermined time interval.

20. (Previously Presented) The skin treatment apparatus of claim 19, wherein the predetermined time interval is from 0.05 to 0.8 seconds.

21. (Cancelled).

22. (Previously Presented) The skin treatment apparatus of claim 19, wherein each electrode of the plurality of electrodes has a length sufficient to reach skin dermis when inserted into skin and the predetermined time interval is from 0.05 to 0.8 seconds.

23. (Cancelled).

24. (Previously Presented) The skin treatment apparatus of claim 22, wherein the closest neighboring electrodes have opposite polarities.

25. (Cancelled).

26. (Previously Presented) The skin treatment apparatus of claim 17, wherein the RF is about 2.0 MHz and the coagulated area around each electrodes is oval shaped.

27. (Cancelled).

28. (Previously Presented) The skin treatment apparatus of claim 17, wherein the electrodes are needles and have a diameter from 0.25mm to 0.30mm.

29. (Cancelled).

30. (Cancelled).

31. (Previously Presented) The skin treatment apparatus of claim 19, wherein the predetermined time interval is from 0.05 to 0.8 seconds and the RF is about 2.0MHz.

32. (Cancelled).

33. (Cancelled).

34. (Previously Presented) The skin treatment apparatus of claim 17, wherein the closest neighboring electrodes are separated by a distance of 1.3mm to 3.0mm.

35. (Cancelled).

36. (Previously Presented) The skin treatment apparatus of claim 28, wherein the needles have a length from 1mm to 4mm.

37. (Previously Presented) The skin treatment apparatus of claim 17, wherein the plurality of electrodes are non-insulated.

38. (Previously Presented) The skin treatment apparatus of claim 22, wherein a section of each electrode of the plurality of electrodes is non-insulated.

39. (Previously Presented) The skin treatment apparatus of claim 17, wherein each electrode of the plurality of electrodes is insulated except at its tip.

40. (Cancelled).

41. (Cancelled).

42. (Cancelled).

43. (Previously Presented) A method of treating skin, comprising:

inserting a plurality of electrodes, the electrodes being bipolar into a section of skin to be treated; and

applying a Alternating Current (AC) Radio Frequency (RF) signal to the plurality of electrodes to coagulate around each electrode rather than coagulating between the electrodes.

44. (Previously Presented) The method of treating skin of claim 43, including providing an AC RF signal to the plurality of electrodes for a predetermined time interval.

45. (Previously Presented) The method of treating skin of claim 44, wherein the predetermined time interval is from 0.05 to 0.8 seconds.

46. (Previously Presented) The method of treating skin of claim 44, wherein the skin segment to be treated is skin dermis and each electrode of the plurality of electrodes has a length sufficient to reach skin dermis when inserted into skin and the predetermined time interval is from 0.05 to 0.8 seconds.

47. (Previously Presented) The method of treating skin of claim 46, wherein the closest neighboring electrodes have opposite polarities.

48. (Previously Presented) The method of treating skin of claim 43, wherein the RF is about 2.0 MHz and the coagulated area around each electrode is oval shaped.

49. (Previously Presented) The method of treating skin of claim 43, wherein the electrodes are needles and have a diameter from 0.25mm to 0.30mm.

50. (Previously Presented) The method of treating skin of claim 43, wherein the RF is from 0.5 to 10Mhz and the predetermined time interval is from 0.05 to 0.8 seconds.

51. (Previously Presented) The method of treating skin of claim 43, wherein the closest neighboring electrodes are separated by a distance of 1.3mm to 3.0mm.

52. (Previously Presented) The method of treating skin of claim 49, wherein the needles have a length from 1mm to 4mm.

53. (Previously Presented) The method of treating skin of claim 43, wherein the plurality of electrodes are non-insulated.

54. (Previously Presented) The method of treating skin of claim 43, wherein a section of each electrode of the plurality of electrodes is non-insulated.

55. (Previously Presented) The method of treating skin of claim 43, wherein each electrode of the plurality of electrodes is insulated except at its tip.

56. (Newly Added) The skin treatment apparatus of claim 17, further comprising a drive module to controllably move one or more of the plurality of electrodes into skin to be treated.

57. (Newly Added) The skin treatment apparatus of claim 17, further comprising a drive module to controllably move one or more of the plurality of electrodes from an epidermis region to an adjacent dermis region of skin to be treated.

58. (Newly Added) The skin treatment apparatus of claim 56, further comprising a user interface to enable a user to select the depths that the drive module controllably moves one or more of the plurality of electrodes into skin to be treated.

REMARKS

Status of the claims

- Claims in issue before this Amendment: 17, 19, 20, 22, 24, 26, 28, 31, 34, 36-39, and 43-55
- List of claims amended: *None*
- List of claims canceled: *None*
- List of claims added: 56-58
- Claims in issue as of this Amendment: 17, 19, 20, 22, 24, 26, 28, 31, 34, 36-39, and 43-58
- No new matter has been added.

The Examiner has allowed claims 17, 19, 20, 22, 24, 26, 28, 31, 34, 36-39, and 43-55 in a notice of allowance dated May 18, 2016. In a restriction requirement issued on May 13, 2015, the Examiner stated that the claims as filed 17-42 included three species A-C, where Claims 17, 18, 23, and 42 read on Species A, Claims 17, 19-21, 24-27, 29-33, and 41 read on Species B, and Claims 17, 22, 28, and 34-40 read on Species C. Applicants elected Species C. The Examiner noted, however that "[u]pon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise require all the limitations of an allowed generic claim. Currently, the following claim(s) are generic: Claim 17". Generic claim 17 has been allowed. The newly added claims are dependent on allowed, generic claim 17 and read on Species A or B.

In particular, claim 56 is based on cancelled claim 18, which read on Species A. Claim 57 is based on cancelled claim 23, which read on Species A. Claim 58 is based on cancelled claim 42, which read on Species A.

Notice to Corrected Application Papers

The Notice to File Corrected Application Papers dated June 7, 2016, requests the Applicants to please verify if data is missing from paragraph 0077 on page 16. Applicants have deleted paragraph 0077 and confirm that NO data is missing. Entry of this amendment is respectfully requested.

The undersigned Attorney respectfully requests the Examiner contact the undersigned Attorney with any issues with the present Amendment after Allowance.

Respectfully Submitted,

6/23/2016 _/mwresq/_____
Date Merle Richman
Attorney/Agent for Applicant(s)
Reg. No. 38282

Merle Richman
Patent Attorney
Customer ID - 26338
PO Box 3333
La Jolla, CA 92038-3333
Tel. 858 551-2030

Doc Code: TRAN.LET
Document Description: Transmittal Letter

PTO/SB/21 (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paper Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

TRANSMITTAL FORM *(to be used for all correspondence after initial filing)*		Application Number	14/006,930
		Filing Date	Sep 23, 2013
		First Named Inventor	Na, Jongju
		Art Unit	3762
		Examiner Name	Phillip Charles Edwards
Total Number of Pages in This Submission		Attorney Docket Number	NA002US

ENCLOSURES *(Check all that apply)*

☐ Fee Transmittal Form	☐ Drawing(s)	☐ After Allowance Communication to TC
☐ Fee Attached	☐ Licensing-related Papers	☐ Appeal Communication to Board of Appeals and Interferences
☒ Amendment / Reply (10 pages)	☐ Petition	☐ Appeal Communication to TC **(Appeal Notice, Brief, Reply Brief)**
☒ After Allowance	☐ Petition to Convert to a Provisional Application	☐ Proprietary Information
☐ Affidavits/declaration(s)	☐ Power of Attorney, Revocation Change of Correspondence Address	☐ Status Letter
☐ Extension of Time Request	☐ Terminal Disclaimer	☐ Other Enclosure(s) (please identify below):
☐ Express Abandonment Request	☐ Request for Refund	
☐ Information Disclosure Statement	☐ CD, Number of CD(s) _____	
	☐ Landscape Table on CD	
☐ Certified Copy of Priority Document(s)		
☐ Reply to Missing Parts/ Incomplete Application	Remarks	
☐ Reply to Missing Parts under 37 CFR 1.52 or 1.53		

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name	Merle W. Richman, Cust ID - 26338		
Signature	/mwresq/		
Printed name	Merle Richman		
Date	June 23, 2016	Reg. No.	38282

CERTIFICATE OF TRANSMISSION/MAILING

I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below.

Signature	/mwresq/		
Typed or printed name	Merle Richman	Date	June 23, 2016

This collection of information is required by 37 CFR 1.5. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

In you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Electronic Patent Application Fee Transmittal

Application Number:	14006930
Filing Date:	29-Nov-2013
Title of Invention:	SKIN TREATMENT APPARATUS AND METHOD
First Named Inventor/Applicant Name:	Jong ju NA
Filer:	Merle W. Richman
Attorney Docket Number:	NA002US

Filed as Small Entity

Filing Fees for U.S. National Stage under 35 USC 371

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Claims in excess of 20	2615	3	40	120
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**120**

Electronic Acknowledgement Receipt

EFS ID:	26159853
Application Number:	14006930
International Application Number:	
Confirmation Number:	2283
Title of Invention:	SKIN TREATMENT APPARATUS AND METHOD
First Named Inventor/Applicant Name:	Jong ju NA
Customer Number:	26338
Filer:	Merle W. Richman
Filer Authorized By:	
Attorney Docket Number:	NA002US
Receipt Date:	23-JUN-2016
Filing Date:	29-NOV-2013
Time Stamp:	18:12:45
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$120
RAM confirmation Number	062416INTEFSW18144800
Deposit Account	5397
Authorized User	Merle Richman
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Amendment after Notice of Allowance (Rule 312)	na002us-aaa-2016-05-18.pdf	134022 7fe19b1d63a80bc564a44c6729ba5837ea0d2963	no	10
Warnings:					
Information:					
2	Transmittal Letter	na002us-aaa-2016-05-18-transmittal.pdf	110955 023a9ebf6dfe0912327bb17a7a316ec48f4d2d5d	no	1
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	30506 cc98e44f7e10a00b3528256245 7f902644ab04f9	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	275483		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

26338 2880 05/18/2016
MERLE W. RICHMAN, III
P.O. BOX 3333
LA JOLLA, CA 92038

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission
I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

Merle W Richman, Esq.	(Depositor's name)
/mwresq/	(Signature)
July 5, 2016	(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/006,930	11/29/2013	Jong ju NA	NA002US	2283

TITLE OF INVENTION: ELECTRICALLY BASED MEDICAL TREATMENT DEVICE AND METHOD

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$480	$0	$0	$480	08/18/2016

EXAMINER	ART UNIT	CLASS-SUBCLASS
EDWARDS, PHILIP CHARLES	3762	607-116000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).
- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.
1 Merle W. Richman, Esq.
2
3

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:
- ☒ Issue Fee
- ☐ Publication Fee (No small entity discount permitted)
- ☐ Advance Order - # of Copies

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**
- ☐ A check is enclosed.
- ☒ Payment by credit card. Form PTO-2038 is attached. xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx payment via efs-web
- ☐ The director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)
- ☐ Applicant certifying micro entity status. See 37 CFR 1.29 — NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.
- ☒ Applicant asserting small entity status. See 37 CFR 1.27 — NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.
- ☐ Applicant changing to regular undiscounted fee status. — NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature /mwresq/ Date July 5, 2016

Typed or printed name Merle W. Richman, Esq. Registration No. 38,282

PTOL-85 Part B (10-13) Approved for use through 10/31/2013. OMB 0651-0033 U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

ENDYMED EXHIBIT 1002 - 422/509

Electronic Patent Application Fee Transmittal

Application Number:	14006930
Filing Date:	29-Nov-2013
Title of Invention:	SKIN TREATMENT APPARATUS AND METHOD
First Named Inventor/Applicant Name:	Jong ju NA
Filer:	Merle W. Richman
Attorney Docket Number:	NA002US

Filed as Small Entity

Filing Fees for U.S. National Stage under 35 USC 371

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Utility Appl Issue Fee	2501	1	480	480

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**480**

Electronic Acknowledgement Receipt

EFS ID:	26261972
Application Number:	14006930
International Application Number:	
Confirmation Number:	2283
Title of Invention:	SKIN TREATMENT APPARATUS AND METHOD
First Named Inventor/Applicant Name:	Jong ju NA
Customer Number:	26338
Filer:	Merle W. Richman
Filer Authorized By:	
Attorney Docket Number:	NA002US
Receipt Date:	05-JUL-2016
Filing Date:	29-NOV-2013
Time Stamp:	22:05:17
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$480
RAM confirmation Number	070616INTEFSW22083200
Deposit Account	5397
Authorized User	Merle Richman
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	na002us-issue-fee-transmittal.pdf	332141 9ae31b984b10147ea38081a094a0a8d60b96b0e8	no	1
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30654 2619aaef6cd53052e26f367a0621dbf7df184e08	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	362795		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Na, et al. Application No.: 14/006,930 Filed: 9/23/2013 Title: SKIN TREATMENT APPARATUS AND METHOD Attorney Docket No.: NA002US	Art Unit: 3762 Examiner: Phillip Charles Edwards

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

AMENDMENT AFTER NOTICE OF ALLOWANCE AND NOTICE TO FILE CORRECTED APPLICATION PAPERS

Dear Sir:

In response to the Notice of Allowance dated May 18, 2016 and the Notice to File Corrected Application Papers dated June 7, 2016, Applicants are adding restricted claims from the restriction dated May 13, 2015 where the generic claim 17 has been allowed and the Examiner indicated that the restricted species would be permitted if the generic claim 17 was allowed and amending the specification to address the notice to file corrected application papers.

In the Specification:

Please delete the empty paragraph 0077.

Amendment to the Claims begins on page 2 of this paper

Remarks begin on page 9 of this paper.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

BIB DATA SHEET

CONFIRMATION NO. 2283

SERIAL NUMBER	FILING or 371(c) DATE RULE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
14/006,930	11/29/2013	607	3762	NA002US

APPLICANTS

INVENTORS

Jong ju NA, Songpa-Gu, KOREA, REPUBLIC OF;
Jeong Gu Gwak, Songpa-Gu, KOREA, REPUBLIC OF;

**** CONTINUING DATA ***************************

This application is a 371 of PCT/KR2012/004695 06/14/2012

**** FOREIGN APPLICATIONS ***************************

REPUBLIC OF KOREA 10-2011-0057691 06/14/2011
REPUBLIC OF KOREA 10-2011-0057692 06/14/2011

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED **** ** SMALL ENTITY **

11/30/2013

Foreign Priority claimed	☑ Yes ☐ No	☐ Met after Allowance	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
35 USC 119(a-d) conditions met	☑ Yes ☐ No		KOREA, REPUBLIC OF	7	29	1
Verified and Acknowledged	/PHILIP CHARLES EDWARDS/ Examiner's Signature	Initials				

ADDRESS

MERLE W. RICHMAN, III
P.O. BOX 3333
LA JOLLA, CA 92038
UNITED STATES

TITLE

SKIN TREATMENT APPARATUS AND METHOD

FILING FEE RECEIVED		
1100	FEES: Authority has been given in Paper No._____ to charge/credit DEPOSIT ACCOUNT No._____ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/006,930	11/29/2013	Jong ju NA	NA002US	2283

26338 7590 07/11/2016

MERLE W. RICHMAN, III
P.O. BOX 3333
LA JOLLA, CA 92038

EXAMINER
EDWARDS, PHILIP CHARLES

ART UNIT	PAPER NUMBER
3762	

MAIL DATE	DELIVERY MODE
07/11/2016	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Corrected Notice of Allowability	**Application No.** 14/006,930	**Applicant(s)** NA ET AL.	
	Examiner PHILIP C. EDWARDS	**Art Unit** 3762	**AIA (First Inventor to File) Status** No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *amendment filed 6/23/2016*.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on_____.
2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
3. ☒ The allowed claim(s) is/are *17,19,20,22,24,26,28,31,34,36-39, and 43-58*. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov .
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   Certified copies:

   a) ☒ All b) ☐ Some *c) ☐ None of the:
   1. ☒ Certified copies of the priority documents have been received.
   2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
   3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
5. ☒ Examiner's Amendment/Comment
6. ☐ Examiner's Statement of Reasons for Allowance
7. ☒ Other *PTO-271*.

/PHILIP C EDWARDS/ Examiner, Art Unit 3762	/AMANDA PATTON/ Primary Examiner, Art Unit 3762

DETAILED ACTION

The present application is being examined under the pre-AIA first to invent provisions.

Election/Restrictions

Claims 56-58 have been rejoined. The claims were previously restricted via a species restriction but have been rejoined as the generic claim is allowed.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PHILIP C. EDWARDS whose telephone number is (571)270-1804. The examiner can normally be reached on Monday-Friday, 9AM - 5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christopher Koharski can be reached on 571-272-7230. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/PHILIP C EDWARDS/
Examiner, Art Unit 3762

/Amanda Patton/
Primary Examiner, Art Unit 3762

Response to Rule 312 Communication	Application No.	Applicant(s)
	14/006,930	NA ET AL.
	Examiner	Art Unit
	PHILIP C. EDWARDS	3762

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address –

1. ☒ The amendment filed on *23 June 2016* under 37 CFR 1.312 has been considered, and has been:

a) ☒ entered.

b) ☐ entered as directed to matters of form not affecting the scope of the invention.

c) ☐ disapproved because the amendment was filed after the payment of the issue fee.

Any amendment filed after the date the issue fee is paid must be accompanied by a petition under 37 CFR 1.313(c)(1) and the required fee to withdraw the application from issue.

d) ☐ disapproved. See explanation below.

e) ☐ entered in part. See explanation below.

