

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

Mohammed N. ISLAM

Serial No.:

Filed:

For: SYSTEM AND METHOD FOR VOICE CONTROL OF
 MEDICAL DEVICES

Attorney Docket No.: OMNI 0110 PUSP10

Group Art Unit:

Examiner:

**INFORMATION DISCLOSURE STATEMENT
UNDER 37 C.F.R. § 1.97(b)(1)**

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

Sir:

In compliance with the duty of disclosure under 37 C.F.R. § 1.56 and §§ 1.97-1.98, the references listed and identified on the attached Forms PTO/SB08A are being submitted herewith for consideration by the Examiner. This Statement is being filed in accordance with 37 C.F.R. § 1.97(b)(1).

While this Statement is being filed in compliance with the duty of disclosure, citation of the listed references is not to be construed as an admission that any of the references are "material" as defined under 37 C.F.R. § 1.56(b).

In accordance with 37 C.F.R. § 1.98(d), copies of the listed non-patent references are not being provided since the references were previously cited by or submitted to the Patent and Trademark Office in prior application Serial No. 13/913,678 filed June 10, 2013, (pending), of which the present application is a continuation.

Respectfully submitted,

MOHAMMED N. ISLAM

By: /David S. Bir/
David S. Bir
Reg. No. 38,383
Attorney/Agent for Applicant

Date: September 2, 2014

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1000 Town Center, 22nd Floor
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Doc code: IDS

Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (01-10)

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	1	6885683		2005-04-26	FERMANN ET AL.	
	2	6281471	B1	2001-08-28	SMART	
	3	6340806		2002-01-22	SMART ET AL.	
	4	6301271	B1	2001-10-09	SANDERS ET AL.	
	5	7294105	B1	2007-11-13	ISLAM	
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	1	20100046067	A1	2010-02-25	FERMANN ET AL.	

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	2	20080105665	A1	2008-05-08	KONDO	
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	1	ISTEPANIAN, ROBERT H., "The Comparative Performance of Mobile Telemedical Systems based on the IS-54 and GSM Cellular Telephone Standards"; Journal of Telemedicine and Telecare 1999; pp 97-104	☐	
	2	ARIS, ISHAK BIN, "An Internet-Based Blood Pressure Monitoring System for Patients"; Journal of Telemedicine and Telecare 2001; pp 51-53.	☐	

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OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

☐ See attached certification statement.

☐ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

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Signature	/David S. Bir/	Date (YYYY-MM-DD)	2014-09-02
Name/Print	David S. Bir	Registration Number	38383

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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.

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	1	7789800		2010-09-07	Watterson, et al.	
	2	6701271		2004-03-02	Willner, et al.	
	3	6585622		2003-07-01	Shum, et al.	
	4	5676138		1997-10-14	Zawilinski	
	5	5906581		1999-05-25	Tsuda	
	6	5598849		1997-02-04	Browne	
	7	6193631		2001-02-27	Hickman	
	8	4867442		1989-09-19	Matthews	

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	9	3744712		1973-07-10	Papadopoulos, et al.	
	10	6292688		2001-09-18	Patton	
	11	6013007		2000-01-11	Root, et al.	
	12	4860763		1989-08-29	Schminke	
	13	6605038		2003-08-12	Teller, et al.	
	14	6463385		2002-10-08	Fry	
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	1	20020111541		2002-08-15	Bibl, et al.	

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	1	WO9930613	WO		1998-12-09	Margulis, et al.		☐
	2	WO8705727	WO		1987-03-11	Schweikhardt, et al.		☐
	3	WO1999030613	WO		1998-12-09	Margulis, et al.		☐
	4	WO1997049077	WO		1997-06-16	Kuusela, et al.		☐

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	3	6847336	B1	2005-01-25	LEMELSON	
	4	6868285	B2	2005-03-15	MULLER-DETHLEFS	
	5	7236618	B1	2007-06-26	CHUI ET AL.	
	6	7456965	B2	2008-11-25	WANG	
	7	7633673	B1	2009-12-15	ISLAM	
	8	7949017	B2	2011-05-24	MARCIANTE ET AL.	

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	9	8098423	B2	2012-01-17	ISLAM	
	10	8472108	B2	2013-06-25	ISLAM	

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	1	SUN, Y., C.F. Booker, S. Kumari, R.N. Day, M. Davidson, A. Periasamy, "Characterization of an orange acceptor fluorescent protein for sensitized spectral fluorescence resonant energy transfer microscopy using a white-light laser," Journal of Biomedical Optics, Vol. 14, no. 5, paper 054009 (2009).	☐
	2	BORLINGHAUS, R., "Colours Count: how the challenge of fluorescence was solved in confocal microscopy," in Modern Research and Educational Topics in Microscopy, A. Mendez-Vilas and J. Diaz, eds, pp. 890-899, Formatex (2007)	☐
	3	BORLINGHAUS, R., "The White Confocal: Continuous Spectral Tuning in Excitation and Emission," in Optical Fluorescence Microscopy, A. Diaspro (Ed), Chapter 2, pp. 37-54, ISBN 978-3-642-15174-3, Springer-Verlag, Berlin (2011).	☐
	4	BORLINGHAUS, R.T., L. Kuschel, "White Light Laser: The Ultimate Source for Confocal Microscopy," http://www.leica-microsystems.com/science-lab/white-light-laser (June 27, 2012).	☐
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Name/Print	David S. Bir	Registration Number	38383

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7	Schmitt, Joseph, et al., "Intravascular Optical Coherence Tomography Opens a Window Onto Coronary Artery Disease", Optics & Photonics News, February 2004, pages 20-25.	☐
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14	Shaw, et al, IR Supercontinuum Generation in As-Se Photonic Crystal Fiber, Optical Society of America, Copyright 2005, 3 pages	☐
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23	G. Edwards, et al., "Comparison of OPA and Mark-III FEL for Tissue Ablation at 6.45 Microns," Department of Physics and Free Electron Laser Laboratory, Duke University, 2002, 7 pages	☐
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26	P.A. Thielen and L.B. Shaw, et al., "Small-core As-Se fiber for Raman amplification," OPTICS LETI-ERS, Vol. 28, No. 16, August 15, 2003, 3 pages	☐
27	R.Rox Anderson, et al., "Selective Photothermolysis: Precise Microsurgery by Selective Absorption of Pulsed Radiation," Department of Dermatology, Harvard Medical School, Science, Vol. 220, April 29, 1983, 4 pages	☐
28	U.S. Appln. Serial No. 10/652,276, "System and Method for Voice Control of Medical devices," by Mohammed N. Islam, abandoned (074036.0129) Date filed: August 29, 2003	☐
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30	U.S. Appln. Serial No. 12/206432, "System and Method for Voice Control of Medical Devices," by Mohammed N. Islam, pending (074036.0154) Date filed: September 8, 2008	☐
31	U.S. Patent and Trademark Office, Office Action for USSN 12/206,432, filed 09/08/2008, Mohammed N, Islam, Attorney Docket No. 074036.0154, Date filed: March 12, 2009	☐
32	U.S. Patent and Trademark Office, Notice of Allowance and Fee(s) Due for USSN 12/206,432, filed 09/08/2008, Mohammed N. Islam, Attorney Docket No. 074036.0154, Date filed: August 28, 2009	☐

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Signature	/David S. Bir/	Date (YYYY-MM-DD)	2014-09-02
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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.

