

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

BIOFRONTERA INC., BIOFRONTERA BIOSCIENCE GMBH,
BIOFRONTERA PHARMA GMBH, and BIOFRONTERA AG,
Petitioner,

v.

SUN PHARMACEUTICAL INDUSTRIES, INC.,¹
Patent Owner.

IPR2024-00874
Patent 11,697,028 B2

Before WILLIAM V. SAINDON, ERICA A. FRANKLIN, and
ROBERT A. POLLOCK, *Administrative Patent Judges*.

FRANKLIN, *Administrative Patent Judge*.

DECISION
Denying Institution of *Inter Partes* Review
35 U.S.C. § 314

¹ Patent Owner provided notice that “DUSA Pharmaceuticals, Inc. merged with Sun Pharmaceutical Industries, Inc., effective March 31, 2024, with Sun Pharmaceutical Industries, Inc. remaining as the surviving corporation.” Paper 3, 1 n.1. Accordingly, the caption for this proceeding is modified to reflect Sun Pharmaceutical Industries, Inc. as the Patent Owner.

I. INTRODUCTION

Biofrontera Inc., Biofrontera Bioscience GmbH, Biofrontera Pharma GmbH, and Biofrontera AG (“Petitioner”) filed a Petition requesting an *inter partes* review of claims 1–8, 10, 11, 13, 14, and 16–21 of U.S. Patent No. 11,697,028 B2 (Ex. 1001, “the ’028 patent”). Paper 1 (“Pet.”). Sun Pharmaceuticals Industries, Inc. (“Patent Owner”) filed a Preliminary Response to the Petition. Paper 7 (“Prelim. Resp.”). Petitioner has also filed a petition in IPR2024-01312, along with a Notice Regarding Parallel Petitions, in which Petitioner ranks the petition in IPR2024-01312 higher. *See* IPR2024-01312, Papers 2, 3. We have reviewed those filings, but note that the preliminary response in IPR2024-01312 has not yet been filed, and we decide the instant proceeding on the merits of IPR2024-00874 only.

We have authority to determine whether to institute an *inter partes* review. 35 U.S.C. § 314. Upon considering the parties’ arguments and evidence, we determine that Petitioner has not established a reasonable likelihood that it would prevail in showing the unpatentability of at least one claim challenged in the Petition. Accordingly, we do not institute an *inter partes* review of the challenged claims.

A. *Real Parties-in-Interest*

Petitioner identifies itself as the real parties-in-interest. Pet. 1. Patent Owner identifies itself as the real party-in-interest. Paper 3, 1.

B. *Related Matters*

The parties relay that the following proceedings are related, both filed on June 24, 2024: *In re Certain Photodynamic Therapy Systems, Components Thereof, And Pharmaceutical Products Used In Combination With The Same*, Investigation No. 337-TA-1411 (U.S.I.T.C.); and *Sun Pharmaceutical Industries, Inc. v. Biofrontera Bioscience GmbH*,

Biofrontera Pharma GmbH, Biofrontera AG, and Biofrontera Inc., Civil Action No. 1:24-cv-11637 (D. Mass). Paper 6, 1; Paper 8, 1. Petitioner also identifies *Biofrontera Inc.*, *Biofrontera Bioscience GmbH*, *Biofrontera Pharma GmbH*, and *Biofrontera AG v. DUSA Pharmaceuticals, Inc.*, IPR2024-01312. Paper 8, 2.

C. The '028 Patent

The '028 patent relates to “an adjustable illuminator that provides a uniform distribution of visible light in a number of configurations and is suitable for use in photodynamic therapy and diagnosis.” Ex. 1001, 1:19–22. A perspective view of the illuminator attached to a stand, shown below, is in Figure 4.

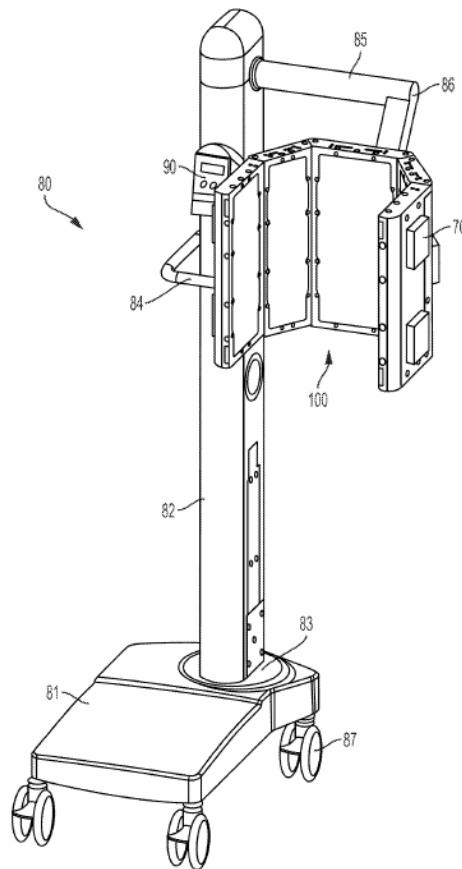


Figure 4 shows main body 100 of the illuminator mounted by a connecting arm 85 to a movable stand 80, which includes a base 81 with wheels 87. *Id.* at 5:16–33.