/Amanda Patton/ Primary Examiner, Art Unit 3762	/PHILIP C EDWARDS/ Examiner, Art Unit 3762

ENDYMED EXHIBIT 1002 - 433/509

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14006930	NA ET AL.
	Examiner	**Art Unit**
	PHILIP C EDWARDS	3762

CPC								
Symbol							**Type**	**Version**
A61N		1	/	0502			F	2013-01-01
A61B		18	/	1477			I	2013-01-01
A61B		2018	/	0047			A	2013-01-01
A61B		2018	/	00589			A	2013-01-01
A61B		2018	/	00452			A	2013-01-01
A61B		2018	/	00726			A	2013-01-01
A61B		2018	/	00732			A	2013-01-01
A61B		2018	/	00767			A	2013-01-01
A61B		2018	/	126			A	2013-01-01
A61B		2018	/	143			A	2013-01-01
A61B		2018	/	1475			A	2013-01-01
			/					
			/					
			/					
			/					

CPC Combination Sets									
Symbol							**Type**	**Set**	**Ranking**	**Version**
			/							
			/							

/PHILIP C EDWARDS/ Examiner.Art Unit 3762	06/27/2016	**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	29	
/AMANDA PATTON/ Primary Examiner.Art Unit 3762	04/29/2016	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	5

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14006930	NA ET AL.
	Examiner	**Art Unit**
	PHILIP C EDWARDS	3762

US ORIGINAL CLASSIFICATION		INTERNATIONAL CLASSIFICATION										
CLASS	SUBCLASS	CLAIMED					NON-CLAIMED					
607	116	A	6	1	N	1 / 00 (2006.01.01)						
CROSS REFERENCE(S)												
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)											

/PHILIP C EDWARDS/ Examiner.Art Unit 3762	06/27/2016	**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	29	
/AMANDA PATTON/ Primary Examiner.Art Unit 3762	04/29/2016	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	5

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14006930	NA ET AL.
	Examiner	**Art Unit**
	PHILIP C EDWARDS	3762

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
1	17	17	46												
2	19	18	47												
3	20	19	48												
4	22	20	49												
5	24	22	50												
8	26	23	51												
9	28	21	52												
7	31	24	53												
11	34	25	54												
10	36	26	55												
12	37	27	56												
6	38	29	57												
13	39	28	58												
14	43														
15	44														
16	45														

/PHILIP C EDWARDS/ Examiner.Art Unit 3762	06/27/2016	**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	29	
/AMANDA PATTON/ Primary Examiner.Art Unit 3762	04/29/2016	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	5

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/006,930	11/29/2013	Jong ju NA	NA002US

CONFIRMATION NO. 2283

26338
MERLE W. RICHMAN, III
P.O. BOX 3333
LA JOLLA, CA 92038

37 CFR 1.48 ACKNOWLEDGEMENT LETTER

OC000000085504407

Date Mailed: 09/06/2016

IMPROPER SUBMISSION OF REQUEST UNDER 37 CFR 1.48(a)

The request under 37 CFR 1.48(a) (request to change inventorship) submitted on 12/07/2013 in the above-identified application is not accepted because:

- The request to correct inventorship under 37 CFR 1.48(a) is deficient because a corrected or updated application data sheet (ADS) in compliance with 37 CFR 1.76 (including markings showing the changes) has not been submitted. Any renewed request must include a corrected or updated ADS in compliance with 37 CFR 1.76 that identifies the information being changed, with underlining for insertions, and strike-through or brackets for text removed.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/mmasfaw/

ENDYMED EXHIBIT 1002 - 437/509

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/006,930	11/29/2013	Jong ju NA	NA002US	2283

26338 7590 09/09/2016

MERLE W. RICHMAN, III
P.O. BOX 3333
LA JOLLA, CA 92038

EXAMINER	
EDWARDS, PHILIP CHARLES	

ART UNIT	PAPER NUMBER
3762	

MAIL DATE	DELIVERY MODE
09/09/2016	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

Application No. : 14006930
Applicant : Na
Filing Date : 11/29/2013
Date Mailed : 09/09/2016

NOTICE TO FILE CORRECTED APPLICATION PAPERS

Notice of Allowance Mailed

This application has been accorded an Allowance Date and is being prepared for issuance. The application, however, is incomplete for the reasons below.

Applicant is given two (2) months from the mail date of this Notice within which to respond. This time period for reply is extendable under 37 CFR 1.136(a) for only TWO additional MONTHS.

The informalities requiring correction are indicated in the attachment(s). If the informality pertains to the abstract, specification (including claims) or drawings, the informality must be corrected with an amendment in compliance with 37 CFR 1.121 (or, if the application is a reissue application, 37 CFR 1.173). Such an amendment may be filed after payment of the issue fee if limited to correction of informalities noted herein. See Waiver of 37 CFR 1.312 for Documents Required by the Office of Patent Publication, 1280 Off. Gaz. Patent Office 918 (March 23, 2004). In addition, if the informality is not corrected until after payment of the issue fee, for purposes of 35 U.S.C. 154(b)(1)(iv), "all outstanding requirements" will be considered to have been satisfied when the informality has been corrected. A failure to respond within the above-identified time period will result in the application being ABANDONED.

See attachment(s).

A copy of this notice MUST be returned with the reply. Please address response to "Mail Stop Issue Fee, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450".

/Daxa Patel/
Publication Branch
Office of Data Management
(571) 272-4200

APPLICATION FILED BEFORE SEPTEMBER 16, 2012,
DECLARATION NOT IN COMPLIANCE WITH 37 CFR 1.63

The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.63 identifying this application by application number and filing date, or if applicable a supplemental application data sheet (ADS) in compliance with 37 CFR 1.76, is required. The oath or declaration does not comply with 37 CFR 1.63 because it:

☐ does not identify the citizenship of each inventor.

☐ does not state that the person making the oath or declaration believes the named inventor or inventors to be the original and first inventor or inventors of the subject matter which claimed and for which a patent is sought.

☐ does not state that the person making the oath or declaration has reviewed and understands the contents of the specification, including the claims, as amended by any amendment specifically referred to in the oath or declaration.

☐ does not state that the person making the oath or declaration acknowledges the duty to disclose to the Office all information known to the person to be material to patentability as defined in 37 CFR 1.56.

☐ does not include the clause regarding "willful false statements…" required by 37 CFR 1.68.

☒ does not identify the residence (e.g., city and either state or foreign country) of each inventor. This information may be provided in a supplemental ADS or an executed declaration.

☐ does not identify the complete mailing address of each inventor. This information may be provided in a supplemental ADS or an executed declaration.

☐ does not identify the foreign application for patent or inventor's certificate on which priority it claimed pursuant to 37 CFR 1.55, and any foreign application having a filing date before that of the application on which priority is claimed, by specifying the application number, country, day, month and year of its filing. This information may be provided in a supplemental ADS or an executed declaration.

☐ does not state the last known residence and/or citizenship of the deceased inventor (see 37 CFR 1.64).

☐ does not state the citizenship, residence, and/or mailing address of the person signing on behalf of the deceased inventor (see 37 CFR 1.64).

☐ does not state the legal relationship (e.g., legal representative for a deceased or legally incapacitated inventor) of the person signing on behalf of the inventor.

☐ Other: .

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Na, et al. Application No.: 14/006,930 Filed: 9/23/2013 Title: SKIN TREATMENT APPARATUS AND METHOD Attorney Docket No.: NA002US	Art Unit: 3762

RESPONSE TO NOTICE TO FILE CORRECTED APPLICATION PAPERS AND REJECTION OF REQUEST UNDER RULE 48 TO CORRECT INVENTORSHIP

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This is in response to a Notice to File Corrected Application Papers of Application under 37 CFR 1.52(b) and rejection of request under rule 48 to correct inventorship. Enclosed is a copy of said Notice and the following documents and fees to complete the filing requirements of the above-identified application.

(X) Supplemental Application Data Sheet and Marked Up Application Data Sheet showing the amendments to the Application Data Sheet. The second inventor per the rule 48 petition filed Dec. 7, 2013 has been removed (shown in cross-out). The missing address of the first inventor has been added as shown both sheets. No new matter has been added to the Specification.

( ) A Petition for Extension of Time for reply to Notice of Missing Parts is attached.
- ( ) one month ($100.00)
- ( ) two months ($300.00)
- ( ) three months ($700.00)
- ( ) four months ($1100.00)

I hereby certify that this Correspondence is being deposited with the United States Postal service with sufficient postage for first class mail in an envelope address to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, or the correspondence is being electronically transmitted to the USPTO, on the date indicated below.

Date of Deposit: 9/16/2016

Typed Name: Merle W Richman

Signature: /mwresq/

Respectfully submitted,

By /mwresq/_____
Merle Richman, Patent Attorney

Reg. No. 38282
Date: 9/16/2016
Telephone No.: 858 551-2030

PTO/SB/14 (11-08)
Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	NA002US
	Application Number	
Title of Invention	SKIN TREATMENT APPARATUS AND METHOD	

The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.
This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.

Secrecy Order 37 CFR 5.2

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Applicant Information:

Applicant 1 Remove

Applicant Authority ● Inventor | Legal Representative under 35 U.S.C. 117 | Party of Interest under 35 U.S.C. 118

Prefix	Given Name	Middle Name	Family Name	Suffix
Mr	Jongju		Na	

Residence Information (Select One) US Residency ● Non US Residency Active US Military Service

City	Songpa-Gu	**Country Of Residence**	KR
Citizenship under 37 CFR 1.41(b)	KR		

Mailing Address of Applicant:

Address 1	1-901 Hanyang Apt., 1089, Yangjae-daero		
Address 2			
City	Songpa-Gu	**State/Province**	Se
Postal Code	138-836	**Country**	KR

All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the **Add** button. Add

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below.
For further information see 37 CFR 1.33(a).

☐ **An Address is being provided for the correspondence Information of this application.**

Customer Number	26338		
Email Address	patent@san.rr.com	Add Email	Remove Email

Application Information:

Title of the Invention	SKIN TREATMENT APPARATUS AND METHOD		
Attorney Docket Number	NA002US	**Small Entity Status Claimed**	☒
Application Type	Nonprovisional		
Subject Matter	Utility		
Suggested Class (if any)		**Sub Class (if any)**	
Suggested Technology Center (if any)			
Total Number of Drawing Sheets (if any)		**Suggested Figure for Publication (if any)**	

PTO/SB/14 (11-08)
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	NA002US
	Application Number	
Title of Invention	SKIN TREATMENT APPARATUS AND METHOD	

Publication Information:

☐	Request Early Publication (Fee required at time of Request 37 CFR 1.219)
☐	**Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S. C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32).
Enter either Customer Number or complete the Representative Name section below. If both sections are completed the Customer Number will be used for the Representative Information during processing.

Please Select One:	● Customer Number	US Patent Practitioner	○ Limited Recognition (37 CFR 11.9)
Customer Number	26338		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, or 365(c) or indicate National Stage entry from a PCT application. Providing this information in the application data sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78(a)(2) or CFR 1.78(a)(4), and need not otherwise be made part of the specification.

Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
14006930	a 371 of international	PCTKR2012004695	

Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button. Add

Foreign Priority Information:

This section allows for the applicant to claim benefit of foreign priority and to identify any prior foreign application for which priority is not claimed. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55(a).

Remove

Application Number	Country[i]	Parent Filing Date (YYYY-MM-DD)	Priority Claimed
10-2011-0057691	KR	2011-06-14	● Yes No

Additional Foreign Priority Data may be generated within this form by selecting the **Add** button. Add

Assignee Information:

Providing this information in the application data sheet does not substitute for compliance with any requirement of part 3 of Title 37 of the CFR to have an assignment recorded in the Office.

Assignee 1 Remove

PTO/SB/14 (11-08)
Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	NA002US
	Application Number	
Title of Invention	SKIN TREATMENT APPARATUS AND METHOD	

If the Assignee is an Organization check here. ☐

Prefix	**Given Name**	Middle Name	**Family Name**	Suffix

Mailing Address Information:

Address 1			
Address 2			
City		**State/Province**	
Country		Postal Code	
Phone Number		Fax Number	
Email Address			

Additional Assignee Data may be generated within this form by selecting the **Add** button. Add

Signature:

A signature of the applicant or representative is required in accordance with 37 CFR 1.33 and 10.18. Please see 37 CFR 1.4(d) for the form of the signature.

Signature	/mwresq/			Date (YYYY-MM-DD)	2016-09-16
First Name	Merle	Last Name	Richman	Registration Number	38282

This collection of information is required by 37 CFR 1.76. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

PTO/SB/14 (11-08)
Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	NA002US
	Application Number	

Title of Invention	SKIN TREATMENT APPARATUS AND METHOD

The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.
This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.

Secrecy Order 37 CFR 5.2

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Applicant Information:

Applicant 1

Applicant Authority ◉ Inventor ○ Legal Representative under 35 U.S.C. 117 ○ Party of Interest under 35 U.S.C. 118

Prefix	Given Name	Middle Name	Family Name	Suffix
Mr	Jongju		Na	

Residence Information (Select One) ○ US Residency ◉ Non US Residency ○ Active US Military Service

City	Songpa-Gu	Country Of Residence i	KR
Citizenship under 37 CFR 1.41(b)	KR		

Mailing Address of Applicant:

Address 1	1-901 Hanyang Apt., 1089, Yangjae-daero		
Address 2			
City	Songpa-Gu	State/Province	Se
Postal Code	138-836	Country	KR

Applicant 2

Applicant Authority ◉ Inventor ○ Legal Representative under 35 U.S.C. 117 ○ Party of Interest under 35 U.S.C. 118

Prefix	Given Name	Middle Name	Family Name	Suffix
~~Mr~~	~~Jeong~~	~~Gu~~	~~Gwak~~	

Residence Information (Select One) ○ US Residency ◉ Non US Residency ○ Active US Military Service

City	~~Songpa-gu~~	Country Of Residence i	~~KR~~
Citizenship under 37 CFR 1.41(b)	~~KR~~		

Mailing Address of Applicant:

Address 1			
Address 2			
City		State/Province	
Postal Code		Country	~~US~~

All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the **Add** button. Add

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below.
For further information see 37 CFR 1.33(a).

☐ **An Address is being provided for the correspondence Information of this application.**

ENDYMED EXHIBIT 1002 - 446/509

PTO/SB/14 (11-08)
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	NA002US
	Application Number	
Title of Invention	SKIN TREATMENT APPARATUS AND METHOD	

Customer Number	26338		
Email Address	patent@san.rr.com	Add Email	Remove Email

Application Information:

Title of the Invention	SKIN TREATMENT APPARATUS AND METHOD		
Attorney Docket Number	NA002US	**Small Entity Status Claimed**	☒
Application Type	Nonprovisional		
Subject Matter	Utility		
Suggested Class (if any)		**Sub Class (if any)**	
Suggested Technology Center (if any)			
Total Number of Drawing Sheets (if any)		**Suggested Figure for Publication (if any)**	

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

☐ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S. C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32).
Enter either Customer Number or complete the Representative Name section below. If both sections are completed the Customer Number will be used for the Representative Information during processing.

Please Select One:	◉ Customer Number	○ US Patent Practitioner	○ Limited Recognition (37 CFR 11.9)
Customer Number	26338		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, or 365(c) or indicate National Stage entry from a PCT application. Providing this information in the application data sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78(a)(2) or CFR 1.78(a)(4), and need not otherwise be made part of the specification.

Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
14006930	a 371 of international	PCTKR2012004695	

Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button.

Foreign Priority Information:

PTO/SB/14 (11-08)
Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	NA002US
	Application Number	
Title of Invention	SKIN TREATMENT APPARATUS AND METHOD	

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Remove

Application Number	Country[1]	Parent Filing Date (YYYY-MM-DD)	Priority Claimed
10-2011-0057691	KR	2011-06-14	(•) Yes ( ) No

Additional Foreign Priority Data may be generated within this form by selecting the **Add** button.

Assignee Information:

Providing this information in the application data sheet does not substitute for compliance with any requirement of part 3 of Title 37 of the CFR to have an assignment recorded in the Office.

Assignee 1

If the Assignee is an Organization check here. ☐

Prefix	**Given Name**	Middle Name	**Family Name**	Suffix

Mailing Address Information:

Address 1			
Address 2			
City		**State/Province**	
Country[1]		Postal Code	
Phone Number		Fax Number	
Email Address			

Additional Assignee Data may be generated within this form by selecting the **Add** button.

Signature:

A signature of the applicant or representative is required in accordance with 37 CFR 1.33 and 10.18. Please see 37 CFR 1.4(d) for the form of the signature.

Signature	/mwresq/			Date (YYYY-MM-DD)	2016-09-16
First Name	Merle	Last Name	Richman	Registration Number	38282

This collection of information is required by 37 CFR 1.76. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/006,930	11/29/2013	Jong ju NA	NA002US	2283

26338 7590 09/09/2016

MERLE W. RICHMAN, III
P.O. BOX 3333
LA JOLLA, CA 92038

EXAMINER
EDWARDS, PHILIP CHARLES

ART UNIT	PAPER NUMBER
3762	

MAIL DATE	DELIVERY MODE
09/09/2016	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

ENDYMED EXHIBIT 1002 - 450/509

UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

Application No. : 14006930
Applicant : Na
Filing Date : 11/29/2013
Date Mailed : 09/09/2016

NOTICE TO FILE CORRECTED APPLICATION PAPERS

Notice of Allowance Mailed

This application has been accorded an Allowance Date and is being prepared for issuance. The application, however, is incomplete for the reasons below.