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Doc description: Information Disclosure Statement (IDS) Filed

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	Filing Date		
	First Named Inventor	Mohammed N. ISLAM	
	Art Unit		
	Examiner Name		
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Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear
	1	5084880		1992-01-28	Esterowitz, et al.	
	2	5180378		1993-01-19	Kung, et al.	
	3	5400165		1995-03-21	Gnauck, et al.	
	4	5458122		1995-10-17	Hethuin	
	5	5617871		1997-04-08	Burrows	
	6	5631758		1997-05-20	Knox, et al.	
	7	5687734		1997-11-18	Dempsey, et al.	
	8	5696778		1997-12-09	MacPherson	

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	9	5704351		1998-01-06	Mortara, et al.	
	10	5718234		1998-02-17	Warden, et al.	
	11	5748103		1998-05-05	Flach, et al.	
	12	5855550		1999-01-05	Lai, et al.	
	13	5862803		1999-01-26	Besson, et al.	
	14	5867305		1999-02-02	Waarts, et al.	
	15	5912749		1999-06-15	Harstead, et al.	
	16	5944659		1999-08-31	Flach, et al.	
	17	5957854		1999-09-28	Besson, et al.	
	18	6014249		2000-01-11	Fermann, et al.	
	19	6043927		2000-03-28	Islam	

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	20	6289238		2001-09-11	Besson, et al.	
	21	6333803		2001-12-25	Kurotori, et al.	
	22	6364834		2002-04-02	Reuss, et al.	
	23	6381391		2002-04-30	Islam, et al.	
	24	6402691		2002-06-11	Peddicord, et al.	
	25	6407853		2002-06-18	Samson, et al.	
	26	6441747		2002-08-27	Khair, et al.	
	27	6443890		2002-09-03	Schulze, et al.	
	28	6454705		2002-09-24	Cosentino, et al.	
	29	6480656		2002-11-12	Islam, et al.	
	30	6549702		2003-04-15	Islam, et al.	

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	31	6603910		2003-08-05	Islam, et al.	
	32	6659947		2003-12-09	Carter, et al.	
	33	6802811		2004-10-12	Slepian	
	34	7167300		2007-01-23	Fermann, et al.	
	35	7209657		2007-04-24	Islam	
	36	7263288		2007-08-28	Islam	
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	1	20020013518		2002-01-31	West, Kenneth G. ; et al.	
	2	20020019584		2002-02-14	Schulze, Arthur E. ; et al.	

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	3	20020032468		2002-03-14	Hill, Michael R.S. ; et al.	
	4	20020082612		2002-06-27	Moll, Frederic H. ; et al.	
	5	20020109621		2002-08-15	Khair, Mohammad ; et al.	
	6	20020115914		2002-08-22	Russ, Tomas	
	7	20020178003		2002-11-28	Gehrke, James K. ; et al.	
	8	20040174914		2004-09-09	Fukatsu, Susumu	
	9	20040240037		2004-12-02	Harter, Donald J.	
	10	20050111500		2005-05-26	Harter, Donald J. ; et al.	
	11	20060245461		2006-11-02	Islam; Mohammed N.	
	12	20060268393		2006-11-30	Islam; Mohammed N.	
	13	20070078348		2007-04-05	Holman; Hoi-Ying N.	

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	14	20090028193		2009-01-29	Islam; Mohammed N.	
	15	20090204110		2009-08-13	Islam; Mohammed N.	

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	1	200189362	WO		2001-11-29	West Kenneth G et al.		☐
	2	200227640	WO		2002-04-04	Whittington Charles Lynn et al.		☐
	3	200228123	WO		2002-04-04	Whittington Charles Lynn		☐

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OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

☐ See attached certification statement.

☐ Fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ None

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/David S. Bir/	Date (YYYY-MM-DD)	2014-09-02
Name/Print	David S. Bir	Registration Number	38383

This collection of information is required by 37 CFR 1.97 and 1.98. 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 1 hour 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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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.
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Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear
	1	4063106		1977-12-13	Ashkin, et al.	
	2	4158750		1979-06-19	Sakoe, et al.	
	3	4221997		1980-09-09	Flemming	
	4	4275266		1981-06-23	Lasar	
	5	4374618		1983-02-22	Howard	
	6	4403605		1983-09-13	Tanikawa	
	7	4462080		1984-07-24	Johnstone, et al.	
	8	4516207		1985-05-07	Moriyama, et al.	

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	Attorney Docket Number	OMNI 0110 PUSP10	

	9	4523884		1985-06-18	Clement, et al.	
	10	4605080		1986-08-12	Lemelson	
	11	4641292		1987-02-03	Tunnell, et al.	
	12	4704696		1987-11-03	Reimer, et al.	
	13	4728974		1988-03-01	Nio, et al.	
	14	4762455		1988-08-09	Coughlan, et al.	
	15	4776016		1988-10-04	Hansen	
	16	4958910		1990-09-25	Taylor, et al.	
	17	4989253		1991-01-29	Liang, et al.	
	18	5078140		1992-01-07	Kwoh	
	19	5084880		1992-01-28	Esterowitz, et al.	

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	20	5086401		1992-02-04	Glassman, et al.	
	21	5134620		1992-07-28	Huber	
	22	5142930		1992-09-01	Allen, et al.	
	23	5180378		1993-01-19	Kung, et al.	
	24	5191628		1993-03-02	Byron	
	25	5218655		1993-06-08	Mizrahi	
	26	5230023		1993-07-20	Nakano	
	27	5267256		1993-11-30	Saruwatari, et al.	
	28	5267323		1993-11-30	Kimura	
	29	5300097		1994-04-05	Lerner, et al.	
	30	5303148		1994-04-12	Mattson, et al.	

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	31	5305427		1994-04-19	Nagata	
	32	5313306		1994-05-17	Kuban, et al.	
	33	5323404		1994-06-21	Grubb	
	34	5345538		1994-09-06	Narayannan, et al.	
	35	5408409		1995-04-18	Glassman, et al.	
	36	5544654		1996-08-13	Murphy, et al.	
	37	5572999		1996-11-12	Funda, et al.	
	38	5695493		1997-12-09	Nakajima, et al.	
	39	5696778		1997-12-09	MacPherson	
	40	5792204		1998-08-11	Snell	
	41	5812978		1998-09-22	Nolan	

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	42	5950629		1999-09-14	Taylor, et al.	
	43	5970457		1999-10-19	Brant, et al.	
	44	6014249		2000-01-11	Fermann, et al.	
	45	6185535		2001-02-06	Hedin, et al.	
	46	6200309		2001-03-13	Rice, et al.	
	47	6224542		2001-05-01	Chang, et al.	
	48	6246707		2001-06-12	Yin, et al.	
	49	6273858		2001-08-14	Fox, et al.	
	50	6278975		2001-08-21	Brant, et al.	
	51	6301273		2001-10-09	Sanders, et al.	
	52	6337462		2002-01-08	Smart	

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	53	6340806		2002-01-22	Smart, et al.	
	54	6350261		2002-02-26	Domankevitz, et al.	
	55	6374006		2002-04-16	Islam, et al.	
	56	6407853		2002-06-18	Samson, et al.	
	57	6436107		2002-08-20	Wang, et al.	
	58	6442430		2002-08-27	Ferek-Petric	
	59	6450172		2002-09-17	Hartlaub, et al.	
	60	6453201		2002-09-17	Daum, et al.	
	61	6458120		2002-10-01	Shen, et al.	
	62	6462500		2002-10-08	L'Hegarat, et al.	
	63	6463361		2002-10-08	Wang, et al.	