The Specification describes that main body 100 “preferably has five individual panels 10a-10e, each of which are connected in a rotatable manner via nested hinges 50.” *Id.* at 3:54–56. Further, “[e]ach panel contains an array of light emitting diodes (LED) 60, which may be configured in an evenly spaced pattern across the face of the panel.” *Id.* at 3:56–59. The patent explains that the “LED arrays 60 emit light at an appropriate wavelength according to the intended treatment or to activate the particular photoactivatable agent used in treatment or diagnosis.” *Id.* at 4:1–4. The main body 100 is shown below in perspective view in Figure 2b.

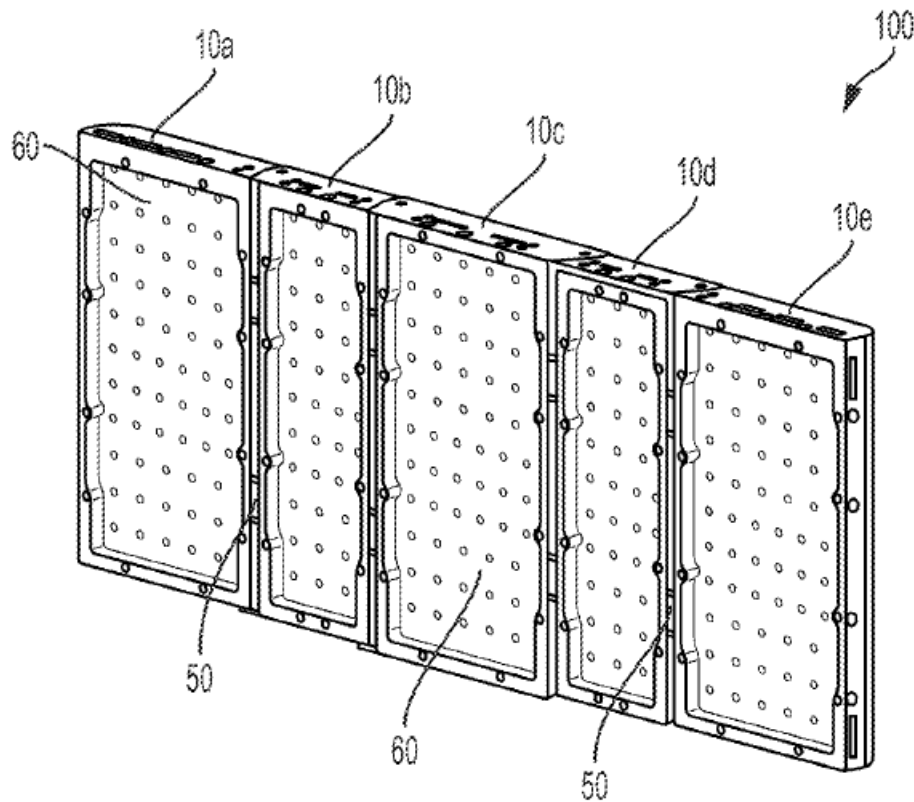


Figure 2b shows main body 100, comprising LED arrays 60, hinges 50, and panels 10a–10e. *Id.* at 3:52–59. The patent describes that “the five

panels 10a-10e are of different widths relative to one another,” and connected to each other by hinges 50. *Id.* at 4:25–26, 4:47–48. The hinges “may take the form of nested hinges, which may include hinges 50 that substantially reduce or eliminate optical dead spaces.” *Id.* at 4:48–50.

The Specification also describes that “[a]t least one control unit is also connected to the panels to regulate power to the lights to achieve the required uniformity and intensity for the target treatment,” and that “each panel may have a dedicated control unit to regulate power to the individual LED array on a given panel.” *Id.* at 5:52–62. A schematic view illustrating an exemplary configuration of LEDs mounted on the main body of the illuminator is shown below in Figure 5.