Applicant is given two (2) months from the mail date of this Notice within which to respond. This time period for reply is extendable under 37 CFR 1.136(a) for only TWO additional MONTHS.

The informalities requiring correction are indicated in the attachment(s). If the informality pertains to the abstract, specification (including claims) or drawings, the informality must be corrected with an amendment in compliance with 37 CFR 1.121 (or, if the application is a reissue application, 37 CFR 1.173). Such an amendment may be filed after payment of the issue fee if limited to correction of informalities noted herein. See Waiver of 37 CFR 1.312 for Documents Required by the Office of Patent Publication, 1280 Off. Gaz. Patent Office 918 (March 23, 2004). In addition, if the informality is not corrected until after payment of the issue fee, for purposes of 35 U.S.C. 154(b)(1)(iv), "all outstanding requirements" will be considered to have been satisfied when the informality has been corrected. A failure to respond within the above-identified time period will result in the application being ABANDONED.

See attachment(s).

A copy of this notice MUST be returned with the reply. Please address response to "Mail Stop Issue Fee, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450".

/Daxa Patel/
Publication Branch
Office of Data Management
(571) 272-4200

APPLICATION FILED BEFORE SEPTEMBER 16, 2012,
DECLARATION NOT IN COMPLIANCE WITH 37 CFR 1.63

The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.63 identifying this application by application number and filing date, or if applicable a supplemental application data sheet (ADS) in compliance with 37 CFR 1.76, is required. The oath or declaration does not comply with 37 CFR 1.63 because it:

☐ does not identify the citizenship of each inventor.

☐ does not state that the person making the oath or declaration believes the named inventor or inventors to be the original and first inventor or inventors of the subject matter which claimed and for which a patent is sought.

☐ does not state that the person making the oath or declaration has reviewed and understands the contents of the specification, including the claims, as amended by any amendment specifically referred to in the oath or declaration.

☐ does not state that the person making the oath or declaration acknowledges the duty to disclose to the Office all information known to the person to be material to patentability as defined in 37 CFR 1.56.

☐ does not include the clause regarding "willful false statements…" required by 37 CFR 1.68.

☒ does not identify the residence (e.g., city and either state or foreign country) of each inventor. This information may be provided in a supplemental ADS or an executed declaration.

☐ does not identify the complete mailing address of each inventor. This information may be provided in a supplemental ADS or an executed declaration.

☐ does not identify the foreign application for patent or inventor's certificate on which priority it claimed pursuant to 37 CFR 1.55, and any foreign application having a filing date before that of the application on which priority is claimed, by specifying the application number, country, day, month and year of its filing. This information may be provided in a supplemental ADS or an executed declaration.

☐ does not state the last known residence and/or citizenship of the deceased inventor (see 37 CFR 1.64).

☐ does not state the citizenship, residence, and/or mailing address of the person signing on behalf of the deceased inventor (see 37 CFR 1.64).

☐ does not state the legal relationship (e.g., legal representative for a deceased or legally incapacitated inventor) of the person signing on behalf of the inventor.

☐ Other: .

Electronic Acknowledgement Receipt

EFS ID:	26957115
Application Number:	14006930
International Application Number:	
Confirmation Number:	2283
Title of Invention:	SKIN TREATMENT APPARATUS AND METHOD
First Named Inventor/Applicant Name:	Jong ju NA
Customer Number:	26338
Filer:	Merle W. Richman
Filer Authorized By:	
Attorney Docket Number:	NA002US
Receipt Date:	16-SEP-2016
Filing Date:	29-NOV-2013
Time Stamp:	22:44:37
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Amendment after Notice of Allowance (Rule 312)	na002us-correct-papers-response.pdf	86478 d51f5a84c4c030dd10a2f3ddc67ec9665d9f9eab	no	1

Warnings:

Information:					
2	Application Data Sheet	na002us-sads.pdf	1424702 c0410fd56e57585ba7ee1f17ea9273d2ce28e6a0	no	4
Warnings:					
Information:					
3	Application Data Sheet	na002us-mu-ads.pdf	163454 b6c19ad0b390acebe230fc95b2933667abe74aaa	no	4
Warnings:					
Information:					
This is not an USPTO supplied ADS fillable form					
4	Amendment after Notice of Allowance (Rule 312)	na002us-notice-correct-papers.pdf	117677 db64f3176a3a30cfaf2ea94b6f98a8f13092b38a	no	3
Warnings:					
Information:					
		Total Files Size (in bytes):	1792311		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
14/006,930	11/29/2013	3762	1100	NA002US	26	1

CONFIRMATION NO. 2283

CORRECTED FILING RECEIPT

26338
MERLE W. RICHMAN, III
P.O. BOX 3333
LA JOLLA, CA 92038

OC000000085920887

Date Mailed: 09/20/2016

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Inventor(s)

Jong ju NA, Songpa-Gu, KOREA, REPUBLIC OF;

Applicant(s)

Jong ju NA, Songpa-Gu, KOREA, REPUBLIC OF;

Power of Attorney: The patent practitioners associated with Customer Number 26338

Domestic Priority data as claimed by applicant

This application is a 371 of PCT/KR2012/004695 06/14/2012

Foreign Applications (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.)
REPUBLIC OF KOREA 10-2011-0057691 06/14/2011
REPUBLIC OF KOREA 10-2011-0057692 06/14/2011

Permission to Access Application via Priority Document Exchange: No

Permission to Access Search Results: No

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 09/02/2016
The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 14/006,930**
Projected Publication Date: Not Applicable

ENDYMED EXHIBIT 1002 - 455/509

Non-Publication Request: No

Early Publication Request: No
**** SMALL ENTITY ****
Title

SKIN TREATMENT APPARATUS AND METHOD

Preliminary Class

607

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign AssetsControl, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

SelectUSA

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The U.S. offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to promote and facilitate business investment. SelectUSA provides information assistance to the international investor community; serves as an ombudsman for existing and potential investors; advocates on behalf of U.S. cities, states, and regions competing for global investment; and counsels U.S. economic development organizations on investment attraction best practices. To learn more about why the United States is the best country in the world to develop technology, manufacture products, deliver services, and grow your business, visit http://www.SelectUSA.gov or call +1-202-482-6800.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/006,930	11/01/2016	9480836	NA002US	2283

26338 7590 10/12/2016

MERLE W. RICHMAN, III
P.O. BOX 3333
LA JOLLA, CA 92038

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment is 26 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site http://pair.uspto.gov for additional applicants):

Jong ju NA, Songpa-Gu, KOREA, REPUBLIC OF;

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The USA offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to encourage and facilitate business investment. To learn more about why the USA is the best country in the world to develop technology, manufacture products, and grow your business, visit SelectUSA.gov.

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
Stylesheet Version v1.2

EPAS ID: PAT6424983

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT

CONVEYING PARTY DATA

Name	Execution Date
VIOL CO., LTD.	11/26/2020

RECEIVING PARTY DATA

Name:	SERENDIA LLC
Street Address:	31631 PASEO DON JOSE
City:	SAN JUAN CAPISTRANO
State/Country:	CALIFORNIA
Postal Code:	92675

PROPERTY NUMBERS Total: 8

Property Type	Number
Patent Number:	9480836
Patent Number:	10058379
Patent Number:	10799286
Patent Number:	8979912
Patent Number:	9320536
Patent Number:	9775774
Patent Number:	9630002
Application Number:	15095098

CORRESPONDENCE DATA

Fax Number:

Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.

Phone: 9493512006
Email: ks.im@ideahub.co.kr
Correspondent Name: KYEONGSU IM
Address Line 1: 9880 IRVINE CENTER DRIVE
Address Line 4: IRVINE, CALIFORNIA 92618

NAME OF SUBMITTER:	KYEONGSU IM
SIGNATURE:	/keith k. lm/
DATE SIGNED:	12/01/2020

	This document serves as an Oath/Declaration (37 CFR 1.63).
Total Attachments: 2 source=Patent Assignment#page1.tif source=Patent Assignment#page2.tif	

EXHIBIT B

INTELLECTUAL PROPERTY ASSIGNMENT AGREEMENT

WHEREAS, **Viol Co., Ltd.** a corporation organized and existing under the laws of Republic of Korea, having an address at #808, #809 Bundang Technopark C, 744 Pangyo-ro, Bundang-gu, Seongnam-si Gyeonggi-do 13510 South Korea (hereinafter, "ASSIGNOR") is the sole and exclusive owner of certain United States and/or patent applications listed in Schedule A annexed hereto (collectively referred to as the "Patents"); and

WHEREAS, **Serendia, LLC**, a California Limited Liability Company having a place of business at 31631 Paseo Don Jose, San Juan Capistrano, CA 92675. (hereinafter, "ASSIGNEE") is desirous of acquiring the right, title and interest in, to and under the said Patents (and all foreign counterparts and related foreign patents).

Now, Therefore,

For good and valuable consideration, the receipt of which is hereby acknowledged, ASSIGNOR does hereby assigns, transfers and sets over to ASSIGNEE, the Patents aforesaid, and any inventions claimed in said Patents, any reissue or reissues of said Patents already granted and which may be granted, any certificates of reexamination already granted and which may be granted the same to be held and enjoyed by ASSIGNEE for its own use and enjoyment, and for the use and enjoyment of its successors, assigns or other legal representatives, to the end of the term or terms for which said Patents are or may be granted, reissued or extended as fully and entirely as the same would have been held and enjoyed by ASSIGNOR, if this assignment and sale had not been made; together with all claims for damages by reason of past, current, and future infringement and/or provisional rights under said Patents, with the right to sue for, and collect the same for its own use and behalf, and for the use and behalf of its successors, assigns or other legal representatives.

And, ASSIGNOR, hereby authorizes and requests the Commissioner of Patents and Trademarks to issue any and all Letters Patents of the United States on said inventions to ASSIGNEE as assignee of the entire interest, and hereby covenants that ASSIGNOR has full right to convey the entire interest herein assigned, and that, except as otherwise provided between the Parties, ASSIGNOR has not executed, and will not execute, any agreements in conflict therewith.

In Witness Whereof, ASSIGNOR has caused this Intellectual Property Assignment Agreement to be executed by its duly authorized representative.

VIOL CO., LTD.

By: _____

Name: Lee Sang Jun

Title: CEO

Date: 11/26/20

SERENDIA, LLC

By: _____

Name: Song'u Na

Title: General manager

Date: 11/26/20

ENDYMED EXHIBIT 1002 - 461/509

SCHEDULE A

Family	Pat/Pub. No.	Title	Inventor	Filing no.	Filing Date	Expiry
1	US9480836	Skin treatment apparatus and method	Na; Jongju	US14/006930	2012.06.14	2032.07.10
	US10058379	Electrically based medical treatment device and method	Na; Jongju	US15/202511	2016.07.05	2032.08.19
	US20180360528A1	ELECTRICALLY BASED MEDICAL TREATMENT DEVICE AND METHOD	Na; Jongju	US16/111616	2018.08.24	
2	US8979912	Method, system, and apparatus for dermalogical treatment	Na; Jongju|Richman; Merle	US13/060274	2008.08.22	2030.05.27
	US9320536	Method, system, and apparatus for dermatological treatment	Na; Jongju	US13/825083	2012.02.22	2032.07.23
	US9775774	Method, system, and apparatus for dermatological treatment	Na; Jongju	US15/096686	2016.04.12	2036.04.12
	US9630002	Method, system, and apparatus for dermatological treatment	Na; Jongju|Richman; Merle	US14/598208	2015.01.15	2028.08.22
	US20170014305A1	METHOD, SYSTEM, AND APPARATUS FOR DERMATOLOGICAL TREATMENT	Na; Jongju|Richman; Merle	US15/095098	2016.04.10	

ENDYMED EXHIBIT 1002 - 462/509

AO 120 (Rev. 08/10)

TO:	Mail Stop 8 Director of the U.S. Patent and Trademark Office P.O. Box 1450 Alexandria, VA 22313-1450	REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK

In Compliance with 35 U.S.C. § 290 and/or 15 U.S.C. § 1116 you are hereby advised that a court action has been filed in the U.S. District Court for the Western District of Texas on the following

☐ Trademarks or ☑ Patents. (☐ the patent action involves 35 U.S.C. § 292.):

DOCKET NO.	DATE FILED	U.S. DISTRICT COURT
6:21-cv-811	8/6/2021	for the Western District of Texas

PLAINTIFF	DEFENDANT
SYNKLOUD TECHNOLOGIES, LLC and SERENDIA, LLC	SUNG HWAN E&B CO., LTD.

	PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1	US 9,320,536 B2	4/26/2016	Serendia, LLC
2	US 9,480,836 B2	11/1/2016	Serendia, LLC
3	US 10,058,379 B2	8/28/2018	Serendia, LLC
4	US 10,869,812 B2	12/22/2020	Serendia, LLC
5			

In the above—entitled case, the following patent(s)/ trademark(s) have been included:

DATE INCLUDED	INCLUDED BY ☐ Amendment ☐ Answer ☐ Cross Bill ☐ Other Pleading	
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1		
2		
3		
4		
5		

In the above—entitled case, the following decision has been rendered or judgement issued:

DECISION/JUDGEMENT

CLERK	(BY) DEPUTY CLERK	DATE

Copy 1—Upon initiation of action, mail this copy to Director **Copy 3—Upon termination of action, mail this copy to Director**
Copy 2—Upon filing document adding patent(s), mail this copy to Director **Copy 4—Case file copy**

AO 120 (Rev. 08/10)

TO:	REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK
Mail Stop 8 Director of the U.S. Patent and Trademark Office P.O. Box 1450 Alexandria, VA 22313-1450	

In Compliance with 35 U.S.C. § 290 and/or 15 U.S.C. § 1116 you are hereby advised that a court action has been filed in the U.S. District Court Eastern District of New York on the following

☐ Trademarks or ☑ Patents. (☐ the patent action involves 35 U.S.C. § 292.):

DOCKET NO.	DATE FILED	U.S. DISTRICT COURT
21cv4423(GRB)(ARL)	8/6/2021	Eastern District of New York

PLAINTIFF	DEFENDANT
Synkloud Technologies, LLC and Serendia, LLC	Cartessa Aesthetics, LLC

	PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1	US 9,320,536 B2	4/26/2016	Serendia, LLC
2	US 9,480,836 B2	11/1/2016	Serendia, LLC
3	US 10,058,379 B2	8/28/2018	Serendia, LLC
4	US 10,869,812 B2	12/22/2020	Serendia, LLC
5			

In the above—entitled case, the following patent(s)/ trademark(s) have been included:

DATE INCLUDED	INCLUDED BY ☐ Amendment ☐ Answer ☐ Cross Bill ☐ Other Pleading	
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1		
2		
3		
4		
5		

In the above—entitled case, the following decision has been rendered or judgement issued:

DECISION/JUDGEMENT

CLERK	(BY) DEPUTY CLERK	DATE
DOUGLAS C. PALMER	Deanna Rodin	8/9/2021

Copy 1—Upon initiation of action, mail this copy to Director **Copy 3—Upon termination of action, mail this copy to Director**
Copy 2—Upon filing document adding patent(s), mail this copy to Director **Copy 4—Case file copy**

AO 120 (Rev. 08/10)

TO:	REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK
Mail Stop 8 Director of the U.S. Patent and Trademark Office P.O. Box 1450 Alexandria, VA 22313-1450	

In Compliance with 35 U.S.C. § 290 and/or 15 U.S.C. § 1116 you are hereby advised that a court action has been filed in the U.S. District Court for the District of Arizona on the following

☐ Trademarks or ☑ Patents. (☐ the patent action involves 35 U.S.C. § 292.):

DOCKET NO.	DATE FILED	U.S. DISTRICT COURT
2:22-cv-00015-PHX-DLR	1/6/2022	for the District of Arizona

PLAINTIFF	DEFENDANT
SynKloud Technologies LLC, et al.	Aesthetics Biomedical Incorporated

	PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1	US 9,320,536 B2	4/26/2016	Serendia, LLC
2	US 9,480,836 B2	11/1/2016	Serendia, LLC
3	US 10,058,379 B2	8/28/2018	Serendia, LLC
4	US 10,869,812 B2	12/22/2020	Serendia, LLC
5			

In the above--entitled case, the following patent(s)/ trademark(s) have been included:

DATE INCLUDED	INCLUDED BY ☐ Amendment ☐ Answer ☐ Cross Bill ☐ Other Pleading	
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1		
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In the above—entitled case, the following decision has been rendered or judgement issued:

DECISION/JUDGEMENT

CLERK	(BY) DEPUTY CLERK	DATE
Debra D Lucas	Rebecca E Lake	1/07/2022

Copy 1—Upon initiation of action, mail this copy to Director **Copy 3—Upon termination of action, mail this copy to Director**
Copy 2—Upon filing document adding patent(s), mail this copy to Director **Copy 4—Case file copy**

Trials@uspto.gov
571-272-7822

Paper 9
Entered: August 12, 2022

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CARTESSA AESTHETICS, LLC and AESTHETICS BIOMEDICAL, INC.,
Petitioner,

v.

SERENDIA, LLC,
Patent Owner.

IPR2022-00594
Patent 9,480,836 B2

Before CARL M. DEFRANCO, MICHAEL L. WOODS, and SCOTT RAEVSKY, *Administrative Patent Judges.*

Opinion for the Board filed by *Administrative Patent Judge* WOODS.

Opinion Concurring filed by *Administrative Patent Judge* DEFRANCO.