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	64	6567431		2003-05-20	Tabirian, et al.	
	65	6605080		2003-08-12	Altshuler, et al.	
	66	6625180		2003-09-23	Bufetov, et al.	
	67	6631025		2003-10-07	Islam, et al.	
	68	6659999		2003-12-09	Anderson, et al.	
	69	6760148		2004-07-06	Islam	
	70	6885498		2005-04-26	Islam	
	71	6885683		2005-04-26	Fermann, et al.	
	72	6943936		2005-09-13	Islam, et al.	
	73	7027467		2006-04-11	Baev, et al.	
	74	7060061		2006-06-13	Altshuler, et al.	

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	75	7167300		2007-01-23	Fermann, et al.	
	76	7259906		2007-08-21	Islam	
	77	7433116		2008-10-07	Islam	

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	2	20020082612		2002-06-27	Moll, Frederic H. ; et al.	
	3	20020128846		2002-09-12	Miller, Steven C.	
	4	20020178003		2002-11-28	Gehrke, James K. ; et al.	
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	1	EP1148666	EP		2001-10-24	Grant Andrew R et al.		☐
	2	WO01150959	WO		0000-00-00	No Inventor		☐
	3	WO09715240	WO		0000-00-00	No Inventor		☐
	4	WO97049340	WO		0000-00-00	No Inventor		☐

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☐ See attached certification statement.

☐ Fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ None

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/David S. Bir/	Date (YYYY-MM-DD)	2014-09-02
Name/Print	David S. Bir	Registration Number	38383

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SYSTEM AND METHOD FOR VOICE CONTROL OF MEDICAL DEVICES

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application is a continuation of U.S. Patent Application Serial No. 14/186,814 filed February 21, 2014, which is a continuation of U.S. Patent Application Serial No. 13/913,678 filed June 10, 2013, which is a continuation of U.S. Patent Application Serial No. 13/531,853 filed June 25, 2012, which is a continuation of U. S. Patent Application Serial No. 13/349,244 filed January 12, 2012 (now U.S. Patent 8,472,108 issued June 25, 2013), which is a continuation of U.S. Application 13/078,547 filed April 1, 2011, which is a divisional of U.S. Patent Application Serial No. 12/625,253 filed November 24, 2009, now U.S. Patent 8,098,423, issued January 17, 2012, which is a divisional of U. S. Patent Application Serial No. 12/206,432, filed September 8, 2008, now U.S. Patent 7,633,673, issued December 15, 2009, which is a divisional of U.S. Patent Application Serial No. 10/812,608, filed March 30, 2004, now U.S. Patent 7,433,116, issued October 7, 2008, which is a continuation of U. S. Patent Application Serial No. 10/757,341, filed January 13, 2004, now U.S. Patent 7,259,906, issued August 21, 2007, which is a continuation of U.S. Patent Application Serial No. 10/652,276 filed August 29, 2003, abandoned. Application Serial No. 10/652,276 claims the benefit to U.S. Provisional Patent Application No. 60/408,025 filed September 3, 2002, the disclosures of which are incorporated in their entirety by reference herein.

TECHNICAL FIELD

[0002] This invention relates generally to medical devices and more particularly to a system and method for voice control of medical devices.

OVERVIEW

[0003] Medical procedures typically use medical instruments or devices that tend to require a high level of manual dexterity on the part of medical professionals. To achieve this high level of dexterity, medical professionals require years of training and practice. This high level of dexterity and the strain imposed on the medical professional when using those instruments can cause the medical professional to become fatigued during medical procedures. For example, certain medical

instruments require the medical professional to use both hands and to stand next to the patient, sometimes in an awkward position through the entire procedure. This can create fatigue, thereby limiting the number of procedures that the medical professional is able to perform in a given period. In addition, the high level of fatigue may lead to unnecessary and dangerous errors occurring during medical procedures.

SUMMARY OF EXAMPLE EMBODIMENTS

[0004] In one embodiment, a light-based medical diagnostic system includes a pump source comprising a plurality of semiconductor diodes with pump beams, a multiplexer capable of combining the plurality of semiconductor diode pump beams and generating at least a multiplexed pump beam comprising one or more wavelengths, a first waveguide structure configured to receive at least a portion of the one or more wavelengths, wherein the first waveguide structure comprises at least in part a gain fiber and outputs a first optical beam, and a second waveguide structure configured to receive at least a portion of the first optical beam and to communicate at least the portion of the first optical beam to an output end of the second waveguide structure to form an output beam, wherein at least a portion of the output beam comprises at least one wavelength in the range of 1.7 microns or more. A lens system is configured to receive at least the portion of the output beam and to communicate at least the portion of the output beam through a patient's mouth onto a part of a patient's body comprising a patient's blood. In various embodiments, at least the portion of the output beam is adapted for use in medical diagnostics to measure a property of the patient's blood, wherein the medical diagnostics comprise a spectroscopic procedure comprising a differential measurement, wherein the differential measurement is based at least in part on a comparison of amplitudes at a plurality of associated wavelengths transmitted or reflected from the patient's blood.

[0005] In another embodiment, a light-based diagnostic system includes a pump source comprising a plurality of semiconductor diodes with pump beams, a multiplexer capable of combining the plurality of semiconductor diode pump beams and generating at least a multiplexed pump beam comprising one or more wavelength, first and second waveguide structures, and a lens system. The first waveguide structure is configured to receive at least a portion of the one or more

wavelengths, wherein the first waveguide structure comprises at least in part a fused silica fiber, and outputs a first optical beam. The second waveguide structure is configured to receive at least a portion of the first optical beam and to communicate at least the portion of the first optical beam to an output end of the second waveguide structure to form an output beam. The lens system is configured to receive at least a portion of the output beam and to communicate at least the portion of the output beam through an orifice in a patient's body. In various embodiments, at least the portion of the output beam is adapted for use in multi-wavelength diagnostics to measure a property of a part of the patient's body, wherein the multi-wavelength diagnostics comprise a spectroscopic procedure comprising a differential measurement, wherein the differential measurement is based at least in part on a comparison of amplitudes at a plurality of associated wavelengths transmitted or reflected from the part of the patient's body.

[0006] In yet another embodiment, a light-based medical diagnostic system includes a pump source comprising a plurality of semiconductor diodes with pump beams and a multiplexer capable of combining the plurality of semiconductor diode pump beams and generating at least a multiplexed pump beam comprising one or more wavelengths. A first waveguide structure is configured to receive at least a portion of the one or more wavelengths, wherein the first waveguide structure comprises at least in part a fused silica fiber, and outputs a first optical beam. A second waveguide structure is configured to receive at least a portion of the first optical beam and to communicate at least the portion of the first optical beam to an output end of the second waveguide structure to form an output beam. A lens system is configured to receive at least a portion of the output beam and to communicate at least the portion of the output beam onto a part of a patient's body comprising a patient's blood.

[0007] In one embodiment, a medical device comprises an insertable portion capable of being inserted into an orifice associated with a body of a patient. The insertable portion comprising an automated head unit capable of being manipulated in at least two axes of motion based at least in part on one or more control signals. The medical device further comprises one or more controllers coupled to the automated head unit. In one particular embodiment, the one or more controllers generate the one or more control signals based at least in part on an input signal.

[0008] In another embodiment, a medical device capable of minimizing tissue damage comprises an insertable portion capable of being inserted into an orifice associated with a body of a patient. The medical device further comprises one or more sensors coupled to the insertable portion. The one or more sensors capable of generating a feedback signal capable of being used to substantially minimize damage to tissue associated with the patient.

[0009] In yet another embodiment, a medical device capable of being used in a medical procedure comprises a pump laser capable of generating a pump signal. The medical device further comprises a Raman wavelength shifter coupled to the pump laser, at least a portion of the wavelength shifter comprising a waveguide structure. In one particular embodiment, the Raman wavelength shifter generates an output optical signal comprising a wavelength of approximately 1.7 microns or more.