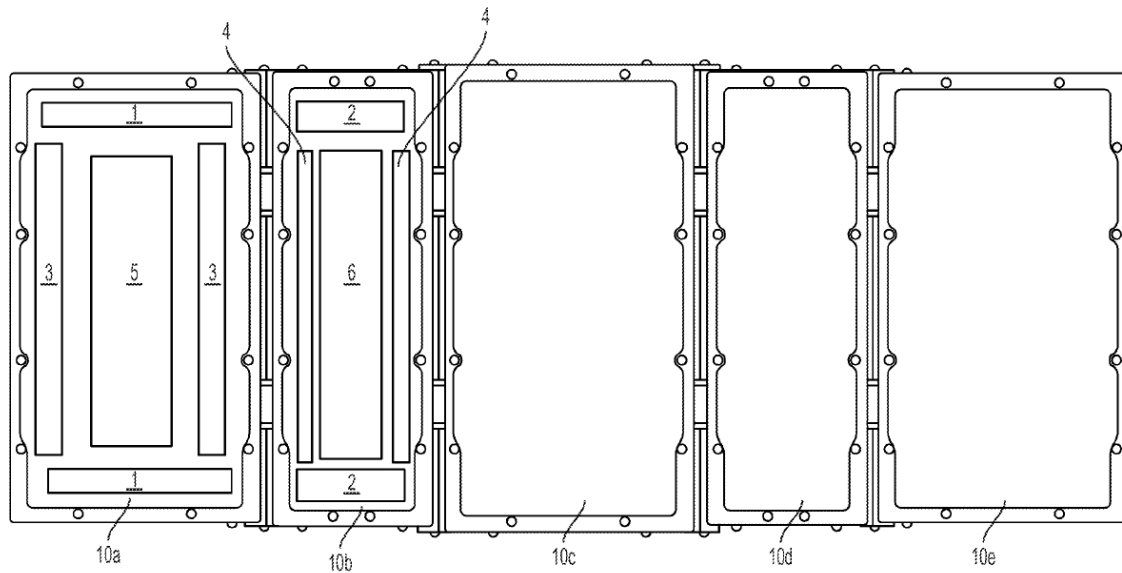


Figure 5 shows LED arrays 60 divided into three general areas, areas 1, 3, and 5 on the wider panels 10a, 10c, and 10e, and areas 2, 4, and 6 on the narrower panels 10b and 10d. *Id.* at 6:24–31. The Specification explains, “to increase the uniformity of light exposure to the treatment area while maintaining a practical size of the illuminator, the LED arrays 60 may be individually configured to increase the intensity of light emitting from

certain diodes,” which may allow for a reduction of any “fall off” of light exposure that tend to occur at the edges of a curved surface. *Id.* at 6:7–8, 6:18–22. For example, “a higher current may be supplied to areas 1 and 2 than the current supplied to areas 3 and 4 such that areas 1 and 2 emit a higher intensity of light than areas 3 and 4.” *Id.* at 6:33–36.

D. Illustrative Claims

Petitioner challenges claims 1–8, 10, 11, 13, 14, and 16–21 of the ’028 patent. Claims 1 and 5, set forth below, both independent claims, are illustrative of the claimed subject matter.

1. A system for photodynamically diagnosing or treating a patient, comprising:
 - an illuminator comprising five panels connected by hinged structures on inner side surfaces of adjacent panels; and
 - light sources disposed on surfaces of the five panels, the illuminator being configured to uniformly illuminate a treatment surface of the patient via the light sources, one of the five panels being positioned as a center panel configured to face the treatment surface, and two or more of the five panels being configured to be angled relative to the center panel,
- wherein the five panels are positioned to allow treatment within approximately four inches of the treatment surface, and
- wherein each of the five panels has two first edges and two second edges shorter than the two first edges, and the light sources are arranged such that a higher intensity of light is emitted proximate the second edges compared to the intensity of light emitted not proximate the second edges.

5. A method of photodynamically diagnosing or treating a patient, comprising:

administering 5-aminolevulinic acid (ALA) to the patient; positioning an illuminator proximate to the patient, the illuminator comprising five panels connected by hinged structures on inner side surfaces of adjacent panels; and uniformly illuminating a treatment surface of the patient with light sources disposed on the five panels of the illuminator, the five panels being positioned to allow treatment within approximately four inches of the treatment surface,

wherein each of the five panels has two first edges and two second edges shorter than the two first edges, and the light sources are arranged such that a higher intensity of light is emitted proximate the second edges compared to the intensity of light emitted not proximate the second edges.

Ex. 1001, 10:24–44; 10:54–11:3.

Independent claims 16, 20, and 21 also each recites a system for diagnosing or treating a patient. Dependent claims 2–4 recite dosage, irradiance density, and wavelength ranges. Dependent claims 5 and 6 recite light colors. Dependent claim 8 recites changing intensities based on curvature of a treatment surface. Dependent claims 10, 11, 13, and 14 recite adjusting dose based on size or shape of a treatment surface. Dependent claim 17 recites panel positioning. Dependent claims 18 and 19 recite using blue or red light.