WOODS, *Administrative Patent Judge.*

DECISION
Denying Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

Petitioners, Cartessa Aesthetics, LLC, and Aesthetics Biomedical, Inc., (collectively, "Petitioner") filed a Petition (Paper 1, "Pet.") requesting *inter partes* review of claims 1–29 ("the Challenged Claims") of U.S. Patent No. 9,480,836 B2 (Ex. 1001, "the '836 patent"). *See* Pet. 1. Patent Owner, Serendia, LLC, filed a Preliminary Response (Paper 8, "Prelim. Resp.") in response to the Petition.

Under 35 U.S.C. § 314 and 37 C.F.R. § 42.4(a), we have authority to institute an *inter partes* review if "the information presented in the petition . . . and any response . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition." 35 U.S.C. § 314(a). Upon consideration of the evidence and arguments in the Petition (including its supporting testimonial evidence) as well as the evidence and arguments in the Preliminary Response, for the reasons below, we determine that the Petition fails to show a reasonable likelihood that Petitioner would prevail with respect to any of the challenged claims. We thus deny institution of *inter partes* review.

A. RELATED MATTERS

The parties identify the following matters as related: *SynKloud Techs., LLC v. Aesthetics Biomedical, Inc.*, No. 2:22-cv-00015 (D. Ariz); *SynKloud Techs., LLC v. Cartessa Aesthetics, LLC*, No. 2:21-cv-04423 (E.D.N.Y.); *SynKloud Techs., LLC v. Sung Hwan E&B Co., Ltd.*, No. 6:21-cv-008811 (W.D. Tex.); and IPR2022-00593 (challenging U.S. Pat. No. 10,058,379). *See* Pet. 2–3; *see also* Paper 5, 2–3.

ENDYMED EXHIBIT 1002 - 467/509

B. THE '836 PATENT (EX. 1001)

The '836 patent is titled "Skin Treatment Apparatus and Method" (Ex. 1001, code (54)) and describes "skin treatment using electrical energy, especially with the primary purpose for skin treatment for aesthetics" (*id.* at code (57)).[1]

The '836 patent describes a "method and apparatus that provides electrical stimulation directly to a body region including the dermis via needles." *Id.* at 2:37–41. The '836 patent explains that the "method revitalizes and regenerates the body region including collagen by wounding the dermis." *Id.* We reproduce Figure 5 of the '836 patent, below:

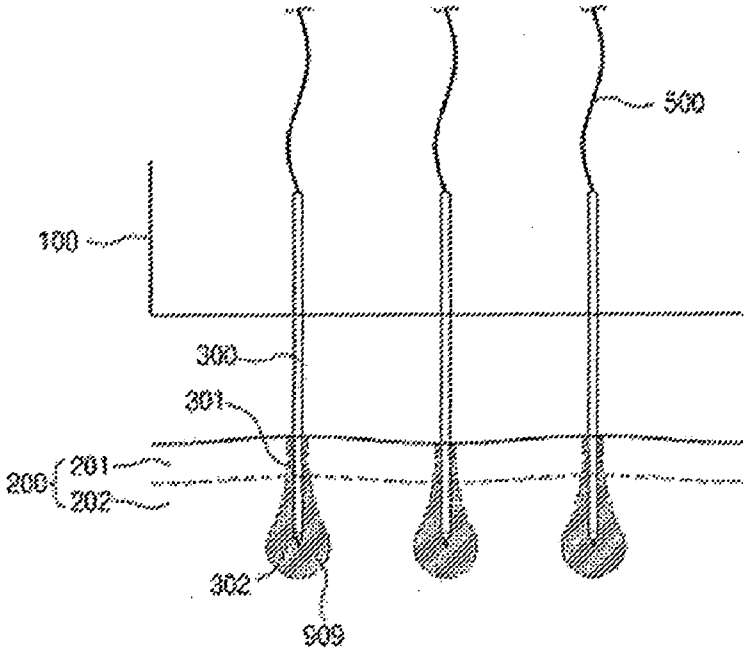


FIGURE 5

[1] Throughout this Decision, our quotations from the '836 patent and other U.S. patent documents omit bold emphasis from the reference numerals.

ENDYMED EXHIBIT 1002 - 468/509

Figure 5 depicts "a simplified diagram of treatment architecture using non insulated needles according to an embodiment of" the '836 patent. Ex. 1001, 4:41–43. In particular, Figure 5 depicts needles 300 with needle tips 302 for generating energy field 909. *See id.* at 7:27–32 (referencing Fig. 6); *see also id.* at 9:25–26.

The '836 patent further discloses,

> In an embodiment, the temperature is raised about the tip of each needle, not between the needles. The method of the present invention may control electrical factors or distance between needles to control the energy field applied between needles. A method of the present invention may enable users to control the number of treatments in target areas by controlling the dissipated energy in needles.

Id. 3:30–36.

C. Challenged Claims

Claims 1 and 14 are independent. *See* Ex. 1001, 10:47–12:36. We reproduce claim 1, below:

> 1. A skin treatment apparatus, comprising:
>
> a plurality of electrodes, the electrodes being bipolar and configured to be insertable into skin to be treated; and
>
> a radio frequency (RF) generation module, the RF generation module electrically coupled to the plurality of electrodes and configured to provide an Alternating Current (AC) RF signal to *the plurality of electrodes configured to cause coagulation around each electrode rather than coagulating between the electrodes*.

Ex. 1001, 10:47–55 (emphasis added).

ENDYMED EXHIBIT 1002 - 469/509

D. References Relied Upon

Petitioner's challenges rely on the following references (Pet. 6):

Name	Reference	Ex. No.
Mehta	US 2010/0204695 A1, published Aug. 12, 2010	1005
Mulholland	US 2010/0023003 A1, published Jan. 28, 2010	1016
INTRAcel Video	"Intracel – Fractional RF technology" video	1006

E. Asserted Grounds

Petitioner contends that the Challenged Claims are unpatentable based on the following grounds (Pet. 8–9):

Ground	Claim(s) Challenged	35 U.S.C. §[2]	Reference(s)/Basis
1	1–29	103(a)	Mehta, Mulholland
2	1–29	103(a)	INTRAcel Video, Mulholland

Petitioner supports its challenge with a declaration from Dr. Robert E. Grove (Ex. 1003). *See, e.g.*, Pet. iv. At this stage of the proceeding, Dr. Grove is competent to testify on the understanding of a person having ordinary skill in the art at the time of the alleged invention ("POSA"). *See* Ex. 1003 ¶¶ 4–22, 27, 28.

[2] The Leahy-Smith America Invents Act ("AIA"), Pub. L. No. 112-29, 125 Stat. 284, 285–88 (2011), revised 35 U.S.C. §§ 102, 103 effective March 16, 2013. The '836 patent claims priority to an application filed on June 14, 2012. Ex. 1001, code (22). Petitioner applies the pre-AIA version of § 103. Pet. 6. Patent Owner does not dispute that the pre-AIA version of § 103 applies. We consequently also apply the pre-AIA version of § 103.

ENDYMED EXHIBIT 1002 - 470/509

II. ANALYSIS

A. PRINCIPLES OF LAW

"In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable." *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016). This burden never shifts to Patent Owner. *Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015).

Petitioner's challenges are based on obviousness. Pet. 6.

A patent claim is unpatentable under 35 U.S.C. § 103 if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. *See KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and, when presented, (4) objective evidence of nonobviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

We analyze the asserted grounds of unpatentability in accordance with these principles.

B. LEVEL OF ORDINARY SKILL IN THE ART

The level of ordinary skill in the art is "a prism or lens" through which we view the prior art and the claimed invention. *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001). The person of ordinary skill in the art is a hypothetical person presumed to have known the relevant art at the time of

the invention. *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995). In determining the level of ordinary skill in the art, we may consider certain factors, including the "type of problems encountered in the art; prior art solutions to those problems; rapidity with which innovations are made; sophistication of the technology; and educational level of active workers in the field." *Id.*

Petitioner contends, with Dr. Grove's testimonial support, that a person of ordinary skill in the art "as of June 14, 2011, would typically have (1) 7-10 years of experience with developing and/or using treatment systems for delivery of electromagnetic radiation energy to skin or other tissues, and (2) a related graduate engineering degree or M.D." Pet. 18–19 (citing Ex. 1003 ¶ 27).

Patent Owner does not dispute Petitioner's proposed level of skill in the art at this stage.

The precise definition of the level of skill in the art is not critical, as we determine that even under Petitioner's proposed definition, Petitioner has not met its institution burden.

C. Claim Construction

Claim terms are generally given their ordinary and customary meaning as would be understood by one with ordinary skill in the art in the context of the specification, the prosecution history, other claims, and even extrinsic evidence including expert and inventor testimony, dictionaries, and learned treatises, although extrinsic evidence is less significant than the intrinsic record. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–17 (Fed. Cir. 2005) (en banc); 37 C.F.R. § 100(b) (2021).

ENDYMED EXHIBIT 1002 - 472/509

Petitioner requests that we construe "cause coagulation around each electrode rather than coagulating between the electrodes." Pet. 17. Petitioner and Patent Owner disagree on the interpretation of this limitation (*compare id.* at 17–18, *with* Prelim. Resp. 5–14), and we find it necessary to construe this limitation to address a central issue in this Decision.

1. "cause coagulation around each electrode rather than coagulating between the electrodes"

a. Petitioner's Proposed Construction and Arguments

Petitioner submits that "[c]onsistent with the intrinsic record and the prosecution estoppel, the plain and ordinary meaning of this phrase, as understood by a POSA, is 'concentrate heat around the needle(s) to cause coagulation *while minimally affecting the area between the needles*.'" Pet. 17 (citing Ex. 1003 ¶ 47) (emphasis added).

In referencing the intrinsic record, Petitioner cites the following passage:

> In the present invention the temperature may be raised and the ***heat may be concentrated*** at an area in dermis ***by the needle(s)*** to cause coagulation. The heat generated by the present invention may ***minimally affect the adjacent epidermis area*** . . . . In an embodiment ***heat may not be concentrated between needles***. In an embodiment, the heated area may be around each needle.

Id. at 17–18 (citing Ex. 1001, 3:21–29).

In referencing the prosecution history, Petitioner cites the following statement from the patent applicant:

> In Applicants' claimed apparatus and methods, conduction may begin initially between bipolar electrodes as electrons are released from one electrode to the tissue around the electrode and then travel to the other electrode. ***Concentration of the***

ENDYMED EXHIBIT 1002 - 473/509

> ***electron current may be highest in the area immediately surrounding each electrode causing areas around each electrode to be heated more.*** Electrons have more space to travel through in the path between the electrodes, becoming less dense (spaced apart from one another)[.] Accordingly, ***the path between the electrodes may heat slower than the areas immediately surrounding the electrodes.***

Pet. 18 (quoting Ex. 1002, 380).

In applying Mehta to the claim limitation, Petitioner further cites to Figures 13A and 13B of Mehta, as well as Figures 7 and 8 of the '836 patent. *See id.* at 32–35. In doing so, Petitioner annotates these figures in an attempt to analogize the coagulation that occurs continuously between the electrodes of Mehta and the continuous coagulation that allegedly occurs between the electrodes shown in the '836 patent. *See id.*

In contending that Mehta discloses this limitation, Petitioner submits an annotated version of Mehta's Figure 13A (*id.* at 32), a copy of which we reproduce, below:

ENDYMED EXHIBIT 1002 - 474/509

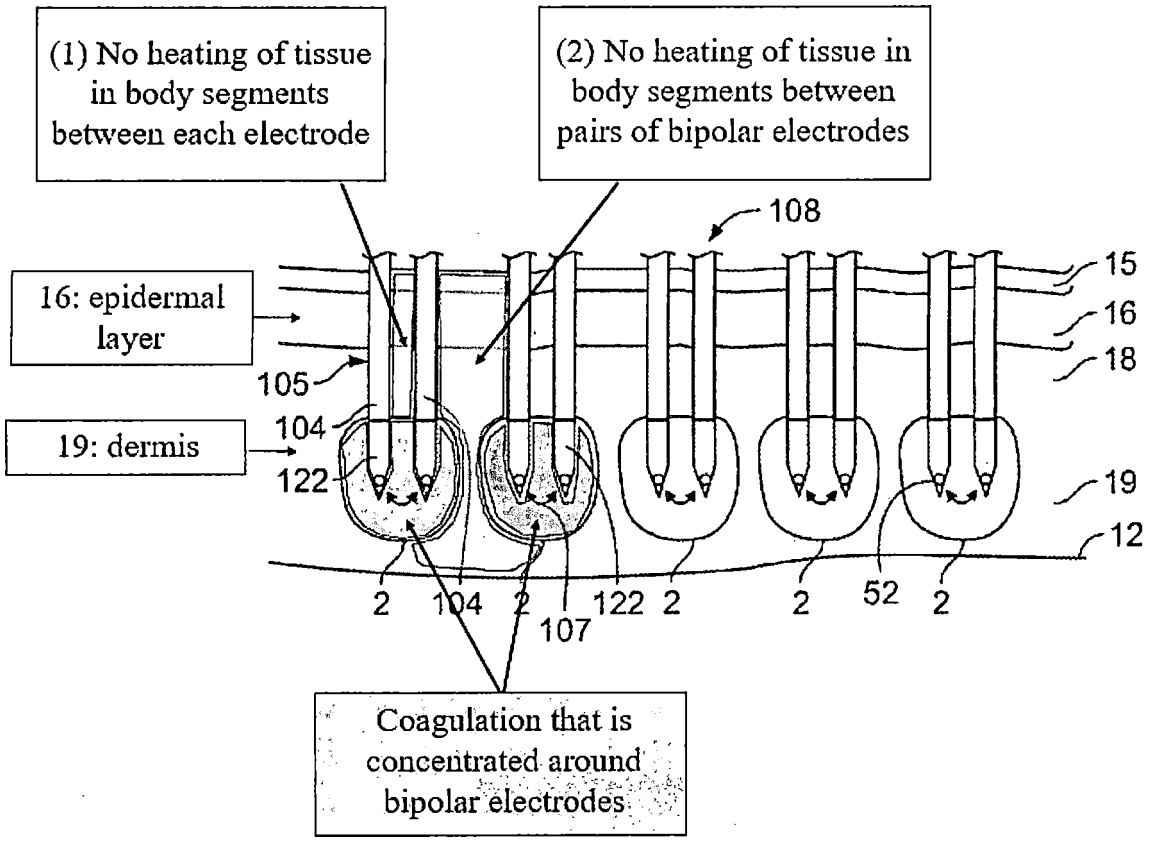
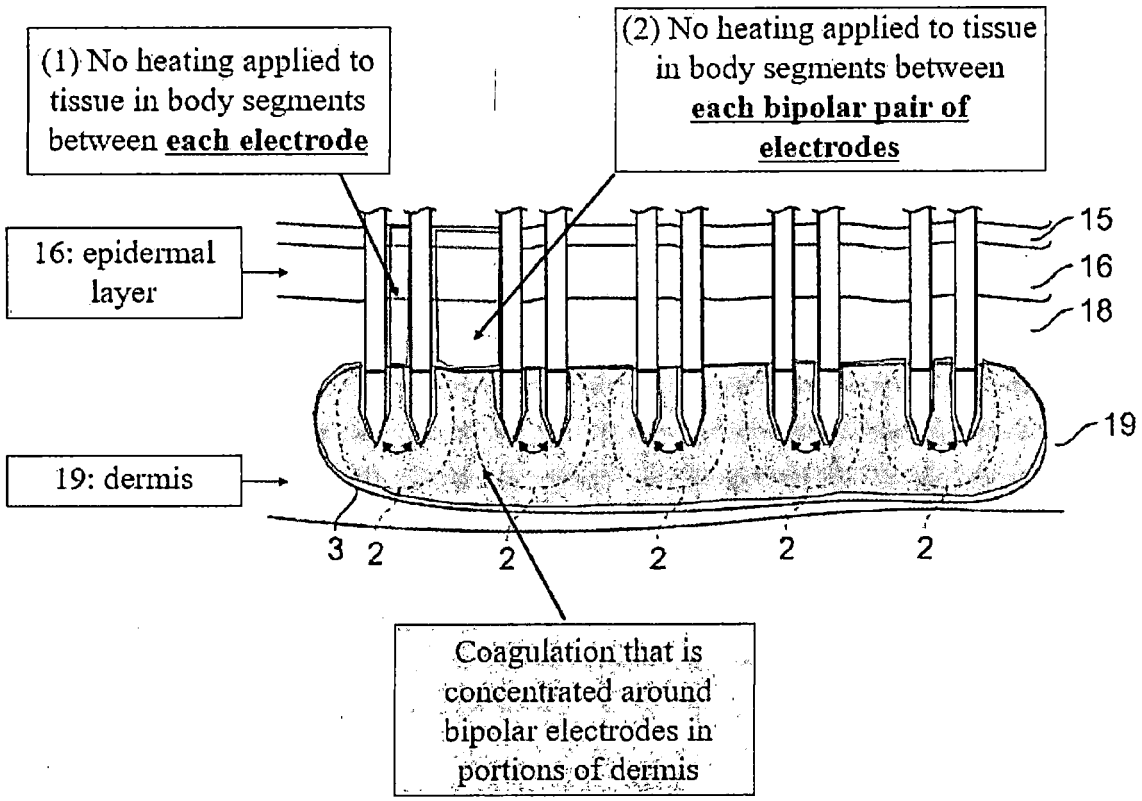


Figure 13A "shows an example of a series of discrete focal lesions created in a reticular dermis." Ex. 1005 ¶ 71. Petitioner annotates Figure 13A to illustrate: (1) where "No heating of tissue in body segments between each electrode" (shown in green); where (2) "No heating of tissue in body segments between pairs of bipolar electrodes" (also shown in green); and (3) where "Coagulation [] is concentrated around bipolar electrodes" (shown in red). Pet. 32. Petitioner submits that, "as shown above, Mehta heats tissue around each electrode (105) to certain areas of the body segment (2) *shown in red that results in coagulation around the electrodes*." *Id.* at 32–33 (citing Ex. 1003 ¶ 121) (emphasis added).