[0010] In still another embodiment, a medical device capable of being used in a medical procedure comprises a Raman wavelength shifter operable to generate an optical signal comprising a mid-infrared wavelength. At least a portion of the Raman wavelength shifter comprises a chalcogenide waveguide.

[0011] In another embodiment, a system for controlling a medical device includes a monitor capable of communicating medical information associated with a patient and a communication device capable of receiving one or more input signals from a user. In one particular embodiment, the one or more input signals are based at least in part on the medical information displayed on the monitor. The system further includes one or more processors coupled to the communicated device and operable to convert the one or more input signals into one or more control signals capable of being used to manipulate a medical device.

[0012] Depending on the specific features implemented, particular embodiments may exhibit some, none, or all of the following technical advantages. Various embodiments may be capable of reducing medical professional fatigue through the implementation of a control system capable of manipulating a medical device through voice commands. Some embodiments may be capable of controlling a medical device from a remote location. Other embodiments may be capable of reducing the level of dexterity required of a medical professional when performing a medical procedure.

[0013] Other technical advantages will be readily apparent to one skilled in the art from the following figures, description, and claims. Moreover, while specific advantages have been enumerated, various embodiments may include all, some, or none of the enumerated advantages.

BRIEF DESCRIPTION OF THE DRAWINGS

[0014] To provide a more complete understanding of the present invention and certain features and advantages, thereof, reference is made to the following description taken in conjunction with the accompanying drawings, in which:

[0015] FIGURE 1 illustrates one example embodiment of a medical device control system;

[0016] FIGURE 2 illustrates another example embodiment of a medical device control system;

[0017] FIGURE 3 illustrates an example medical device capable of being inserted into a patient's body during a medical procedure;

[0018] FIGURE 4 is a block diagram illustrating a flow of command signals from a medical professional to a medical device in a medical device control system;

[0019] FIGURE 5 is a flow chart illustrating an exemplary method for processing a voice control signal and/or a command signal received by a medical device control system;

[0020] FIGURE 6A compares a surgical incision made using a 2.94 micron optical signal wavelength to a surgical incision made using a 6.45 micron optical signal wavelength;

[0021] FIGURE 6B illustrates example evanescent spectra in different cell-type regions;

[0022] FIGURE 7 illustrates example attenuation characteristics of several optical fibers based on wavelength;

[0023] FIGURES 8A through 8D are block diagrams illustrating example embodiments of Raman wavelength shifters and/or Raman oscillators capable of shifting a pump signal to an output signal wavelength of 1.7 microns or more; and

[0024] FIGURES 9A through 9C are block diagrams illustrating example embodiments of pump sources that are capable of generating a pump signal for use in a Raman wavelength shifter.

DESCRIPTION OF EXAMPLE EMBODIMENTS

[0025] As required, detailed embodiments of the present invention are disclosed herein; however, it is to be understood that the disclosed embodiments are merely exemplary of the invention that may be embodied in various and alternative forms. The figures are not necessarily to scale; some features may be exaggerated or minimized to show details of particular components. Therefore, specific structural and functional details disclosed herein are not to be interpreted as limiting, but merely as a representative basis for teaching one skilled in the art to variously employ the present invention.

[0026] FIGURE 1 illustrates one example embodiment of a medical device control system 100. In this example, system 100 includes a medical device 10, a manipulator 40, a microphone 50, a display device 60, and a host 70. In various embodiments, system 100 may be capable of receiving voice commands associated with the manipulation of medical device 10 from a medical professional, such as a nurse, a medical assistant, a medical technician, and/or a doctor. In some cases, system 100 is capable of assisting a medical professional during a medical procedure by processing data signals associated with one or more voice commands and manipulating medical device 10 in response to those commands.

[0027] Medical device 10 may comprise any device or instrument that a medical professional needs to perform a medical procedure. Medical device 10 can comprise, for example, a surgical scalpel, a scope, a laser, an imaging device, a microscope, or a combination of these or any other suitable device. As used throughout this document, the term "scope" refers to any medical device capable of entering a patient's body, such as endoscopes, colonoscopes, gastroscopes, enteroscopes, bronchoscopes, laryngoscopes, choledochoscopes, sigmoidoscopes, duodenoscopes, arthoroscopes, cystoscopes, hysteroscopes, laparoscopes, or a combination of these or any other suitable device.

[0028] In one particular embodiment, medical device 10 comprises an endoscope. In those cases, the endoscope may comprise an insertable portion capable of being inserted through an orifice

associated with a patient. In other embodiments, the insertable portion may be capable of being guided through the patient's orifice, and capable of collecting biological samples from the patient for investigation. The orifice associated with the patient may comprise, for example, a throat, a mouth, a nasal passage, an orifice created by the medical professional, and/or any other suitable orifice. In some embodiments, medical device 10 may include a fiber-optic cable with a lens system at the end that is capable of sending images to a camera and/or a display device, such as display device 60.

[0029] In other embodiments, medical device 10 may comprise one or more sensors coupled to feedback control circuitry that is capable of minimizing collateral tissue damage during a medical procedure. In various embodiments, the one or more sensors and the control circuitry may be capable of providing positioning information to a medical professional and/or a controller, such as system controller 90. In other embodiments, the one or more sensors and the control circuitry may be capable of providing data associated with one or more physiological parameters associated with the patient to a medical professional and/or a controller. In some cases, the one or more sensors may be capable of detecting and/or alerting a medical professional or a controller when medical device 10 is in close proximity to and/or in contact with tissue. In other cases, the one or more sensors and the control circuitry may be capable of detecting when medical device 10 is in contact with tissue and capable of overriding control signals received by medical device 10.

[0030] In this example, manipulator 40 includes an actuation unit 20 and a supporting structure 30. Actuation unit 20 may house one or more control systems capable of receiving control signals and manipulating medical device 10 in response to those control signals. The one or more control systems may comprise, for example, a mechanical control system, an electrical control system, or a combination of these or any other control system. As used throughout this document, the phrase "mechanical control system" refers to a control system that at least partially includes mechanical components. In various embodiments, actuation unit 20 can implement a mechanical control system, such as a hydraulic system, pneumatic system, or a pulley guidewire system.

[0031] Supporting structure 30 may comprise a robotic arm, one or more pivoted links, multiple links connected together to move in a "scissor-like" manner, or any other structure capable of supporting and manipulating medical device 10. Although this example depicts manipulator 40 and medical device 10 as separate devices, manipulator 40 and medical device 10 can comprise a

unitary medical apparatus capable of performing the desired functionalities without departing from the scope of the present disclosure. For example, manipulator 40 and medical device 10 can be combined to form a unitary medical apparatus, such as an endoscope, have an automated portion.

[0032] In some embodiments, a freedom of motion associated with manipulator 40 can have a resolution that substantially replicates the manual dexterity of a medical professional and/or a manual medical device used by the medical professional. In some cases, manipulator 40 may have a step size and/or angle of rotation step size that is substantially similar to the manual dexterity of a medical professional and/or a manual medical device used by the medical professional. For example, the number of degrees of manipulation freedom associated with medical device 10 can match the number of degrees of manipulation freedom currently available on manual devices. That is, if a conventional manual device that has four degrees of freedom in the x-y plane, then the range of motion associated with manipulator 40 can include at least four degrees of freedom in the x-y plane. In some embodiments, manipulator 40 may include manual override controls that allow a medical professional to exercise manual control of medical device 10.