E. Asserted Grounds of Unpatentability

Petitioner asserts that claims 1–8, 10, 11, 13, 14, and 16–21 are unpatentable on the following three grounds:

Claim(s) Challenged	35 U.S.C. §²	Reference(s)/Basis
1, 2, 4–8, 16–21	103	Larsen ³ , Bansal ⁴ , Jones ⁵
2–4	103	Larsen, Bansal, Jones, Anderson ⁶
10, 11, 13, 14	103	Larsen, Bansal, Jones, Mackinnon ⁷

Petitioner also relies upon the Declaration of Eric Bretschneider, Ph.D. (Ex. 1003). Patent Owner relies upon the Declaration of Jose Sasian, Ph.D. (Ex. 2001).

II. ANALYSIS

A. *Person of Ordinary Skill in the Art*

The level of skill in the art is a factual determination that provides a primary guarantee of objectivity in an obviousness analysis. *Al-Site Corp. v. VSI Int’l Inc.*, 174 F.3d 1308, 1323 (Fed. Cir. 1999) (citing *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966)); *Ryko Mfg. Co. v. Nu-Star, Inc.*, 950 F.2d 714, 718 (Fed. Cir. 1991)).

² The Leahy-Smith America Invents Act, Pub. L. No. 112–29, 125 Stat. 284 (2011) (“AIA”), amended 35 U.S.C. § 103, effective March 16, 2013. The earliest claimed priority date for the ’028 patent is after the effective date of the applicable AIA amendment. *See* Ex. 1001, code (60). Accordingly, we apply the AIA version of §103.

³ Eric Larsen, U.S. 2004/0075703 A1, published Apr. 7, 2005 (Ex. 1004, “Larsen”).

⁴ Vineet Bansal et al., U.S. 2004/0068305 A1, published Apr. 8, 2004 (Ex. 1005, “Bansal”).

⁵ Ross Peter Jones, et al., U.S. 2014/0067024 A1, published Mar. 6, 2014 (Ex. 1006, “Jones”).

⁶ Richard Anderson, WO 02/13788 A1, published Feb. 21, 2002 (Ex. 1007, “Anderson”).

⁷ Nicholas Mackinnon et al., WO 2005/030328 A2, published Apr. 7, 2005 (Ex. 1012, “Mackinnon”).

Petitioner asserts that a person of ordinary skill in the art (“POSA”) at the time the application for the ’028 patent was filed

would have had at least a Bachelor of Science in electrical engineering, physics, biomedical engineering, computer engineering, chemical engineering, material science, or a related scientific or engineering field, and at least one year of work or research experience in optics, optoelectronics, radiometry, photometry, photodynamic diagnosis (PD), photodynamic therapy (PDT), phototherapy (PT), or a related field.

Pet. 8. Petitioner asserts that, alternatively, a “POSITA in the relevant time frame would have had at least four years of industry or academic experience in optics, optoelectronics, radiometry, photometry, PD, PDT, PT, or a related field.” *Id.* (citing Ex. 1003 ¶ 37).

According to Patent Owner, a person of ordinary skill in the art at the time the application for the ’028 patent was filed, “would have had a M.D. and/or a Ph.D. in an electrical engineering, physics, optical sciences, optical engineering, or a related scientific or engineering field, and at least one to two years of work or research experience in optical engineering, optics, optoelectronics, phototherapy (‘PT’), PDT, or a related field.” Prelim.

Resp. 16. Patent Owner asserts that, “[a]lternatively, a POSITA could have a Bachelor’s degree in one of the above areas and at least three to four years of work or research experience in that area.” *Id.* (citing Ex. 2001 ¶¶ 30–31).

We note that the parties’ proposed definitions are largely similar. To the extent that the proposed definitions differ, we do not need to resolve those differences as our findings and conclusion in this Decision would be the same under any of the proposed definitions.

B. Claim Construction

The Board applies the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. § 282(b); 37 C.F.R. § 100(b). Under that standard, claim terms “are generally given their ordinary and customary meaning” as understood by a person of ordinary skill in the art at the time of the invention. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (en banc) (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)). See *Wellman, Inc. v. Eastman Chem. Co.*, 642 F.3d 1355, 1361 (Fed. Cir. 2011) (“[C]laim terms need only be construed ‘to the extent necessary to resolve the controversy.’”) (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)).