Petitioner further submits an annotated version of Mehta's Figure 13B (Pet. 34), a copy of which we reproduce, below:



EX1005, FIG. 13B (annotated).

Mehta's Figure 13B "shows the discrete focal lesions increasing in a width of the rectangular dermis layer without damaging adjacent tissue." Ex. 1005 ¶ 72. Petitioner annotates Figure 13B to illustrate: (1) "No heating applied to tissue in body segments between each electrode" (shown in green); (2) "No heating applied to tissue in body segments between each bipolar pair of electrodes" (also shown in green); and (3) "*Coagulation that is concentrated around bipolar electrodes in portions of the dermis* [(*shown in red*)]." Pet. 34 (emphasis omitted).

Petitioner further submits annotated versions of Figures 7 and 8 of the '836 patent to illustrate how Mehta's electrodes are similar to the electrodes described in the '836 patent. *See id.* at 34, 35. We reproduce a copy of Petitioner's annotated version of Figure 8 (*id.* at 35), below:

ENDYMED EXHIBIT 1002 - 476/509

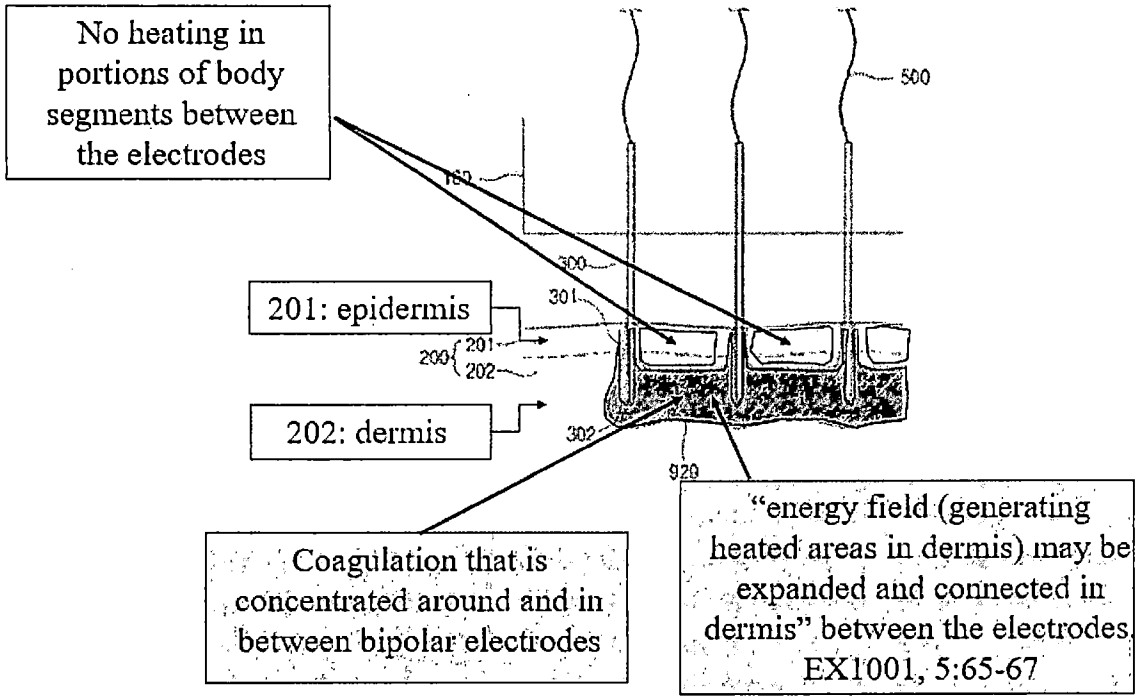


Figure 8 of the '836 patent "is a simplified diagram of a treatment architecture according to an embodiment of the present invention." Ex. 1001, 4:49–50. Petitioner annotates Figure 8 to illustrate: (1) "No heating in portions of body segments between the electrodes" (shown in green); (2) "Coagulation that is concentrated around and in between bipolar electrodes" (shown in red); and (3) "'energy field (generating heated areas in dermis) may be expanded and connected in dermis' between the electrodes" (also shown in red). Pet. 35 (citing Ex. 1001, 5:65–67).

Based on the alleged similarities between Figures 7 and 8 of the '836 patent and Figures 13A and 13B of Mehta, Petitioner submits that "Mehta's FIGs. 13A and 13B correspond directly to the '836 patents' FIGs. 7 and 8 . . . [a]nd both FIGs. 7 and 8, according to the '836 patent, are within the claimed scope." *Id.* at 35 (citing Ex. 1001, 3:16–17, 7:1–14; 1003 ¶ 124).

According to Petitioner's application of Mehta to the claim limitation, as *shown in red* in the annotated figures (namely, Figures 32A, 32B of Mehta and Figures 7, 8 of the '836 patent), we understand that Petitioner's construction allows for some continuous coagulation between electrodes.

b. Patent Owner's Proposed Construction and Arguments

Patent Owner, on the other hand, submits that "Petitioner[] introduce[s] additional caveats that are not specifically claimed," in particular, by advocating that the limitation "is satisfied even where coagulation is continuous between electrodes." Prelim. Resp. 5 (citing Pet. 32).

Patent Owner submits that Petitioner's proposed construction "is inconsistent with the ordinary understanding of the claim language, i.e. a[n] incorrect[] construction that captures continuous regions of coagulation between electrodes in violation of the plain claim language." *Id.* at 6. Patent Owner argues that Petitioner impermissibly relies on the features shown in embodiments not claimed, specifically, the embodiments of Figures 7 and 8. *See id.* at 7.

c. Analysis

We agree with Patent Owner that Petitioner's proposed construction is contrary to the plain and ordinary meaning of the claim language and impermissibly attempts to read structure from irrelevant embodiments described in the '836 patent. *See* Prelim. Resp. 5–7; *see also id.* at 12–13 (explaining that the embodiments of Figures 7 and 8 are different from the embodiment shown in Figure 5, and it is the embodiment shown in Figure 5 that provides subject matter support for the claimed limitation).

ENDYMED EXHIBIT 1002 - 478/509

The claims recite, "electrodes configured to cause coagulation around each electrode *rather than coagulating between the electrodes*." Ex. 1001, 10:55 (independent claim 1, emphasis added); *see also id.* at 11:29–30 (independent claim 14). The plain and ordinary meaning of this limitation, as indicated by the phrase "rather than," precludes coagulation that extends continuously from one electrode to another electrode. This construction is also consistent with relevant embodiments disclosed in the Specification, namely, Figure 5, a copy of which we reproduce below:

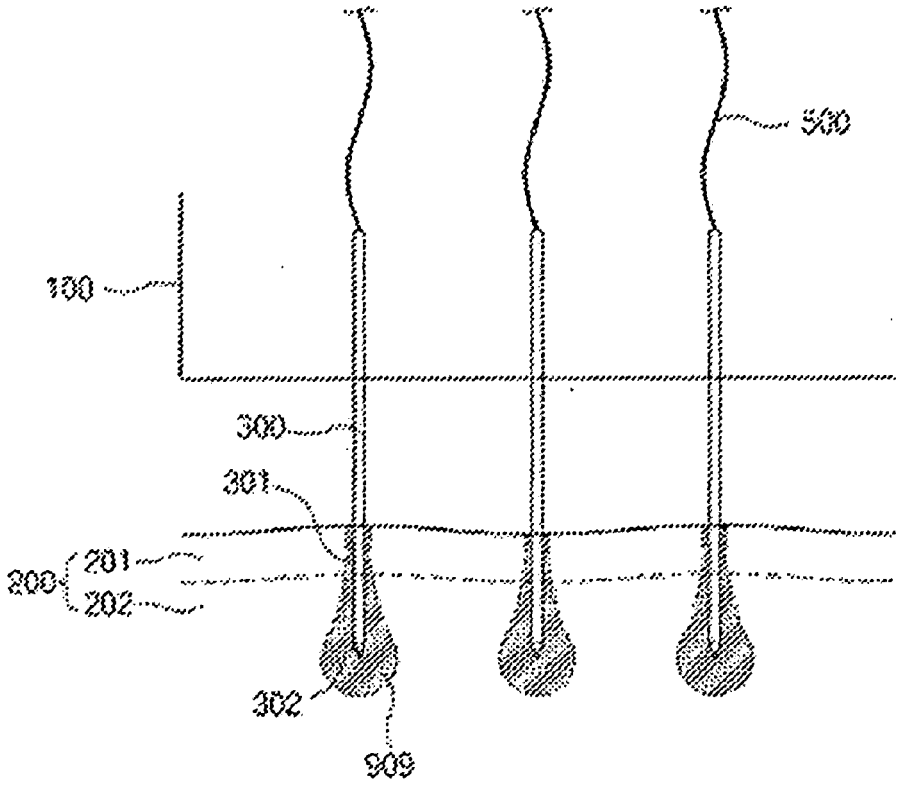


FIGURE 5

As shown in Figure 5 of the '836 patent, energy field 909 occurs around each individual needle 301, without extending from needle-to-needle. *See supra* § I.B (summarizing Figure 5 of the '836 patent). The Specification

ENDYMED EXHIBIT 1002 - 479/509

describes certain embodiments in which "the temperature is raised about the tip of each needle, *not between the needles*." Ex. 1001, 3:30–31 (emphasis added). We understand that by raising the temperature "about the tip of each needle," while not raising temperature "between the needles," coagulation would only occur "around each electrode rather than [] between the electrodes," as recited in the claims. *Id.*

Petitioner proposes that the claim limitation may be satisfied with coagulation that extends between the electrodes, despite the express claim language that precludes coagulation extending continuously from one electrode to another electrode. *See* Pet. 32–35 (depicting coagulation in red extending continuously between electrodes); *see also* Ex. 1001, 10:55 (independent claim 1); *see also* Ex. 1001, 11:29–30 (independent claim 14). It is not clear what, exactly, it means to "minimally affect[] the area between the needles," as Petitioner proposes (Pet. 17), but if this results in continuous coagulation extending from one electrode to another electrode, as Petitioner's annotated figures illustrate (*see* Pet. 32–35), such a construction conflicts with the plain and ordinary meaning of the claims. *Phillips*, 415 F.3d at 1312–17.

Furthermore, even if the Specification describes that "[t]he heat generated by the present invention may minimally affect the adjacent epidermis area" (Ex. 1001, 3:21–29), as Petitioner points out (Pet. 17–18), we disagree with Petitioner's position that the "area between the needle" may nonetheless be "minimally affected" to support Petitioner's position that Mehta discloses the claim limitation. *See* Pet. 17. Petitioner's proposed construction presumes that some coagulation may occur between the needles if only "minimal." *See id.*; *see also id.* at 32–35 (depicting coagulation (in

ENDYMED EXHIBIT 1002 - 480/509

red) extending continuously between electrodes). Although we read claims in view of the specification, we do not read limitations from these embodiments into the claims. *See Hill-Rom Servs., Inc. v. Stryker Corp.*, 755 F.3d 1367, 1371 (Fed. Cir. 2014) (The Federal Circuit explaining that "[w]hile we read claims in view of the specification, of which they are a part, we do not read limitations from the embodiments in the specification into the claims.").

Moreover, Petitioner relies on embodiments of the '836 patent (specifically, Figures 7 and 8) that are different from the embodiment that provides support for the claim limitation, namely, Figure 5. *See* Prelim. Resp. 12–13 (pointing out the same). As shown in Figure 5 of the '836 patent (*see supra* § I.B), coagulation does not extend continuously between electrodes.

We also find Petitioner's reliance on the prosecution history inapposite because Petitioner quotes it selectively. We reproduce a portion of Petitioner's quotation from the prosecution arguments below, including the sentence that immediately follows those arguments:

> Concentration of the electron current may be highest in the area immediately surrounding each electrode causing areas around each electrode to be heated more. Electrons have more space to travel through in the path between the electrodes, becoming less dense (spaced apart from one another)[.] Accordingly, the path between the electrodes may heat slower than the areas immediately surrounding the electrodes. Then the current will alternate, and the process start over again, *preventing or limiting the heating between electrodes.*

Ex. 1002, 380 (emphasis added); *see* Pet. 18. Petitioner omitted the last sentence of the above quotation, which clarifies that heating between electrodes may be prevented. *See* Pet. 18. This omitted sentence undercuts

ENDYMED EXHIBIT 1002 - 481/509

Petitioner's interpretation that the limitation "cause coagulation around each electrode rather than coagulating between the electrodes" is interpreted to allow "minimally affecting the area between the needles." *See id.* (citing Ex. 1003 ¶¶ 47–56).

Accordingly, we construe "electrodes configured to cause coagulation around each electrode rather than coagulating between the electrodes" to mean that coagulation occurs around each electrode without such coagulation fully extending from one electrode to another electrode. In other words, the electrodes must be configured such that coagulation between electrodes does not extend continuously between the electrodes.

2. Other Claim Terms

At this stage of the proceeding, we determine that there are no other terms that require express construction for the purposes of instituting trial. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017); *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999).

D. GROUND 1: MEHTA IN VIEW OF MULHOLLAND

Petitioner contends that claims 1–29 are unpatentable over Mehta in view of Mulholland. Pet. 19.

1. Mehta (Ex. 1005)

Mehta is titled "Methods for Applying Energy to Tissue Using a Graphical Interface" (Ex. 1005, code (54)) and describes "a system and method for percutaneous energy delivery in an effective[] manner using one or more probes" (*id.* at code (57)). We reproduce Figure 2A of Mehta, below:

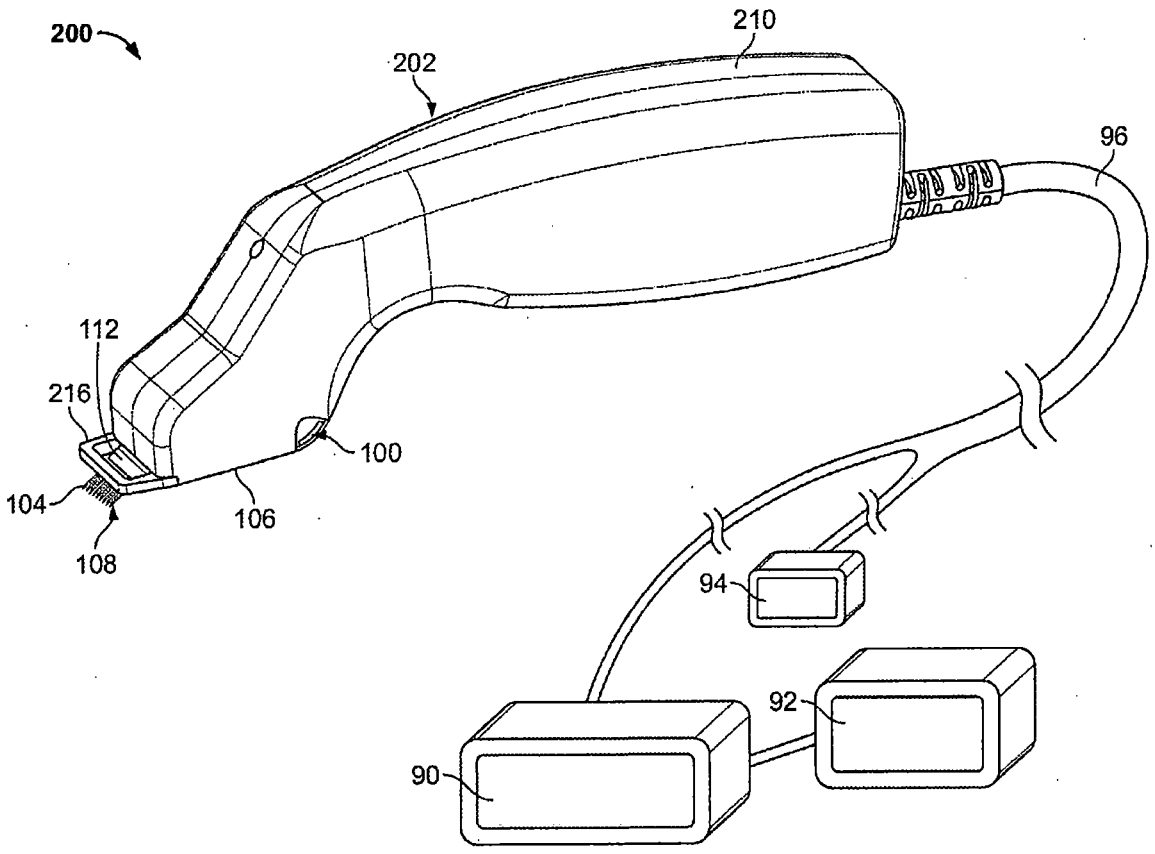


FIG. 2A

Figure 2A "shows a sample variation of a system according to the principles of the invention having probes configured to provide percutaneous energy delivery." Ex. 1005 ¶ 41. Specifically, Figure 2A depicts treatment system 200 including treatment unit 202 having device body 210. *Id.* ¶ 87. Probes 104 are arranged in array 108 and coupled to body 210 via removable cartridge 100. *Id.* Mehta discloses that:

> The term probes 104 (for purposes of this disclosure) is intended to include any electrode, energy transfer element (e.g., thermal, electrical, electromagnetic, microwave, mechanical, ultrasound, light, radiation, monopolar RF, bipolar RF, chemical, radioactive, etc.), or source of therapeutic treatment. For sake of convenience, the term probe shall be used to refer to

ENDYMED EXHIBIT 1002 - 483/509

> any electrode, energy transfer element or source of therapeutic treatment unless specifically noted otherwise.