[0033] Manipulator 40 is coupled to host 70 through a first communication link 45. As used throughout this document, the term "couple" and or "coupled" refers to any direct or indirect communication between two or more elements, whether or not those elements are in physical contact with one another. In this example, first communication link 45 is operable to facilitate the communication of command/data signals 47 between manipulator 40 and host 70. Command/data signals 47 may comprise, for example, video signals from a video device coupled to medical device 10, data obtained by sensors coupled to medical device 10, or manipulation commands generated in response to voice commands, auxiliary input commands, and/or automated commands.

[0034] In this example, host 70 is capable of performing a desired communicating and/or computing functionality. For example, host 70 may be capable of at least partially contributing to the manipulation of medical device 10. In other embodiments, host 70 may be capable of collecting, entering, processing, storing, retrieving, amending, and/or dispatching medical data during a medical procedure. In operation, host 70 may execute with any of the well-known MS-DOS, PC-DOS, OS-2, MAC-OS, WINDOWSTM, UNIX, or other appropriate operating systems. In some embodiments, host 70 may include a graphical user interface (GUI) 72 that enables a medical professional to

display medical data and/or medical video associated with medical device 10. Host 70 may comprise, for example, a desktop computer, a laptop computer, a server computer, a personal digital assistant, and/or any other computing or communicating device or combination of devices.

[0035] In this example, host 70 includes system controller 90 capable of processing, collecting, storing, retrieving, and/or amending medical data and/or video during a medical procedure. System controller 90 may comprise one or more computers, an embedded microprocessor, or any other appropriate device or combination of devices capable of processing and/or generating voice command signals 47 and/or 57. In operation, system controller 90 may execute with any of the well-known MS-DOS, PC-DOS, OS-2, MAC-OS, WINDOWS™, UNIX, or other appropriate operating systems. In this embodiment, system controller 90 may implement voice recognition software operable to process voice command signals 57. For example, system controller 90 may implement one or more voice recognition software programs, such as ViaVoice or Dragon Speech Recognition software, or any appropriate proprietary or nonproprietary voice recognition software. In certain embodiments, the voice recognition software may be programmed to recognize the medical professional's voice and commands may be customized to the medical professional's preferences. In addition, the voice recognition software may be capable of filtering out background noise.

[0036] System controller 90 is operable to process voice command signals 57, generate command/data signals 47 in response to the voice command, and communicate the command/data signals 47 to manipulator 40. System controller 90 may also be used to collect and record data using a memory storage device. System controller 90 may be operable to provide data associated with a patient's medical status during a medical procedure to the medical professional using display device 60 and/or GUI 72, or any other appropriate devices.

[0037] In this embodiment, host 70 also includes an auxiliary input device 80 coupled to system controller 90. Although a keyboard is depicted in this example, any other device capable of inputting commands and/or data may be used without departing from the scope of this disclosure. In this example, auxiliary device 80 is operable to facilitate manual entry of manipulation commands to supplement and/or replace voice commands. In addition, the medical professional may use auxiliary device 80 to input data into system controller 90, such as the patient's physiological parameters, for

example, blood pressure, heart rate, blood oxygen level, or to retrieve data stored in a memory device associated with host 70.

[0038] In this example, system 100 also includes display device 60 and a graphical user interface (GUI) 72, each capable of displaying medical information, such as medical data and/or medical video. Display device 60 and GUI 72 may comprise, for example, a monitor, a LED, a heads-up display, virtual reality goggles, a closed circuit television, a CAVE environment, or any other device or combination of devices capable of displaying. In some cases, display device 60 and GUI 72 may display a live video image from a video device associated with medical device 10, information about a patient's medical status, such as the current state of any number of the patient's physiological parameters, information about the particular medical device 10 being used, or any other information that may assist a medical professional during a medical procedure. In this example, display device 60 is coupled to host 70 through a third communication link 65, which is operable to facilitate the communication of data signals 67 to and/or from host 70.

[0039] In this example, system 100 also includes communication device 50 that enables a medical professional to communicate with host 70. Communication device 50 can comprise any device that enables a medical professional to communicate with host 70. Communication device 50 may comprise, for example, a telephone, a wireless device, a voice-over-IP device, a unidirectional microphone attached to a headset worn by a medical professional, a bi-directional microphone, or any other suitable communicating device or combination of devices. Communication device 50 may be selectively attached to and/or placed near the medical professional for ease of use. Attaching communication device 50 to the medical professional can, in some cases, advantageously minimize background noise. Although system 100 includes one communication device 50 in this example, any other number of communication devices may be used without departing from the scope of the present disclosure. Communication device 50 is coupled to host 70 through a second communication link 55, which is operable to facilitate the communication of voice command signals 57 between communication device 50 and host 70.

[0040] In the illustrated embodiment, system 100 includes at least a first communications link 45, a second communications link 55, and a third communications link 65 each operable to facilitate the communication of data to and/or from host 70. Communications links 45, 55, and 65

may include any hardware, software, firmware, or combination thereof. In various embodiments, communications link 45, 55, and 65 may comprise any communications medium capable of assisting in the communication of analog and/or digital signals. Communications links 45, 55, and 65 may, for example, comprise a twisted-pair copper telephone line, a fiber optic line, a Digital Subscriber Line (DSL), a wireless link, a USB bus, a PCI bus, an Ethernet interface, or any other suitable interface operable to assist in the communication of information to and/or from network 104.

[0041] In conventional medical procedures involving a scope, a medical professional manually manipulates the medical device based on feedback from the medical device. The medical professional typically uses one hand to hold the medical device and guide it into and through a patient's body. The medical professional's other hand is used to manipulate the manual controls of the medical device. Thus, conventional systems typically require significant manual dexterity, which can result in a significant amount of strain on the medical professional.

[0042] Unlike conventional procedures, system 100 comprises a communication device 50 that enables a medical professional to manipulate medical device 10 using voice commands, auxiliary input commands, and/or automated commands. Allowing a medical professional to use voice commands and/or automated commands can significantly reduce the manual dexterity, and the resulting strain, imposed on the medical professional during a medical procedure.

[0043] In operation, a medical professional can speak voice commands into communication device 50 for communication to host 70. Host 70 receives voice command signals 57 from communication device 50 and processes those signals using a voice recognition module associated with host 70. Host 70 converts the voice command signals into command/data signals 47 and communicates signals 47 to manipulator 40. Manipulator 40 responds by causing medical device 10 to perform its desired function. Voice commands may comprise, for example, a voice to take a photograph of a portion of the patient's body, a voice command to change an image size by zooming in or out, or any other suitable voice command capable of causing medical device 10 to perform its functionality. In other embodiments, host 70 is capable of automatically generating command/data signals 47 based at least in part on data received from medical device 10 through communication link 47.

[0044] FIGURE 2 illustrates another example embodiment of a medical device control system 300. System 300 includes system 150 for remote manipulation of a medical device 210 and system 200 for voice control of medical device 210. In this example, system 150 is capable of controlling at least a portion of system 200 from a remote location. For example, a medical professional may use system 150 to remotely control system 200 in the case where the medical professional is not located near system 200. The remote location may comprise, for example, a different location in the hospital that includes system 200, a location in a different hospital, or any other location.

[0045] System 150 can include a communication device 155, a display device 160, a first auxiliary input device 165, and a second auxiliary input device 180. The structure and function of communication device 155, display device 160, and second auxiliary input device 180 can be substantially similar to the structure and function of communication device 50, display device 60, and auxiliary input device 80, respectively, of FIGURE I. First auxiliary input device 165 may comprise, for example, a joystick, a computer mouse, a rollerball, knobs, levers, buttons, touchpads, touchscreens, or any other appropriate control device capable of being used to control manipulator 240. In this example, a medical professional can use first auxiliary input device 165 to control manipulator 240 from the remote location.