Petitioner asserts that “all claim terms of the ’028 Patent are presumed to take on their ordinary and customary meaning that the terms would have to POSITA at the time of the invention, and there is no need to resolve any controversy with respect to these terms.” Pet. 8. Patent Owner asserts that “the Board need not construe any terms to deny institution.” Prelim. Resp. 16. We agree with the parties that we need not expressly construe any claim term for purposes of rendering this Decision whether to institute review of the challenged claims.

C. Obviousness over Larsen, Bansal, and Jones

Petitioner asserts that claims 1, 2, 4–8, and 16–21 would have been obvious over the combined teachings of Larsen, Bansal, and Jones. Pet. 17–62. Patent Owner disagrees. Prelim. Resp. 36–49.

A patent claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter 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 the subject matter pertains. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007).

“An obviousness determination requires finding both ‘that a skilled artisan would have been motivated to combine the teachings of the prior art references to achieve the claimed invention, and that the skilled artisan would have had a reasonable expectation of success in doing so.’” *CRFD Research, Inc. v. Matal*, 876 F.3d 1330, 1340 (Fed. Cir. 2017) (quoting *Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1367–68 (Fed. Cir. 2016)). Obviousness grounds must be supported with “articulated reasoning with some rational underpinning” and not by “mere conclusory statements.” *See KSR Int’l Co.*, 550 U.S. at 418.

I. Larsen

Larsen describes a “treatment device which uses a light radiation of multiple wavelengths and pulse-shaped electromagnetic fields for the photodynamic stimulation of cells, especially cells of human tissue, and also for the activation and stimulation of light sensitive substances (PTD).” Ex. 1004, code (57). Larsen’s device produces energy radiation through the use of “semiconductor and/or laser diodes, which emit light in several separate wavelengths.” *Id.* The device comprises a stand, a jointed arm, “machine applicators,” wheels, and a control mechanism. *Id.* A diagram of Larsen’s device is shown in Figure 1, below.

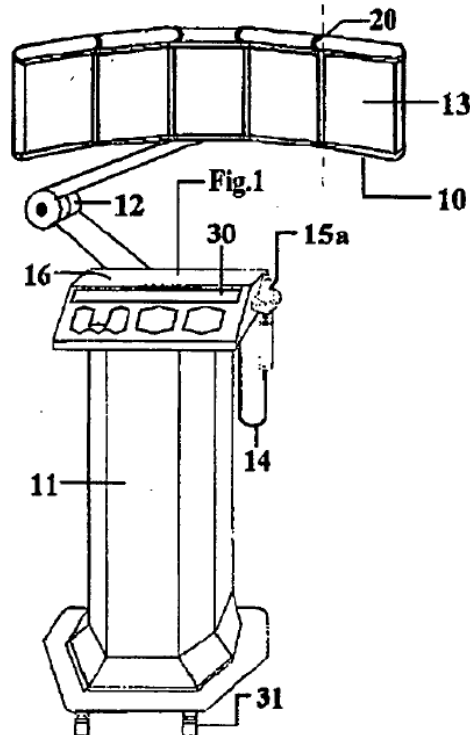


Figure 1 shows device 10, with stand 11, jointed arm 12, machine applicators 13, electric circuit 14, hand applicator 15, control mechanism 16, control panel 30, and wheels 31. *Id.* ¶ 69. Larsen describes that “applicators 13 are flexibly connected to each other through hinges 10, respectively connecting one edge with the other.” *Id.* ¶ 72.

2. *Bansal*

Bansal relates to a “phototherapy system,” where “an array of light sources arranged so as to achieve substantially uniform distribution of light on a subject.” Ex. 1005, code (57). Bansal describes that prior art “phototherapeutic light sources have been arranged into uniform arrays, typically in a rectangular pattern.” *Id.* ¶ 7. Bansal explains such a “distribution of light from a simple rectangular array will not be uniform,” because the “intensity will be significantly higher underneath the center of the array than around the periphery.” *Id.* ¶ 8.

Bansal explains that the array of light sources in its device “can take a number of different non-uniform forms to achieve the goal of even exposure on the subject’s skin.” *Id.* ¶ 25. Bansal describes one embodiment of the invention wherein “the density of light source distribution would vary throughout the array, such as with higher density in the periphery and a lower density in the center.” *Id.* In another version, “low intensity light sources could be used in one portion of the array, and higher intensity light sources could be used in another section.” *Id.* Bansal explains that “[t]his can be achieved by either using different intensity light sources or driving the light sources with a lower power in the center and a higher power on the outer edges.” *Id.*

Figure 9b, shown below, illustrates one version of light array, with a higher density of light sources around the periphery of the array.