Id. Mehta further discloses that "the length of the probes 104 is generally selected so that the energy delivery occurs in the dermis layer of the skin 10 while the spacing of probes 104 may be selected to minimize delivery of energy between adjacent pairs of probes or to minimize energy to certain areas of tissue." *Id.* ¶ 91.

2. *Mulholland (Ex. 1016)*

Mulholland is titled "Skin Rejuvenation Resurfacing Device and Method of Use." Ex. 1005, code (54). Mulholland discloses a needle-based device that may use "AC out of the wall power source" and an "RF feature . . . to heat the needle." *See id.* ¶ 32.

3. *"the plurality of electrodes configured to cause coagulation around each electrode rather than coagulating between the electrodes"*

We need only address the recitation, "the plurality of electrodes configured to cause coagulation around each electrode rather than coagulating between the electrodes," as recited in each of the claims, because it is dispositive of this ground. *See* Ex. 1001, 10:53–55 (independent claim 1); *see also id.* at 11:28–30 (independent claim 14).

As explained above, we construe "electrodes configured to cause coagulation around each electrode rather than coagulating between the electrodes" to mean that coagulation occurs around each electrode without such coagulation fully extending from one electrode to another electrode. *Supra* § II.C.1. In other words, the electrodes must be configured such that coagulation between electrodes does not extend continuously between the electrodes. *Id.*

ENDYMED EXHIBIT 1002 - 484/509

Petitioner submits that Mehta discloses the limitation, providing annotated versions of Mehta's Figures 13A and 13B. *See* Pet. 32, 34 (addressing independent claim 1); *see also id.* at 55 (addressing independent claim 14).

We reproduce a copy of Petitioner's annotated version of Mehta's Figure 13A, below:

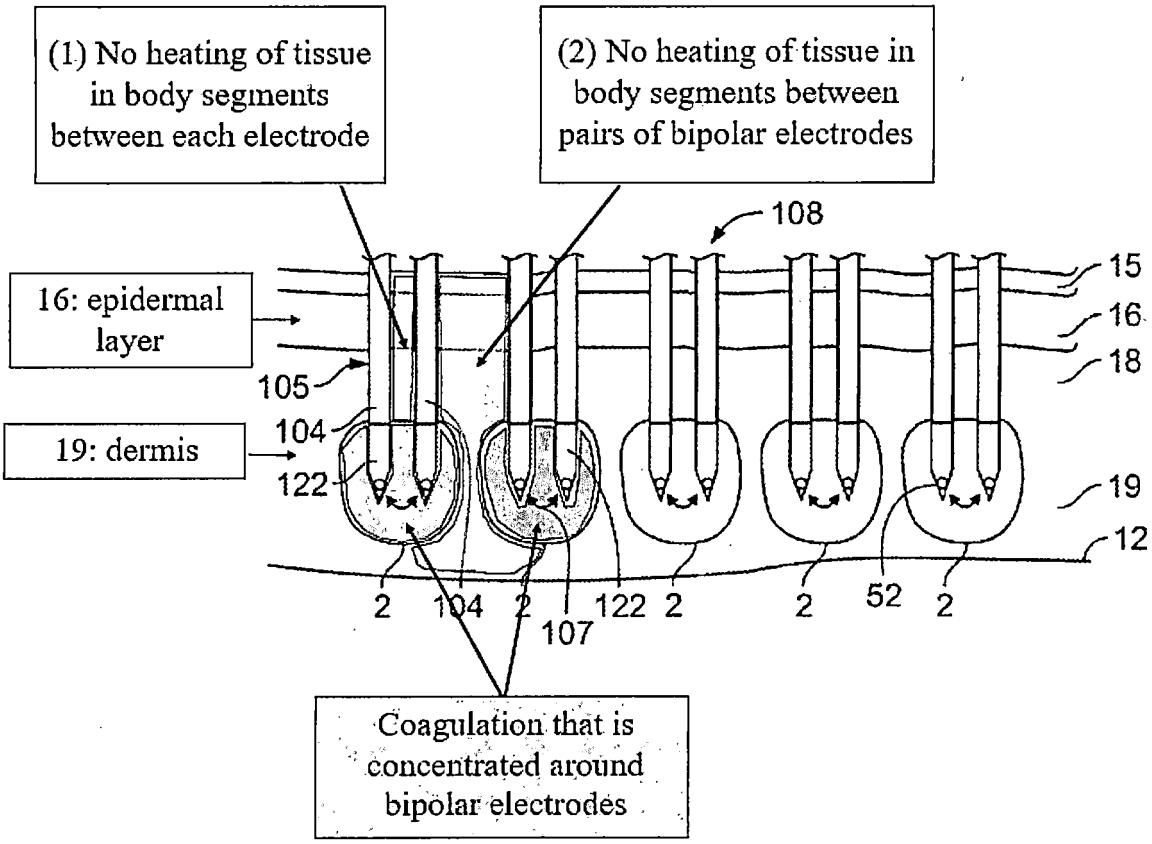


Figure 13A shows an example of a series of discrete focal lesions created in a reticular dermis." Ex. 1005 ¶ 71. Petitioner annotates Figure 13A to illustrate: (1) where "No heating of tissue in body segments between each electrode" (shown in green); where (2) "No heating of tissue in body segments between pairs of bipolar electrodes" (also shown in green); and (3) where "Coagulation [] is concentrated around bipolar electrodes," (shown in red). Pet. 32.

ENDYMED EXHIBIT 1002 - 485/509

Petitioner submits that:

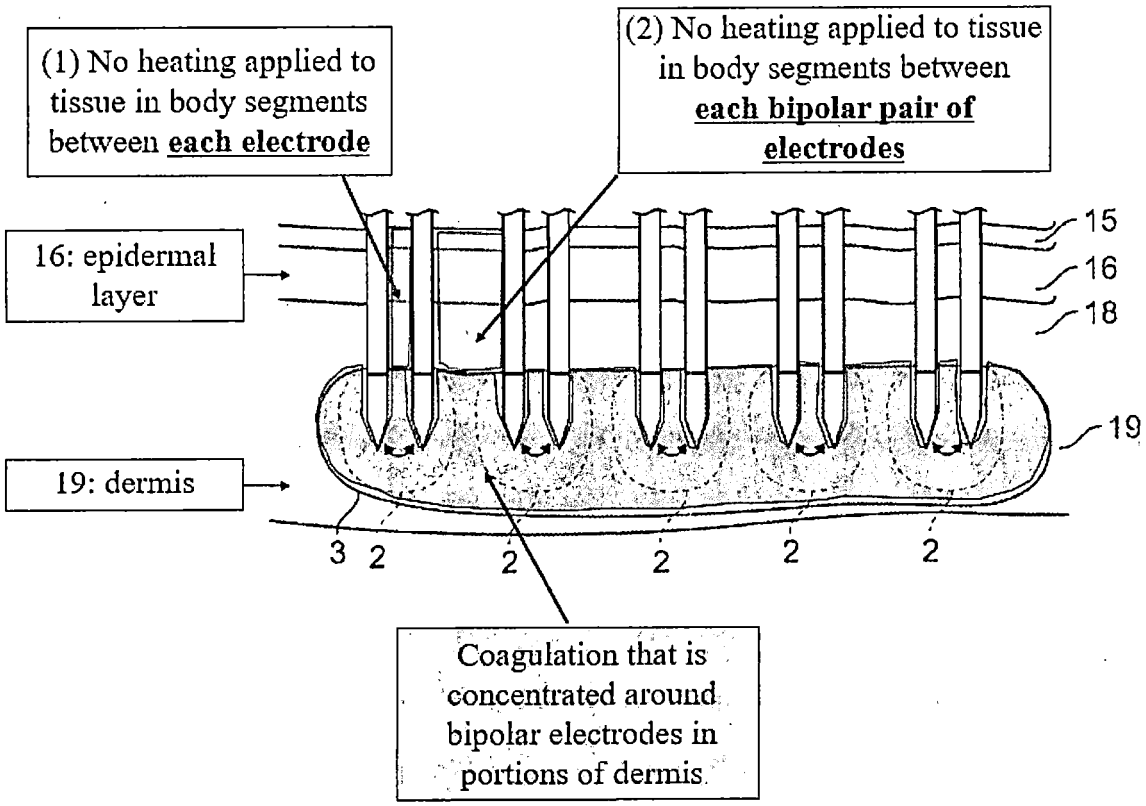
> Therefore, as shown above, Mehta heats tissue around each electrode (105) to certain areas of the body segment (2) shown in red that results in coagulation around the electrodes. . . . In Mehta, the energy concentration and heated tissue are limited to only portions of the dermis (19) without impacting the epidermis layer (16). . . . And while portions of body segments around the electrodes are heated to coagulation, Mehta also omits coagulating portions of the body segments between each electrode, as shown in green. . . . Such areas include both the dermis (19) and epidermis (16) between each electrode and between each pair of bipolar electrodes. Therefore, Mehta meets the claimed limitation of "cause coagulation around each electrode rather than coagulating between the electrodes."

Id. at 32–33 (citing Ex. 1003 ¶ 121).

With annotation (2) in Figure 13A, Petitioner asserts that no energy is deposited between pairs of bipolar electrodes. *See id.* ("Mehta also omits coagulating portions of the body segments between each electrode, as shown in green . . . [t]herefore, Mehta meets the claimed limitation"). But Petitioner does not assert that adjacent electrodes from separate bipolar pairs are themselves bipolar, and we can find no teaching in Mehta that this is the case. *See, e.g.*, Ex. 1005 ¶¶ 87 (generically describing "bipolar RF"), 173 (generically describing "5 bi-polar pairs"), 236 (generically referring to a "bipolar RF electrode device . . . configured with 5 pairs of 30 gauge electrodes"). As claim 1 requires "the electrodes being bipolar" and "electrodes configured to cause coagulation around each electrode rather than coagulating between the electrodes," Petitioner does not persuasively show a likelihood that the area between Mehta's separate pairs of bipolar electrodes discloses the claim limitations.

ENDYMED EXHIBIT 1002 - 486/509

Petitioner further submits an annotated version of Mehta's Figure 13B to illustrate how Mehta discloses a "plurality of electrodes configured to cause coagulation around each electrode rather than coagulating between the electrodes." *See id.* at 34. We reproduce Petitioner's annotated version of Mehta's Figure 13B (*id.*), below:



Mehta's Figure 13B "shows the discrete focal lesions increasing in a width of the rectangular dermis layer without damaging adjacent tissue." Ex. 1005 ¶ 72. Petitioner annotates Figure 13B to illustrate: (1) "No heating applied to tissue in body segments between each electrode" (shown in green); (2) "No heating applied to tissue in body segments between each bipolar pair of electrodes" (also shown in green); and (3) "Coagulation that is concentrated around bipolar electrodes in portions of the dermis" (shown in red). Pet. 34 (emphasis omitted).

Petitioner further submits annotated versions of Figures 7 and 8 of the '836 patent to illustrate how Mehta's electrodes are similar to the electrodes described in the '836 patent. *See* Pet. 34, 35. Based on the similarities between Figures 7 and 8 of the '836 patent and Figures 13A and 13B of Mehta, Petitioner submits that "Mehta's FIGs. 13A and 13B correspond directly to the '836 patents' FIGs. 7 and 8 . . . [a]nd both FIGs. 7 and 8, according to the '836 patent, are within the claimed scope." *Id.* at 35 (citing Ex. 1001, 3:16–17, 7:1–14; 1003 ¶ 124).

Patent Owner argues that Mehta, as shown in Petitioner's own relied upon Figures 13A and 13B, *does not disclose* "caus[ing] coagulation around each electrode *rather than coagulating between the electrodes*." *See* Prelim. Resp. 16–21 (emphasis added). Patent Owner explains that the proper construction of the term "does not include directed application of energy and focused heating to cause overlapping or intersecting coagulation between the electrodes." *Id.* at 17. Patent Owner further explains that in Petitioner's own annotated version of Mehta's Figures 13A and 13B, "Petitioner[] concede[s] that there is energy concentration around the bipolar electrodes, including between those electrode pairs, that results in fractional lesions 2 between those electrode pairs." *Id.* at 18 (citing Pet. 32). Referencing Petitioner's annotated Figures 13A and 13B, Patent Owner submits that the "red zone clearly indicates the body segments between electrode pairs, as shown above, and is plainly distinct from the claim language at issue." *Id.* Patent Owner further contends that "Mehta's focused and intentional direction of energy to body segments to allegedly cause coagulation between adjacent electrodes does not teach the claimed feature of 'caus[ing]

ENDYMED EXHIBIT 1002 - 488/509

coagulation around each electrode rather than coagulating between the electrodes.'" *Id.* at 18–19.

We agree with Patent Owner that Petitioner's own annotated Figures (that is, Mehta's Figures 13A and 13B) depict coagulation of tissue that extends continuously between electrodes.

Indeed, Mehta discloses, and Figures 13A and 13B depict, fractional lesions 2 that *extend continuously between pairs of electrode probes 105*. *See* Mehta ¶ 241 (referencing Figure 13A); *see also id.* ¶ 242 (referencing Figure 13B). Mehta discloses that Figures 13A and 13B "show[] an example illustration of an array of probes 108 comprising five electrode pairs 105 inserted into a reticular dermis layer 19 to create a series of discrete fractional lesions 2 leaving tissue in the adjacent epidermal layer 16 and subcutaneous layer 12 undamaged." *Id.* ¶ 241; *see also id.* ¶ 242. Mehta explains that "[t]his is accomplished by passing current 107 between adjacent electrodes 104 of opposite polarity in the electrode pair." *Id.* ¶ 241.

Turning to Petitioner's attempt to analogize Figures 7 and 8 of the '836 patent with Figures 13A and 13B of Mehta (*see* Pet. 34–35), Petitioner's misdirection fails. Importantly, subject matter support for claim 1 relies on the embodiment of Figure 5, not of Figures 7 and 8. *See* Prelim. Resp. 7 ("each of FIG. 5, FIG. 7, FIG. 8, and FIG. 9B in the '836 patent are ***different*** embodiments."). Rather than focusing on the embodiments described in Figures 7 and 8, we focus on the embodiment of Figure 5, reproduced below:

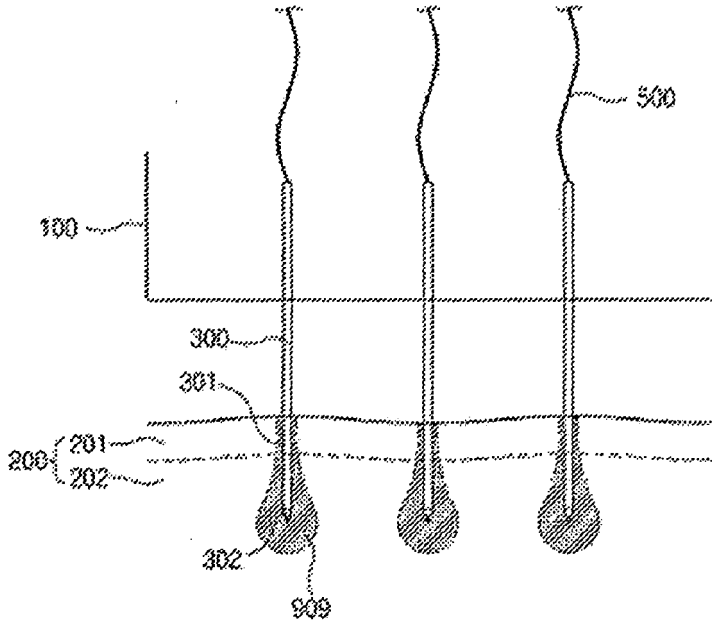


FIGURE 5

Figure 5 depicts needles 300 with needle tips 302 for generating energy field 909. *See* Ex. 1001, Fig. 5; *see also id.* at 7:27–32 (referencing Fig. 6); *see also id.* at 9:25–26. As can be seen, energy field 909 does not extend continuously between electrodes.

Because Mehta discloses and depicts fractional lesions 2 (that is, coagulation) as extending from one electrode to another electrode in a bipolar pair—or continuously between the electrodes—Petitioner has not reasonably shown that Mehta discloses or suggests a "plurality of electrodes configured to cause coagulation around each electrode rather than coagulating between the electrodes."

4. Summary of Ground 1

Because Petitioner has not established a reasonable likelihood that Mehta discloses or suggests a "plurality of electrodes configured to cause

ENDYMED EXHIBIT 1002 - 490/509

coagulation around each electrode rather than coagulating between the electrodes," Petitioner has not established a reasonable likelihood that independent claims 1 and 14 are unpatentable over Mehta in view of Mulholland.

Furthermore, Petitioner's challenge of dependent claims 2–13 and 15–29 also fall short for the same reason. *See* Pet. 39–57.