[0046] In this embodiment, system 200 includes a medical device 210, a manipulator 240, a communication device 250, and a display device 260. System 200 also includes a host 270 comprising GUI 272, a third auxiliary input device 280, and a system controller 290. Although host 270 resides within system 200 in this example, host 270 could reside within system 150 or could reside in any location accessible to system 300 without departing from the scope of the present disclosure. The structure and function of medical device 210, manipulator 240, communication device 250, display device 260, host 270, GUI 272, third auxiliary input device 280, and system controller 290 can be substantially similar to the structure and function of medical device 10, manipulator 40, communication device 50, display device 60, host 70, GUI 72, auxiliary input device 80, and system controller 90, respectively, of FIGURE 1.

[0047] System 150 communicates with system 200 over communication link 305. Although communication link 305 comprises a single communication link in this example, any other number

of communication links may be used without departing from the scope of the present disclosure. Communications link 305 may include any hardware, software, firmware, or combination thereof. In various embodiments, communications link 305 may comprise a communications medium capable of assisting in the communication of analog and/or digital signals. Communications link 305 may, for example, comprise a twisted-pair copper telephone line, a fiber optic line, a Digital Subscriber Line (DSL), a wireless link, a USB bus, a PCI bus, an Ethernet interface, or a combination of these or other elements.

[0048] In some embodiments, a first medical professional can manually insert medical device 210 into a patient. In those cases, system 200 can communicate data to a second medical professional using remote system 150 through communication link 305. The second medical professional, while monitoring display device 160, can remotely manipulate medical device 210 using voice instructions communicated through communication device 155 coupled to communication link 305 to host 270. In this manner, the medical professional using system 150 can substantially emulate a medical professional's manual control of medical device 210. In other embodiments, the medical professional can remotely manipulate medical device 210 using auxiliary devices 165 and/or 180. In an alternative embodiment, a medical professional can insert medical device 210 into a patient using system 200 locally or using system 150 remotely.

[0049] In addition to voice command control and/or auxiliary input device control, other methods of medical device control may be implemented. In some cases, system 150 and/or system 200 can implement a heads-up-display (HUD) capable of controlling and/or manipulating medical device 210 and/or manipulator 240. The HUD may be capable of projecting images onto or near the eyes of a medical professional and capable of sending command signals using a virtual control device attached to the medical professional. In another example, the medical professional may wear a helmet capable of manipulating medical device 210 and/or manipulator 240 based at least in part on command signals generated in response to a motion associated with the head of the medical professional. For example, rotation of the head to the right may indicate that the operator wants the medical device to move to the right.

[0050] FIGURE 3 illustrates an example medical device 400. In various embodiments, at least a portion of medical device 400 may be inserted into a patient's body through an orifice during

a medical procedure. The orifice may comprise, for example, the patient's throat or mouth, the patient's nasal passages, an incision made during surgery, or any other suitable orifice. In this particular example, medical device 400 comprises a scope. The scope may comprise, for example, an endoscope, a colonoscope, a gastroscope, a enteroscope, a bronchoscope, a laryngoscope, a choledochoscope, a sigmoidoscope, a duodenoscope, a arthroscope, a cystoscope, a hyteroscope, a laparoscope, or a combination of these or any other suitable device. In various embodiments, medical device 400 can be controlled through, for example, voice commands, auxiliary input command, automated commands, and/or manual commands. In some cases, medical device 400 can be coupled to a medical device control system, such as system 100 or system 300 of FIGURE 1 and FIGURE 2, respectively.

[0051] Medical device 400 includes a base portion 410 capable of controlling and/or at least partially contributing to the manipulation of an insertable portion 420. In this example, base portion 410 includes control system 435 capable of at least partially contributing to the control and/or the manipulation of insertable portion 420. Control system 435 may be capable of receiving, processing, executing, and/or communicating one or more signals associated with the manipulation of insertable portion 420. In various embodiments, these signals received by base portion 410 may comprise, for example, voice commands, auxiliary input commands, automated commands, physiological parameters, video data, positioning data, or a combination of these or other signal types.

[0052] In various embodiments, control system 435 may reside in a location outside of base portion 410 and/or may be partially or wholly included within base portion 410. Control systems 435 may comprise, for example, a mechanical control system, an electrical control system, an electro-mechanical control system, or a combination of these or any other suitable control system. The phrase "mechanical control system" refers to a control system that at least partially includes mechanical components. Mechanical control systems can include, for example, hydraulic components, pneumatic components, pulleys, guidewires, gears, actuators, pushrods, sprocket/chain mechanisms, feedback control circuitry, or any other suitable components.

[0053] In this particular embodiment, control system 435 includes a manual override control module 411, an x-axis control module 412, a y-axis control module 414, and a z-axis control module 416. Control modules 411, 412, 414, and 416 may include any hardware, software, firmware, or

combination thereof. In some embodiments, control modules 411, 412, 414, and 416 may comprise buttons, knobs, dials, control circuitry, or any other suitable control input device. In this particular embodiment, control modules 412, 414, and 416 operate to receive and process input signals from a medical professional. In addition, control modules 412, 414, and 416 operate to at least partially contribute to the manipulation of insertable portion 420. The input signals may comprise, for example, voice commands, auxiliary input commands, and/or manual input commands. In other embodiments, control modules 412, 414, and 416 operate to receive and process input signals from a host and/or system controller. For example, a medical professional can use control modules 412, 414, and 416 to individually control medical device 400 in the x-, y-, and z-axes, respectively. In various embodiments, override control module 411 may be capable of enabling the medical professional to override the automatic operation of medical device 400 as necessary during a medical procedure.

[0054] Control system 435 may also include touch-screen 417 and controller 418. Controller 418 operates to combine the individual control functions of control modules 412, 414, and 416 into a single controller. For example, a medical professional can use controller 418 and/or touchscreen 417 to manually control medical device 400 in the x-, y-, and z-axes, respectively. Controller 418 can comprise any device capable of controlling the manipulation of insertable portion 420. Controller can comprise, for example, a joystick, a rollerball, knobs, levers, buttons, or any other appropriate control device.

[0055] Control system 435 further includes motors 436, pulleys 432, and guidewires 434. Although motors, pulleys, and guidewires are used in this example, control system 435 can include any other components capable of contributing to the manipulation of insertable portion 420 without departing from the scope of the present disclosure. In this example, motors 436 operate to control the positioning of insertable portion 420 based at least in part on control signals received from modules 411, 412, 414, and 416, and/or controller 418. Motors 436 operate to manipulate guidewires 434 coupled to one end of insertable portion 420. In other embodiments, base unit 410 includes actuators, pushrods, sprocket/chain mechanisms, feedback control circuitry, or any other control mechanism appropriate to control insertable portion 420.

[0056] In this example, pulleys 432 and motors 436 operate to control the tension in guidewires 434. In some embodiments, each guidewire 434 may comprise two or more segments, each segment comprising a different radial stiffness. For example, a first segment of guidewire 434 may be coupled to pulley 432, and a second segment of guidewire 434 may be coupled to an end of insertable portion 420. In that example, the second segment of guidewire segment may have a radial stiffness that is less than a radial stiffness associated with the first segment guidewire. In various embodiments, the force exerted by guidewires 434 can cause insertable portion 430 to move in a corresponding manner.