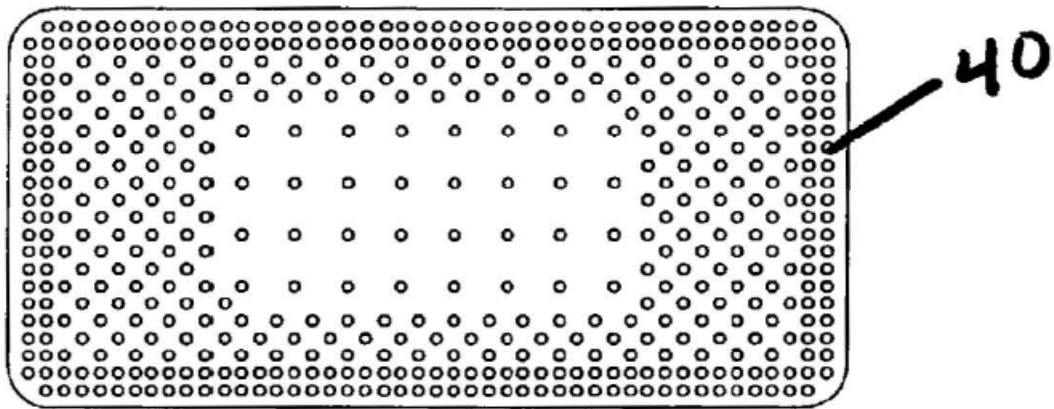


Figure 9b shows one exemplary light source configuration, wherein light array 40, wherein the density of light sources distribution varies throughout the array, with a higher density in the periphery and lower density in the center. *Id.*

3. *Jones*

Jones relates to a “dual panel photodynamic therapy lamp.” Ex. 1006 ¶ 2. Jones describes the lamp includes “two lamp modules (hereinafter lamp modules or modules) in a housing . . . in which the modules are connected via a hinge.” *Id.* ¶ 65. Jones explains that the lamp modules each comprise “a two-dimensional array of LEDs and each of the lamp modules are configured to be movable.” *Id.* ¶ 14. Jones discloses an exemplary embodiment of the invention, “when the photodynamic therapy lamp is in use, a distance between the lamp modules and a treatment surface of a patient is between about 5 cm to about 8 cm.” *Id.* ¶ 24.

4. *Discussion*

We begin by noting that each of the challenged claims share the following requirement for the illuminator panels and light sources, i.e., that “each of the five panels has two first edges and two second edges shorter than the two first edges, and the light sources are arranged such that a higher intensity of light is emitted proximate the second edges compared to the intensity of light emitted not proximate the second edges.” *See* Ex. 1001, Independent Claims 1, 5, 16, 20, and 21. Petitioner relies persuasively on Larsen for its disclosure of an illuminator comprising five panels with two first edges and two second edges shorter than the two first edges. Pet. 35–36. Patent Owner does not contend otherwise.

For the limitation requiring the light sources to be “arranged such that a higher intensity of light is emitted proximate the second edges compared to the intensity of light emitted not proximate the second edges,” Petitioner relies only on Bansal. *See id.* at 36–38. Specifically, Petitioner asserts that Bansal discloses a panel with an array of light sources that “can take a

number of different non-uniform forms to achieve the goal of event exposure on the subject's skin.” *Id.* at 36 (quoting Ex. 1005 ¶ 25).

In particular, Petitioner relies on Bansal's embodiment which varies “the density of light source distribution . . . throughout the array, such as with higher density in the periphery and a lower density in the center.” *Id.* (citing Ex. 1005 ¶ 25; Ex. 1005, claim 10). Referring to Bansal Fig. 9b, set forth above in Section C.2., Petitioner asserts that Bansal exemplifies such an embodiment “where more light sources are placed near the edges of the panel compared to the light sources in the center.” *Id.* at 36–37. According to Petitioner and its expert, Dr. Bretschneider, “due to the higher density of light sources at the shorter second edges of Bansal's panels, a higher intensity of light would be emitted from the areas proximate to those shorter second edges compared to the intensity of light emitted from the center of the panel with fewer light sources (and thus lower intensity).” *Id.* at 37 (citing Ex. 1003 ¶ 219).

Petitioner also emphasizes Bansal's teaching that “low intensity light could be used in one portion of the array, and higher intensity light sources could be used in another section” by “*driving the light sources with a lower power in the center and a higher power on the outer edges.*” *Id.* (citing Ex. 1005 ¶ 25) (emphasis added by Petitioner). Petitioner contends that a person of ordinary skill in the art “would have been motivated with a reasonable expectation of success to incorporate the non-uniform light arrangement of Bansal into Larsen to increase the intensity of light emitted from the second edges of the panels compared to regions not proximate to the edges.” *Id.* at 38 (citing Ex. 1003 ¶¶ 220–221).