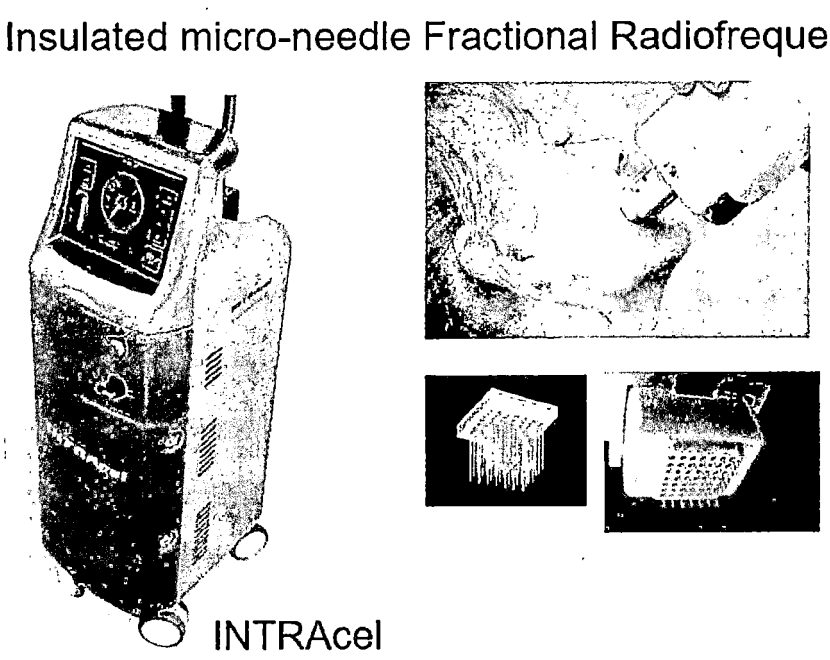
Accordingly, Petitioner has not demonstrated a reasonable likelihood that it would prevail in its challenge of claims 1–29 as unpatentable over Mehta in view of Mulholland.

E. GROUND 2: THE INTRACEL VIDEO IN VIEW OF MULHOLLAND

Petitioner contends that claims 1–29 are unpatentable over the INTRAcel Video in view of Mulholland. Pet. 57.

1. INTRAcel Video or the "Video" (Ex. 1006)

The INTRAcel Video is a 13 minute, 54 second, video with audio narration that describes the INTRAcel RF Micro-needling workstation ("INTRAcel device") for treating skin. Ex. 1006. Below is a screen capture from the video, depicting the INTRAcel device:



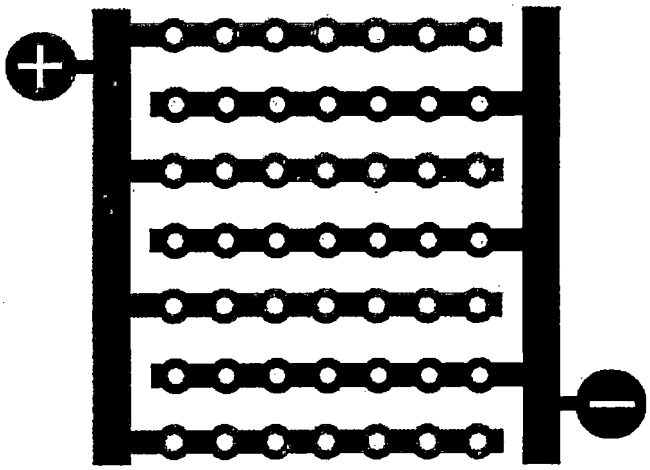
Id. at 0:11–0:19; Pet. 14–15. As narrated in the Video, the INTRAcel device includes a handheld module with an array of 49 microneedles. Ex. 1006, 0:11–0:19. The INTRAcel device can operate in bi-polar mode as shown in the following screen capture, annotated by Petitioner:

Specification

Applied Energy	RF (Radio Frequency)-1Mhz
Output Power	Mono-polar : up to 700W (Peak power & 200Ω)
	Bi-polar : up to 700W (Peak power & 200Ω)
Spot Size (Treated Area)	1cm X 1cm / 0.2cm X 0.2cm
Disposable tip matrix	49 electrode needles 4 electrode needles 7 electrode needles

Pet. 62 (citing Ex. 1006, 0:22–29). In the above screen capture, "Output Power" is depicted as being "Mono-polar" or "Bi-polar." Ex. 1006, 0:28. In citing the Video's narration, Petitioner states that "[y]ou can use bipolar mode and monopolar mode with only one handpiece." Pet. 62 (quoting Ex. 1006, 0:22–0:29). Petitioner places a red box around "Bi-polar : up to 700W (Peak power & 200Ω)." Pet. 62.

The following screen capture from the video depicts an RF circuit diagram:



Pet. 63 (citing Ex. 1006, 0:33–0:45). According to the Video's narration, the above diagram shows an arrangement of needles used to achieve bipolar mode. Ex. 1006, 0:33–0:45.

Petitioner submits that the INTRAcel Video "is a true and correct copy of the INTRAcel Video extracted from YouTube®." Pet. 4. Petitioner further submits "a Certificate of Authenticity from a Custodian of Records at Google LLC attesting that the records relating to INTRAcel Video (EX1006) are true and correct copies and confirm that INTRAcel Video was published and publicly available on April 8, 2011." *Id.* (referencing Ex. 1007-002). Petitioner further submits, "as explained by YouTube support website, the date listed under the video is the date it was published and the 'the [sic] video is made available for anyone to watch.'" *Id.* at 4–5.

Petitioner contends that "a POSA would generally turn to YouTube® to search on-line video content such as INTRAcel Video . . . . Accordingly, INTRAcel Video is a printed publication and prior art to the '836 patent." *Id.* at 5.

2. *Analysis*

a. Device as a Printed Publication

Patent Owner argues that Petitioner "can only raise challenges 'on the basis of prior art consisting of patents or printed publications.'" *See* Prelim. Resp. 33 (referencing 35 U.S.C. § 311(b)). Specifically, Patent Owner explains that Petitioner relies on "statements about the INTRAcel Device's capabilities not expressly disclosed in the Intracel Video," and that these statements are irrelevant and should be disregarded. *See id.*

We agree with Patent Owner. The INTRAcel *Device*, as well as any statements about the device not disclosed in the prior art, fall outside the scope of our review, as they do not qualify as a "printed publication" under 35 U.S.C. § 311(b). Although Patent Owner argues that Petitioner "impermissibly focused on details of the INTRAcel Device, rather than on permissible prior art under the law" (Prelim. Resp. 33), Patent Owner does not dispute that the INTRAcel Video itself is a printed publication.[3] We therefore confine our discussion of Petitioner's arguments to those based on the prior art, including the INTRAcel Video, and do not address any of Petitioner's comments on the INTRAcel Device apart from the prior art.

b. "cause coagulation around each electrode rather than coagulating between the electrodes"

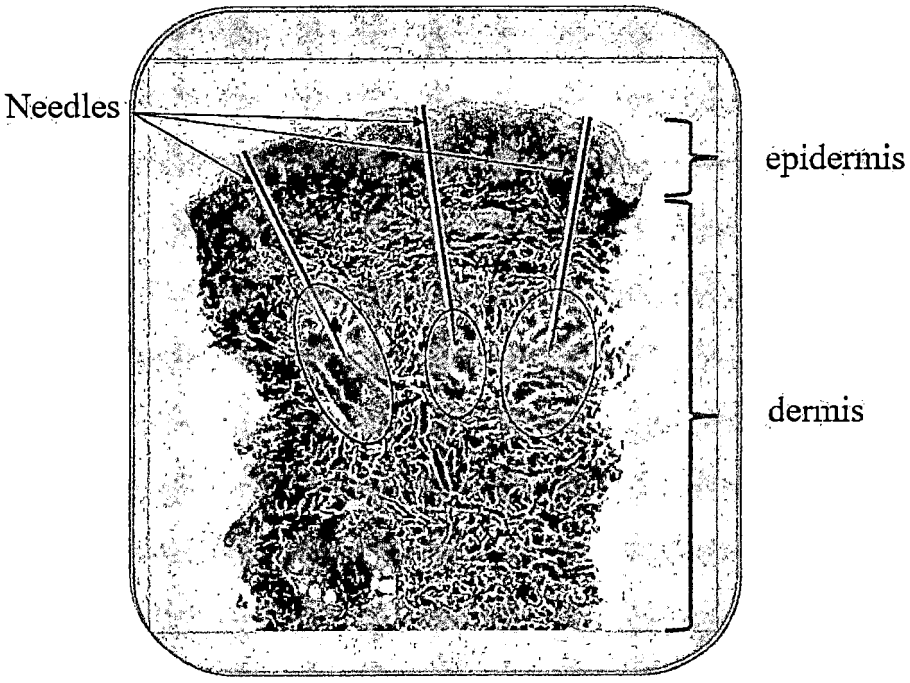
Petitioner fails to establish that the Video discloses or suggests, "cause coagulation around each electrode rather than coagulating between

[3] As the parties do not dispute that the INTRAcel Video is a printed publication, and as we deny on the merits, we find it unnecessary to address the issue raised in the concurrence regarding whether the INTRAcel Video is a printed publication.

ENDYMED EXHIBIT 1002 - 495/509

the electrodes," as recited in each of the independent claims. Ex. 1001, 10:54–55 (claim 1); *id.* at 11:29–30 (claim 14).

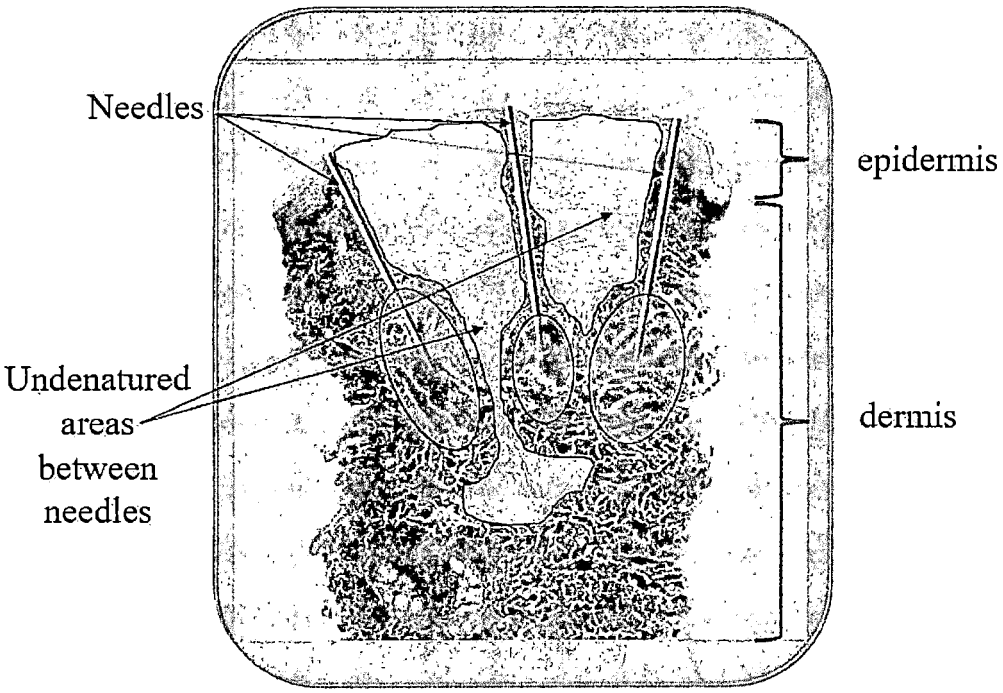
Petitioner contends that the INTRAcel Video discloses the limitation. *See* Pet. 75–78 (addressing claim 1); *see also id.* at 94 ("independent claim 14 is similar to independent claim 1 . . . all the limitations of claim 14 were addressed in independent claim 1"). In support thereof, Petitioner relies on "histology results" shown in the INTRAcel Video, a screen capture of which we reproduce below (as annotated by Petitioner):



Id. at 76 (citing Ex. 1006, 6:22–30). In citing the Video's narration, Petitioner submits that the above screen capture depicts where microneedles penetrate the skin and emit RF energy "from the 0.3 millimeter tip [of the needles]," as well as denatured areas indicated by dotted lines. *Id.* (quoting Ex. 1006, 6:22–30). Petitioner's annotations include green shading to depict where coagulation occurs and labeling of the needles (yellow), epidermis,

ENDYMED EXHIBIT 1002 - 496/509

and dermis. *See id.* Petitioner provides a further annotated version of this same screen capture, shown below:

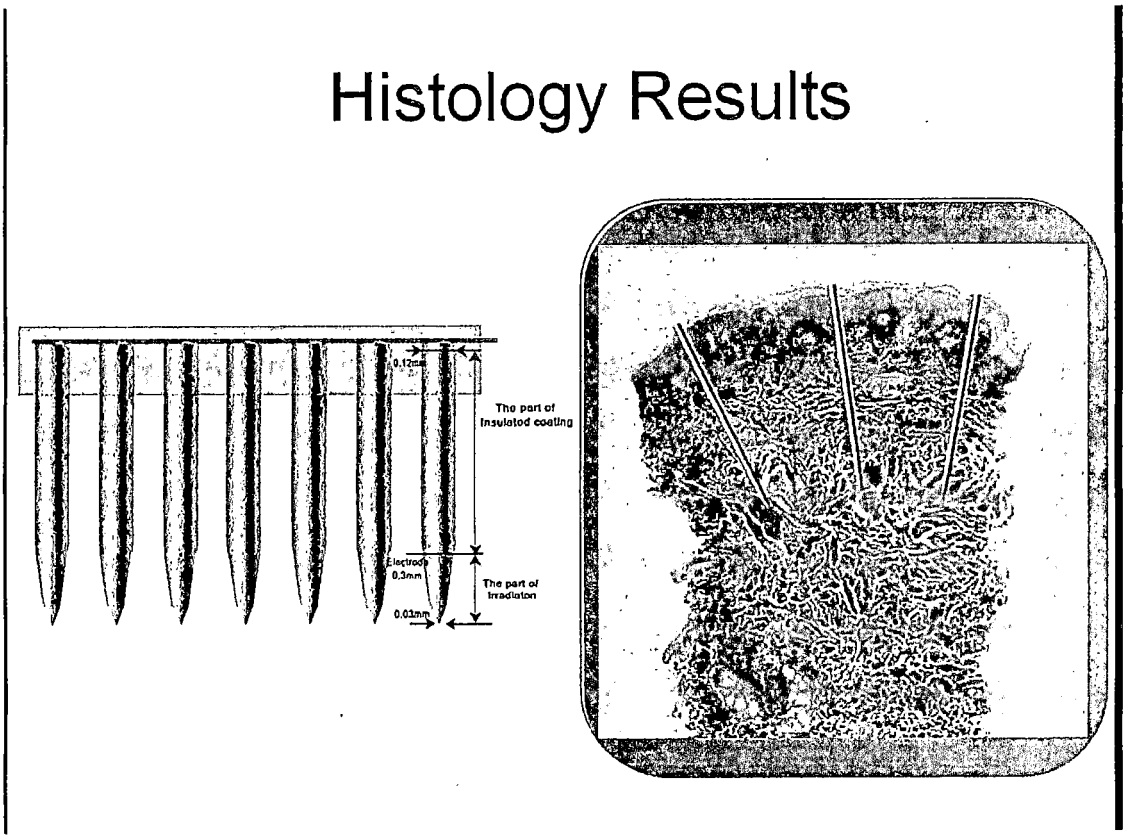


Id. at 77 (citing Ex. 1006, 6:22–30). In the above screen capture, Petitioner added lighter-colored shading to depict "[u]ndenatured areas between needles" (*id.*) that "remain undamaged" (*see id.* at 76).

Petitioner further cites to a "Research Paper" (Ex. 1009) that was presented in 2010 "regarding the INTRAcel Device" and contends that a "POSA reviewing the INTRAcel Video and the corroborating Research Paper would recognize that INTRAcel Device causes coagulation around each electrode rather than coagulating between the electrodes." Pet. 77–78 (citing Ex. 1003 ¶ 225). In support of this assertion, Petitioner quotes the following statement from the Research Paper: "This machine has microneedles and it delivers fractional RF energy [to] induce the thermal damage in the target area of the dermis. Fractional Radiofrequency

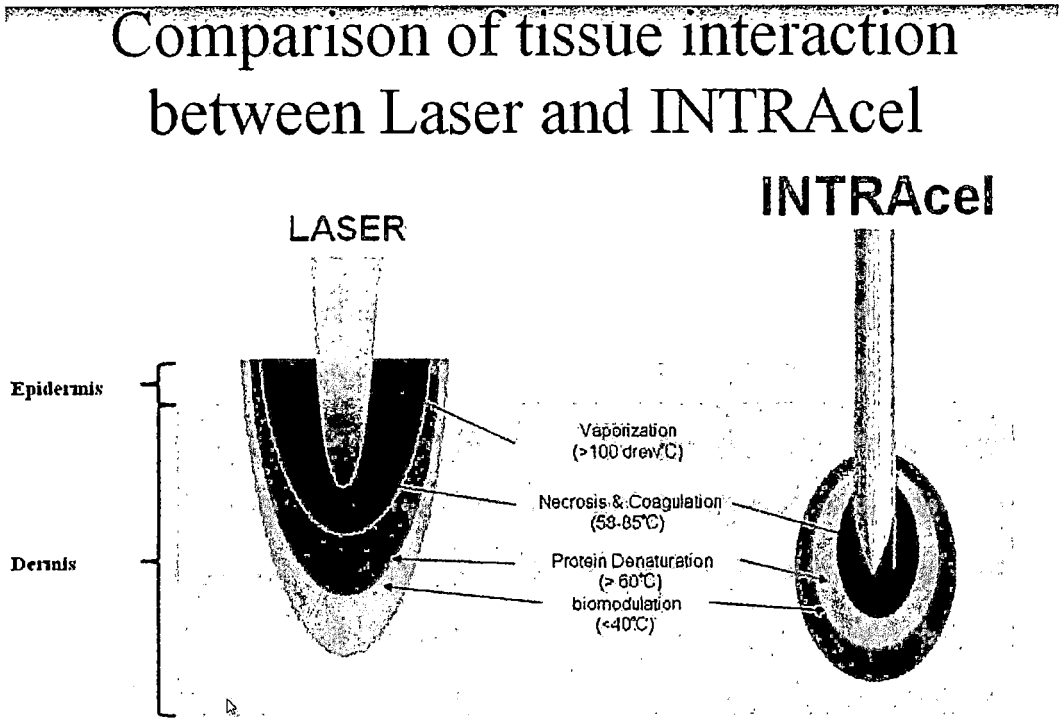
Microneedling (FRMTM) makes thermally and partially injured columns in deep dermis." *Id.* (quoting Ex. 1009, 2; citing also Ex. 1003 ¶ 225).