[0057] Medical device 400 may also include insertable portion 420 connected to base portion 410 and capable of being inserted into an orifice or incision in a patient's body during a medical procedure. In this particular embodiment, a medical professional can, using base portion 410, manipulate insertable portion 420 in the patient's body to perform a medical procedure. In various embodiments, a medical professional can control insertable portion 420 using voice commands, auxiliary input commands, automated commands, and/or manually.

[0058] In this example, insertable portion 420 includes a flexible portion 430 and an automated head unit 440. In this particular embodiment, one end of each guidewire 434 is connected to one end of automated head unit 440, while the other end of each guidewire 434 is connected to one of pulleys 432. Although pulleys and guidewires are used to manipulate automated head unit 440, any other appropriate control mechanism may be used without departing from the scope of the present disclosure. In this example, control system 435 operates to create tension in guidewires 434. The tension in guidewires 434 operates to exert a force on automated head unit 440, which causes automated head unit 440 to move in a corresponding manner. For example, control system 435 may operate to apply tension to one or more guidewires 434 creating a force in the x-plane, which causes automated head unit 440 to move in the x-plane. Any suitable movement of automated head unit 440 in the x-y plane tends to impart a corresponding movement to flexible portion 430 in the x-y plane.

[0059] In this example, four guidewires 434 are used to manipulate automated head unit 440 with two guidewires 434 connected along the x-axis and two guidewires 434 connected along the y-axis. In an alternative embodiment, six or more guidewires 434 may be positioned around the periphery of the insertable portion 420, which can allow a medical professional more precise control

of medical device 400. In some cases, the movement of automated head unit 440 may be controlled independently of the movement of flexible portion 430. In some embodiments, flexible portion 430 and automated head unit 440 may operate as "telescoping" tubes, where automated head unit 440 may retract into and extend from flexible portion 430 to adjust a length (L) of insertable portion 420. Such a telescoping motion may be controlled through the positioning of pulleys 432 and guidewires 434.

[0060] In this particular embodiment, control modules 412, 414, and/or 416 receive and process command signals corresponding to a desired manipulation of insertable portion 420. Control module 412 and control module 414 are operable to control the motion of automated head unit 440 and the entire insertable portion 420 in the x-axis and y-axis, respectively. In some embodiments, control module 416 is operable to adjust the distance that automated head unit 440 moves relative to flexible portion 430. In those cases, control module 416 is operable to cause motor 436 to position the pulleys 432 and guidewires 434 so as to extend and retract automated head unit 440 relative to flexible portion 430. Control module 412 and control module 414 are operable to independently control the motion of automated head unit 440 regardless of length L, enabling insertable portion 420 to have independent motion in the x-, y-, and z-axes.

[0061] Insertable portion 420 may also include sensors 442 and a camera 444. Although this example depicts sensors 442 as being connected to automated head unit 440, sensors may be connected to any portion of medical device 400 without departing from the scope of the present disclosure. Injury may occur when a medical professional accidentally or mistakenly causes insertable portion 420 to contact tissue associated with the patient, which can cause bruising or damage to the tissue. Sensors 442 can comprise any device capable of providing data and/or a signal to a medical professional. Sensors 442 may be capable of generating and transmitting, for example, positioning information associated with insertable portion 420, physiological information associated with the patient, control signals, a signal indicating the presence or absence of blood, or any other data. In one particular embodiment, sensors 442 are capable of generating and transmitting data associated with insertable portion's 420 proximity to tissue of the patient.

[0062] In other embodiments, sensors 442 may be capable of detecting a collision with tissue. In those cases, sensors 442 are capable of generating and transmitting a feedback signal to

control modules 412, 414, 416, a host coupled to medical device 400, or a system controller coupled to medical device 400. For example, sensors 442 may communicate data indicating that wall tissue of a patient's orifice has been encountered and that device 400 may need to be directed away from that wall to prevent injury to the patient's tissue. In some embodiments, sensors 442 operate to generate alarms associated with medical device 400. For example, one or more sensors 442 may monitor the presence of blood in the orifice, so that the medical professional may be alerted to unexpected or excessive bleeding.

[0063] In operation, medical device 400 may be inserted into the patient by inserting insertable portion 420 into the appropriate orifice or incision. In some embodiments, a medical professional can insert medical device 400 into the patient. In other embodiments, the insertion of medical device 400 into the patient may be performed using a medical device control system implementing a manipulator, such as system 100 and manipulator 40 of FIGURE 1 or system 300 and manipulator 240 of FIGURE 2.

[0064] In this particular embodiment, medical device 400 is capable of being manipulated in at least three axes of motion. That is, medical device 400 is capable of being manipulated in the x-axis, y-axis, and z-axis. In other embodiments, medical device 400 is capable of being manipulated in at least two axes of motion. In some embodiments, medical device 400 may be capable of manipulating insertable portion 420 one axis at a time. In other embodiments, medical device 400 may be capable of manipulating insertable portion 420 one axis at a time and manipulating insertable portion 420 along multiple axes substantially simultaneously. In this example, medical device 400 is capable of manipulating insertable portion 420 along multiple axes substantially simultaneously. As used throughout this document, the phrase, "substantially simultaneously" refers to the manipulation of insertable portion 420 and/or automated head unit 440 in multiple axes in response to an input command before responding to a subsequent input command. For example, medical device 400 can manipulate insertable portion 420 along the z-axis and, during that manipulation, medical device 400 can also manipulate insertable portion 420 along the x-axis. In various embodiments, medical device 400 can manipulate automated head unit 440 independently of the movement of flexible portion 430.

[0065] FIGURE 4 is a block diagram illustrating a flow of command signals from a medical professional to a medical device in a medical device control system 500. In various embodiments,

medical device control system 500 can be substantially similar to control system 100 of FIGURE 1 or control system 300 of FIGURE 2. In this example, a communication device 550 receives a voice command 502 from a medical professional. In various embodiments, the structure and function of communication device 550 can be substantially similar to the structure and function of communication device 50 of FIGURE 1. Communication device 550 operates to convert voice command 502 into an electrical voice command signal 504 and to communicate electrical voice command signal 504 to a system controller 590. In various embodiments, the structure and function of system controller 590 can be substantially similar to the structure and function of system controller 90 of FIGURE I.

[0066] In this particular embodiment, system controller 590 comprises a voice recognition module 592 capable of at least partially contributing to one or more functions of system controller 590. That is, voice control module 592 is not required to be capable of performing the desired functionality of system controller 590 alone, but may contribute to the performance of the function as part of a larger routine. In this example, voice recognition module 592 at least partially contributes to the conversion of voice command signal 504 to a control signal 506. Voice recognition module 592 may include any hardware, software, firmware, or any combination thereof that is capable of converting voice command signal 504 into control signal 506.

[0067] System controller 590 also includes a command generator module 594 capable of at least partially contributing to one or more functions of system controller 590. In this example, command generator module 594 operates to receive control signal 506 communicated from voice recognition module 592 and at least partially contributes to the conversion of control signal 506 into a command signal 508. Command generator 594 may comprise any hardware, software, firmware, or any combination thereof that is capable of converting control signal 506 into command signal 508. In this example, command generator module 594 communicates command signal 508 to a signal generator module 596 capable of at least partially contributing to one or more functions of system controller 590. In this example, signal generator module 596 at least partially contributes to the conversion of command signal 508 into an actuation signal 510. Signal generator 596 may comprise any hardware, software, firmware, or any combination thereof that is capable of converting command signal 508 into actuation signal 510.