Patent Owner argues that “Petitioner and Dr. Bretschneider fail to consider the requirements of the higher intensity limitation as a whole.” *Id.* at 19. According to Patent Owner, “[i]n context, the plain language of the claims requires that the intensity of light emitted proximate the second edges be higher than the intensity of light emitted *not proximate the second edges*, which includes at least light proximate the first edges.” *Id.* at 19–20 (citing Ex. 2001 ¶¶ 79–83). In support of this position, Patent Owner refers to an annotated version of Figure 5 of the ’028 patent, set forth below.

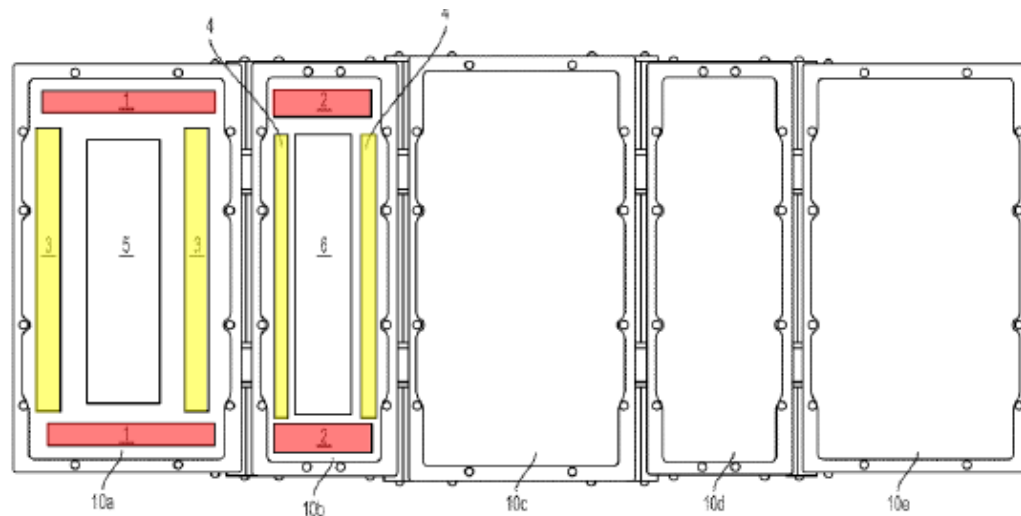


FIG. 5

Patent Owner’s annotated version of Figure 5, includes a red color to highlight areas 1 and 2, and a yellow color to highlight areas 3 and 4. *Id.* at 22. Patent Owner asserts that areas 1 and 2 are the areas proximate the shorter second edges, while areas 3 and 4 are the areas proximate the longer first edges. *Id.* at 21. Patent Owner refers to the ’028 patent description of Figure 5 which discloses that “[a]reas 1 and 2 emit a higher intensity of light than areas 3 and 4.” *Id.* (citing Ex. 1001, 6:33–38; Ex. 1002 ¶ 82).

Patent Owner contends that Petitioner’s reliance on Bansal is misplaced because Bansal discloses a higher intensity of lights “*around all*

edges of the panel,” and a lower density in the center. *Id.* at 20–22 (citing Ex. 1005 ¶ 25). According to Patent Owner, “Bansal thus fails to disclose ‘a higher intensity of light is emitted proximate the second edges compared to the intensity of light emitted not proximate the second edges,’” as required by the challenged claims. *Id.* at 21 (citing Ex. 2001 ¶¶ 80–81).

Having considered the arguments and evidence on the record, we agree with Patent Owner that Petitioner has not sufficiently shown for institution that Bansal teaches or suggests arranging light sources “such that a higher intensity of light is emitted proximate the second edges compared to the intensity of light emitted not proximate the second edges,” as required by the challenged claims. Instead, Petitioner demonstrates how Bansal describes varying the density of light source distribution throughout the array to provide a higher density of light in the entire peripheral area of the array, which includes the areas proximal to both the first and second edges, as compared to the central area of the array. *See* Pet. 36–37; Ex. 1005 ¶ 25. In this regard, Petitioner relies on Bansal’s Figure 9b, asserting that it “shows one embodiment where more light sources are placed near the edges of the panel compared to the light sources in the center.” Pet. 36–37.

The comparison of Bansal’s light density between the entire periphery and the central area of the array is insufficient. What is missing from Petitioner’s argument and discussion of Bansal is how Bansal teaches or suggests a configuration that provides a higher density of light proximate to the second shorter edges of the periphery in comparison to the remaining areas of the array, which includes the first longer edges of the periphery. Without that discussion, we find that Petitioner has not shown sufficient for institution that Bansal is persuasively relied upon for the light source arrangement limitation of the challenged claims.