Patent Owner describes the histology report screen capture above as "ambiguous." Prelim. Resp. 37. According to Patent Owner, "the Intracel Video does not explain how this cross-section was obtained, and along which lines of electrodes the cross-section was allegedly captured." *Id.* at 38. Specifically, Patent Owner argues, "the Intracel Video fails to disclose whether this image captures electrodes of common polarity, electrodes of different polarities, or even electrodes that are not directly adjacent to each other." *Id.* Adding to this uncertainty, Patent Owner argues, Petitioner only includes a portion of the video's screenshot. *Id.* (citing Pet. 76; Ex. 1006, 6:22–6:30). Patent Owner reproduces the "complete screenshot" as follows:



Id. at 39 (citing Ex. 1006, 6:22–6:30, 0:16–0:20). In the above screenshot, Patent Owner explains that an array of electrodes is shown on the left "that are closely arranged and parallel to each other," whereas "in the image on the right, electrodes are not parallel to each other, and are clearly spaced farther apart." *Id.* at 38–39 (citing Ex. 1006, 6:22–6:30, 0:16–0:20 (illustrating a 49-needle tip matrix)).

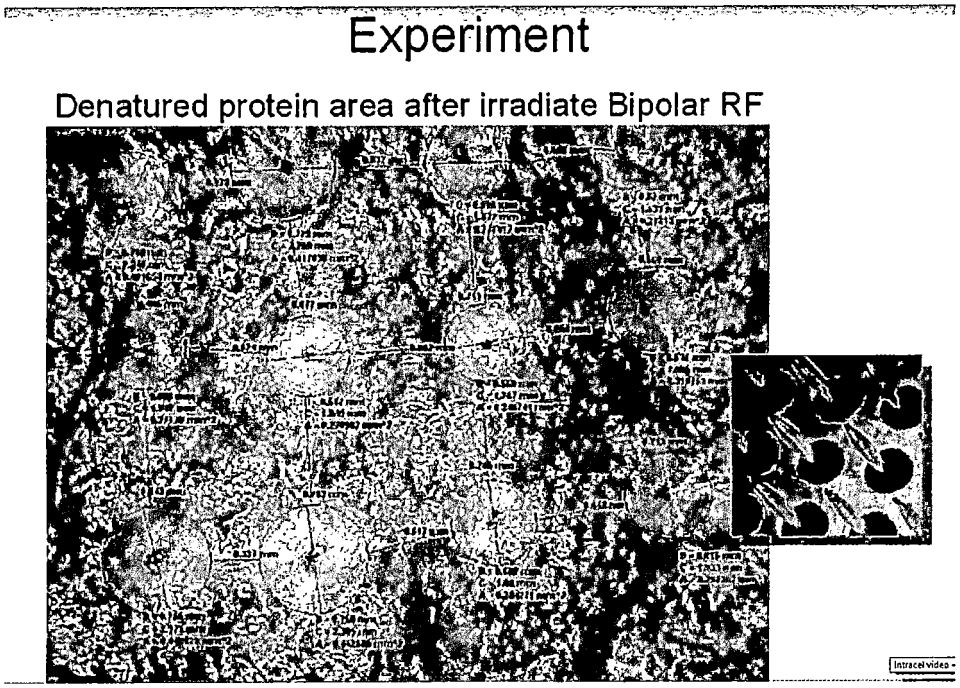
Furthermore, Patent Owner asserts that Petitioner overlooks other aspects of the INTRAcel Video that illustrate a zone of biomodulation in the dermis, outside the denatured areas. *See id.* at 39 (citing Ex. 1006, 2:49–3:46). A screen capture of this zone is shown below:



E.g., Ex. 1006, 3:45. The above screen capture compares a laser's biomodulation zone with the INTRAcel's biomodulation zone. *See id.* Patent Owner faults Petitioner and its expert for providing "absolutely no analysis directed to this biomodulation zone, how large the biomodulation zone is, or why they assert that this biomodulation zone can be disregarded

when evaluating the claimed 'caus[ing] coagulation around each electrode rather than coagulating between the electrodes.'" Prelim. Resp. 39–40. In Patent Owner's view, "Petitioner['s] decision to overlook these aspects of the Intracel Video in favor of self-serving annotations of the denatured area is faulty." *Id.* at 40.

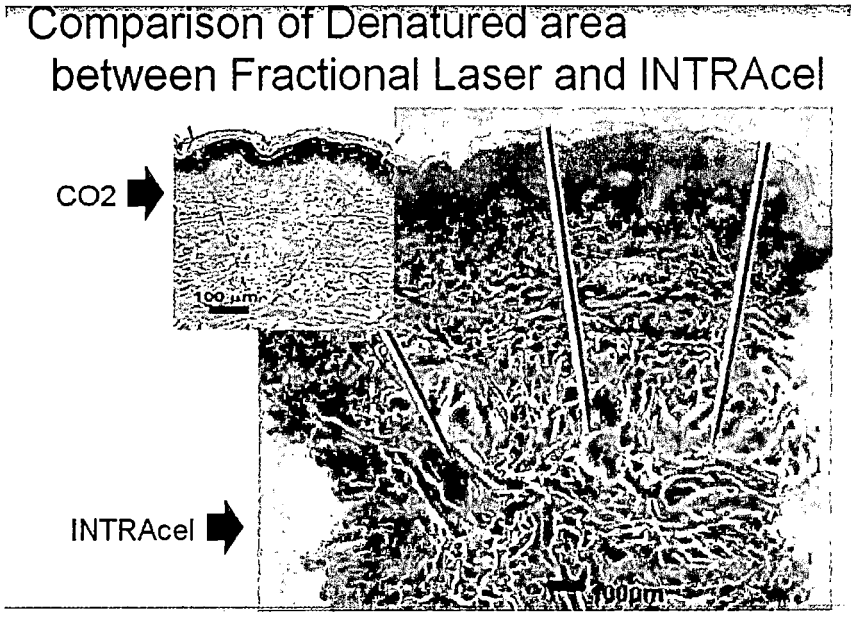
We agree with Patent Owner. The INTRAcel Video does not disclose whether the "histology results" screen capture was taken using electrodes in monopolar or bipolar mode. *See* Ex. 1006, 6:22–6:30. Petitioner does not persuasively explain that the histology results were taken using bipolar mode. Instead, Petitioner merely asserts that "[t]his picture is ***after bipolar irradiation***." Pet. 75 (citing Ex. 1003 ¶ 223). The problem with this argument is that the "picture" Petitioner refers to is different from the histology results picture:



Id. (citing Ex. 1006, 5:14–5:18). The above screen capture depicts an experiment showing a denatured protein area after irradiation by bipolar RF

ENDYMED EXHIBIT 1002 - 500/509

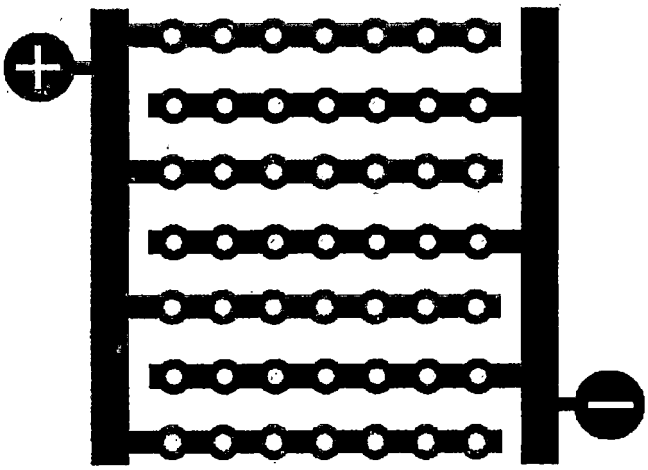
energy. Ex. 1006, 5:14–5:18. While it is possible that the above image is related to the histology results upon which Petitioner relies, Petitioner does not persuasively explain how the INTRAcel Video links the two images. In fact, the first time the video shows histology results happens a few images *after* the preceding "bipolar" irradiated image, as follows:



Id. at 5:53. According to the video, the above picture "shows the difference in changes between CO2 fractional laser and the INTRAcel." *Id.* at 5:53–6:10. The Video does not mention which RF mode was applied for this image (whether monopolar or bipolar). The same is true for the histology results image relied on by Petitioner—the video does not state which RF mode was applied to obtain those results. Nor does Petitioner assert that one of ordinary skill in the art would have understood these images to have been obtained with bipolar energy or that it would have been obvious to have done so. *See* Pet. 75–78.

Furthermore, and *even if* the histology results were obtained using bipolar electrodes, Petitioner's argument has another defect. As Patent

Owner persuasively explains, "the Intracel Video does not explain how this cross-section [from the histology report] was obtained, and along which lines of electrodes the cross-section was allegedly captured." Prelim. Resp. 38. We agree with Patent Owner that "the Intracel Video fails to disclose whether this image captures electrodes of common polarity, electrodes of different polarities, or even electrodes that are not directly adjacent to each other." *Id.* We reproduce again the RF circuit diagram from the INTRAcel video below:



Ex. 1006, 0:33–0:45. As noted above, this diagram shows the arrangement of the needles to achieve bipolar mode. *Id.* at 0:33–0:45; *see* Pet. 63 (reproducing the same). Turning to the histology report, the needles shown could have been a horizontal cross section or a vertical cross section of needles in the above circuit diagram. We do not know, as the INTRAcel video and Petitioner fail to fully address this point. *See id.*; *see also* Pet. 75–78. Importantly, the claims require "the electrodes being bipolar" and "electrodes configured to cause coagulation around each electrode rather than coagulating between the electrodes," yet Petitioner does not

ENDYMED EXHIBIT 1002 - 502/509

persuasively explain how the INTRAcel Video's needles meet these limitations. *See* Pet. 75–78.

Moreover, we see nothing in the Research Paper (Ex. 1009) to support a finding that the *Video* discloses or suggests "coagulation around each electrode rather than coagulating between the electrodes." As explained above (*supra* § II.E.2.a), even if the INTRAcel Device satisfies this limitation—which we do not see based on Petitioner's explanation—the issue is whether the *prior art discloses or suggests* the limitation, not whether the *device discloses or suggests* the limitation. *See* Prelim. Resp. 2 ("Petitioners' Ground 2 challenge initially focuses on a device, rather than the "Intracel Video"[] as asserted art, in violation of 35 U.S.C. § 311(b).").

Last, we agree with Patent Owner that Petitioner provides "absolutely no analysis directed to [the INTRAcel Video's] biomodulation zone, how large the biomodulation zone is, or why . . . this biomodulation zone can be disregarded when evaluating the claimed applying energy 'to body segments around each electrode rather than to body segments between the electrodes.'" Prelim. Resp. 39–40. Again, Petitioner's analysis is lacking, and the prior art, including the INTRAcel Video itself, is not sufficiently detailed to support Petitioner's arguments.

3. Summary of Ground 2

For the reasons above, Petitioner has not established a reasonable likelihood that independent claims 1 and 14 are unpatentable over the INTRAcel Video in view of Mulholland.

Moreover, Petitioner's challenge of dependent claims 2–13 and 15–29 falls short for the same reasons. *See id.* at 78–95.

ENDYMED EXHIBIT 1002 - 503/509

Accordingly, Petitioner has not demonstrated a reasonable likelihood that it would prevail in its challenge of claims 1–29 as unpatentable over the INTRAcel Video in view of Mulholland.

III. CONCLUSION

We deny to institute review of any of the challenged claims.

IV. ORDER

For the reasons above, it is:

ORDERED that the Petition is *denied* as to the grounds and all challenged claims of the '836 patent.

ENDYMED EXHIBIT 1002 - 504/509

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CARTESSA AESTHETICS, LLC and
AESTHETICS BIOMEDICAL, INC.,
Petitioner,

v.

SERENDIA, LLC,
Patent Owner.

IPR2022-00594
Patent 9,480,836 B2

Before CARL M. DEFRANCO, MICHAEL L. WOODS, and SCOTT RAEVSKY, *Administrative Patent Judges*.

DEFRANCO, *Administrative Patent Judge*, concurring.

I concur with the majority's decision denying institution of *inter partes* review. I write separately only to address the issue of whether the INTRAcel Video qualifies as a "printed publication" within the scope of our review under 35 U.S.C. § 311(b). The majority "find[s] it unnecessary to address the issue" because "Patent Owner does not dispute that the INTRAcel Video itself is a printed publication." *See* Majority Op. 30, n.3. I am not so sure that is the case. For instance, in alleging that "Petitioners do not limit the scope of their challenge to the categories—patents and printed publications—allowed under the law," Patent Owner contends that

ENDYMED EXHIBIT 1002 - 506/509

"the Petition's sections V.B.1 *and* V.B.2, respectively entitled 'Background on the INTRAcel Device' *and* 'The INTRAcel Video' . . . *are* irrelevant to permissible challenges in IPRs and should be disregarded." Prelim. Resp. 33 (emphases added). Those statements, at the very least, indicate Patent Owner's unease with Petitioner's reliance on the Video as a basis for challenging the claims. So, to dispel any doubt, I would find expressly that the Video, including its text, images, and audio, qualifies as a "printed publication" within the scope of our review.

At the outset, I note that Patent Owner does not dispute Petitioner's proof that the Video was *published*, i.e., disseminated and sufficiently accessible to the public interested in the art before the critical date of the challenged patent. *See* Majority Op. 29 (discussing Petitioner's proof). Thus, it appears Patent Owner's sole concern is that the Video is not a *printed* publication. I submit that legal precedent clearly holds it is.

To that end, our reviewing court and this Board repeatedly point to the case of *In re Wyer*, 655 F.2d 221 (CCPA 1981) for the proposition that a video is a "printed publication" so long as it is publicly accessible. There, the court explained that

> "printed publication" should be approached as a unitary concept. *The traditional dichotomy between "printed" and "publication" is no longer valid.* Given the state of technology in document duplication, data storage, and data retrieval systems, the "probability of dissemination" of an item very often has little to do with whether or not it is "printed" in the sense of that word when it was introduced into the patent statutes in 1836. . . .
>
> [T]he printed publication provision was designed to prevent withdrawal by an inventor, as the subject matter of a patent, of that which was already in the possession of the public. Thus, the question to be examined under [the statute] is the accessibility to

ENDYMED EXHIBIT 1002 - 507/509

> at least the pertinent part of the public, of a perceptible description of the invention, *in whatever form it may have been recorded.*

Id. at 226 (emphases added). In other words, accessibility to the relevant public is the "criterion" by which a prior art reference is judged when resolving the "printed publication" inquiry, *not* whether the reference is "printed" in the word's strictest sense. *See In re Klopfenstein*, 380 F.3d 1345, 1350 n.2 (Fed. Cir. 2004).

Indeed, that "printed publication" under the statute is interpreted broadly to encompass videos is nothing new. *See, e.g.*, *Medtronic, Inc. v. Barry*, 891 F.3d 1368, 1379–83 (Fed. Cir. 2018) (vacating Board's decision for failing to consider all relevant factors in determining whether video demonstration and related slide presentation were publicly accessible); *Jazz Pharm., Inc. v. Amneal Pharm., LLC*, 895 F.3d 1347, 1352, 1354–60 (Fed. Cir. 2018) (addressing public accessibility of "video" of FDA advisory committee meeting); *Acco Brands Corp. v. ThinkProds., Inc.*, 2015 WL 6232937, *7 (PTAB Oct. 21, 2015) (finding that "product video" published on website qualifies as "printed publication"); *Intex Recreation Corp. v. Bestway Inflatables & Material Corp.*, 2017 WL 2312915, *10 (PTAB May 26, 2017) (holding challenged claims unpatentable as obvious "over the Intex Video and Blomquist"); *MerchSource, LLC v. DODOCase VR, Inc.*, 2018 WL 4043241, *8 (PTAB Aug. 22, 2018) (instituting review of challenged claims based on "YouTube Video"); *Ex Parte Mettke*, 2008 WL 4448201, *6 (PTAB Sept. 30, 2008) (finding "video tape" qualifies as "printed publication" under the statute because "the key . . . is the 'probability of dissemination' rather than form").

ENDYMED EXHIBIT 1002 - 508/509

Those cases show that the term "printed" as used in the statute no longer takes on an overly-narrow and outdated meaning of being produced by mechanical means involving the transfer of text or images to paper. Thus, contrary to what Patent Owner might think, so long as the INTRAcel Video was publicly accessible, which it was, it qualifies as "printed publication" within the scope of our review under § 311(b).

ENDYMED EXHIBIT 1002 - 509/509