Accordingly, we determine that Petitioner has not shown a reasonable likelihood of prevailing in its obviousness challenge of independent claims 1, 5, 16, 20, or 21, or dependent claims 2, 4, 6–8, and 17–19 over Larsen, Bansal, and Jones.

D. Obviousness over Larsen, Bansal, Jones, and Anderson

Petitioner asserts that claims 2–4 would have been obvious over the combined teachings of Larsen, Bansal, Jones, and Anderson. Pet. 63–67. Patent Owner disagrees. Prelim. Resp. 46–49. We incorporate our description and discussion of Larsen, Bansal, and Jones, in Section II.C., here.

1. Anderson

Anderson relates to “[l]ight treatments of sebaceous gland disorders with 5-aminolevulinic acid [(“ALA”)] and photodynamic therapy.” Ex. 1007, code (57). Anderson explains that “[t]opically-applied ALA is taken up by epithelial cells and metabolized via the porphyrin pathway to protoporphyrin *IX* (*PpIX*), the precursor of heme.” *Id.* at 2:16–17. Anderson further explains that when “intense light, e.g., visible light, red light, light with a wavelength range of between about 320 and 700 nm, is delivered to the ALA-treated skin, *PpIX* is excited into a triplet state, which reacts with oxygen to produce singlet oxygen, causing membrane damage and cell destruction.” *Id.* at 2:19–22.

Anderson discloses that “[i]n preferred embodiments, the energy source emits visible light, especially red visible light. Generally, the range of energy applied to the skin surface ranges from 1 J/cm² to about 200 J/cm², preferably from about 25 J/cm² to about 200 JU/cm², and most preferably about 100 J/cm².” *Id.* at 8:12–15.

2. Discussion

Here again, Petitioner relies on Bansal for the light source arrangement limitation of the challenged claims in the same manner discussed for challenge of claims over Larsen, Bansal and Jones. *See* Pet. 65–67. Petitioner does not rely on Anderson for this limitation. *See id.* Therefore, we find that Petitioner has not shown sufficient for institution that Bansal is persuasively relied upon for the light source arrangement limitation of the challenged claims for the same reasons discussed above in Section II.C.4.

Accordingly, we determine that Petitioner has not shown a reasonable likelihood of prevailing in its obviousness challenge of dependent claims 2–4 over the combination of Larsen, Bansal, Jones, and Anderson.

E. Obviousness over Larsen, Bansal, Jones, and Mackinnon

Petitioner asserts that claims 10, 11, 13, and 14 would have been obvious over the combined teachings of Larsen, Bansal, Jones, and Mackinnon. Pet. 67–71. Patent Owner disagrees. *See generally* Prelim. Resp. We incorporate our description and discussion of Larsen, Bansal, and Jones, in Section II.C., here.

1. Mackinnon

Mackinnon relates to “[c]omputer-controlled illumination systems that can be used to select a variety of wavelengths of light and intensities of such wavelengths suitable for the activation of various kinds of photodynamic drugs, for various types of phototherapy.” Ex. 1012, code (57). Mackinnon describes that it addresses “a need for a light source that can be used to activate a range of drugs, that can be well controlled for duration and intensity of exposure when activating a drug, and can further be used if desired to measure the presence of a photodynamic drug.” *Id.* ¶ 11.

Mackinnon further explains that its “projection system may match the shape and size of the illumination area to correspond to the shape and size of a target region discerned by an imaging system.” *Id.* ¶ 68. For example, when treating a skin lesion, “the imaging system can use standard image analysis techniques to identify cancerous/diseases regions or cells, then use such information to control a spatial light modulator . . . such that the SLM transmits therapeutic, diagnostic, etc., light to the skin.” *Id.*

2. Discussion

For this obviousness ground, Petitioner again relies on Bansal for the light source arrangement limitation of the challenged claims in the same manner discussed in the challenge of claims over Larsen, Bansal and Jones. *See* Pet. 69–71. Petitioner does not rely on Mackinnon for this limitation. *See id.* Therefore, we find that Petitioner has not shown sufficient for institution that Bansal is persuasively relied upon for the light source arrangement limitation of the challenged claims for the same reasons discussed above in Section II.C.4.

Accordingly, we determine that Petitioner has not shown a reasonable likelihood of prevailing in its obviousness challenge of dependent claims 10, 11, 13, and 14 over the combination of Larsen, Bansal, Jones, and Mackinnon.

III. CONCLUSION

For the foregoing reasons, we conclude that Petitioner has not established a reasonable likelihood of prevailing in its assertion that at least one challenged claim of the ’028 patent is unpatentable. Accordingly, we deny the Petition and decline to institute the requested *inter partes* review.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that the Petition is *denied*, and no trial is instituted.

IPR2024-00874
Patent 11,697,028 B2

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