[0068] In this example, system controller 590 communicates actuation signal 510 to a device control module 560 capable of manipulating a medical device 570. In various embodiments, the structure and function of device control module 560 can be substantially similar to the structure and function of actuation unit 20 of FIGURE 1 or base portion 410 of FIGURE 3. In various embodiments, the structure and function of medical device 570 can also be substantially similar to the structure and function of medical device 10 of FIGURE 1 or medical device 400 of FIGURE 3.

[0069] In various embodiments, device control module 560 may be capable of generating a feedback signal 512 and communicating feedback signal 512 to system controller 590. Feedback signal 512 may comprise, for example, positioning data associated with medical device 570, a video feed, a physiological parameter associated with a patient, or any other information associated with medical device 570, device control module 560, and/or a patient undergoing a medical procedure. In some embodiments, medical device 570 can communicate data 514 to system controller 590. Data 514 may comprise, for example, positioning data, one or more physiological parameters associated with a patient, a live video feed associated with a camera coupled to medical device 570, or any other data capable of being collected by medical device 570.

[0070] In various embodiments, system controller 590 may be capable of generating commands on its own based at least in part on data 514 and/or feedback signal 512 communicated from medical device 570 and/or device control module 560. For example, if medical device 570 comprises a scope with blood sensors, system controller 590 may stop the movement of the scope within a patient's body if data 514 is received from medical device 570 indicating that the patient is bleeding excessively.

[0071] In this example, system 500 also includes a display device 580 capable of displaying data associated with medical device 570 and/or a patient. The structure and functional of display device 580 can be substantially similar to the structure and function of display device 60 or GUI 72 of FIGURE 1. Although system 500 includes a single display device in this example, any other number of display devices may be used without departing from the scope of the present disclosure. In some embodiments, system controller 590 can communicate an output signal 516 containing data associated with medical device 570 and/or a patient to display device 580.

[0072] In some embodiments, system 500 may also include an audio output device 587 capable of communicating data associated with medical device 570 and/or a patient. Audio output device 587 can comprise any device capable of providing an audio output signal, such as a speaker, headphones, an audio alarm device, or any other suitable audio output device. Although system 500 includes a single audio output device in this example, any other number of audio output devices may be used without departing from the scope of the present disclosure. In some embodiments, system controller 590 may communicate an audio output signal 516 to output device 587 so that the medical professional may receive the data associated with output signal 516 in audio format.

[0073] Although, in most cases, voice command 502 represents the primary control input into system 500, system 500 also includes an auxiliary input device 585 capable of generating a control signal 518. Control signal 518 can comprise data that is substantially similar to data contained within control signal 506. In various embodiments, the structure and function of auxiliary input device 585 can be substantially similar to the structure and function of auxiliary input devices 165 or 180 of FIGURE 2. Although system 500 includes a single auxiliary input device in this example, any other number of auxiliary input devices may be used without departing from the scope of the present disclosure. In this particular embodiment, auxiliary input device 585 is coupled directly to command generator 594. In some embodiments, auxiliary input device 585 may also receive data signals 520 from system controller 590. For example, in a case where auxiliary input device 585 comprises a "force-feedback" joystick, signals 520 may comprise the feedback signal representing the force being exerted on medical device 570 by the patient's body.

[0074] FIGURE 5 is a flow chart illustrating an exemplary method 600 for processing a voice control signal and/or a command signal received by a medical device control system. In one particular embodiment, voice control signals and/or command signals are received from system 100 of FIGURE I. Although system 100 is used in this example, any other system, such as systems 300 and 500 of FIGURES 2 and 4, respectively, may be used without departing from the scope of the present disclosure.

[0075] In this example, method 600 begins at step 602 where communication device 50 receives a voice command from a medical professional. Communication device 50 operates to convert the voice command into voice command signal 57 and communicates voice command signal

57 to host 70. In this particular example, host 70 includes a voice recognition module that processes voice command signal 57 at step 604 by converting voice command signal 57 into a control signal. In various embodiments, the structure and function of the voice recognition module can be substantially similar to voice recognition module 592 of FIGURE 4. In this example, the voice recognition module further operates to identify the specific voice command represented by the control signal at step 606. In some embodiments, identifying the specific voice command may be accomplished by comparing the received control signal with a list of pre-programmed commands stored in a memory device associated with host 70.

[0076] The voice recognition module validates the control signal at step 608. If the voice command is not recognized as a pre-programmed command, the invalid voice command is ignored and the method loops back to step 602. If the voice command is valid, the voice recognition module communicates the control signal to a command generator. In this example, the command generator operates to convert the control signal into a command signal representing the voice command at step 610. In various embodiments, the structure and function of the command generator can be substantially similar to the structure and function of command generator module 594 of FIGURE 4.

[0077] In an alternate embodiment, auxiliary control signals capable of manipulating a medical device may be generated by an auxiliary input device at step 616. In various embodiments, the auxiliary input device may comprise, for example, auxiliary input devices 165 and/or 180 of FIGURE 2. The auxiliary input device communicates the auxiliary control signal to the command generator, which converts the auxiliary control signal into a command signal at step 610. The command generator also operates to communicate the command signal to a signal generator.

[0078] In this example, the signal generator operates to convert the command signal into an actuation signal 47 representing the voice command of the medical professional at step 612. In various embodiments, the structure and function of the signal generator can be substantially similar to the structure and function of signal generator module 596 of FIGURE 4. In this example, manipulator 40 and/or medical device 10 operates to receive and execute actuation signal 47 at step 614.

[0079] Medical devices, such as a scope, that are adapted to be inserted into the patient's body typically permit the introduction of a waveguide structure or other wired device through the patient's orifice. The waveguide structure can comprise, for example, an optical fiber, a hollow tube waveguide, an air core waveguide, a planar waveguide, or a combination of these or other devices. Examples of such additional devices include, for example, surgical knives, sample collectors, and/or cauterizing heads. In some cases, inserting a waveguide structure may enable, for example, the early detection of cancerous cells and may contribute to the removal of the cancerous cells. In various embodiments, the waveguide structure may communicate an optical signal wavelength of 1.7 microns or more.

[0080] In some embodiments, a waveguide structure may be implemented in a medical device that uses an optical signal wavelength in the mid-infrared (mid-IR) wavelength range to perform surgery and/or spectroscopy on a patient. In various embodiments, a wavelength in the mid-IR range comprises a wavelength between approximately two (2) microns and approximately ten (10) microns. In other embodiments, a wavelength in the mid-IR range comprises a wavelength between approximately five (5) and seven (7) microns. For light-based surgery and spectroscopy, it can be particularly advantageous to use an optical signal wavelength in the range between approximately 5 microns to approximately 7 microns to minimize tissue damage or collateral damage. In a particular embodiment, an optical signal having a wavelength of approximately 6.45 microns may be advantageously used for light-based surgery and/or spectroscopy.

[0081] In some embodiments, a Raman wavelength shifter coupled to a pump laser is capable of generating an optical signal wavelength in the mid-IR range. As used in this document, the phrase "Raman wavelength shifter" refers to any device that uses the Raman effect to shift a shorter optical signal wavelength to a longer optical signal wavelength. The Raman wavelength shifters may comprise, for example, one or more reflectors, one or more gratings, an optical fiber, or a combination of these or other elements. In various embodiments, the Raman wavelength shifter may comprise, for example, a chalcogenide glass fiber that is capable of shifting the shorter pump laser wavelength to a longer wavelength, such as a wavelength in the mid-IR region. The chalcogenide fiber may comprise, for example, a ZBLAN fiber, a sulphide fiber, a selenides fiber, or a telluride fiber, or a combination of these or other fiber types.

[0082] In other embodiments, a first wavelength shifter coupled to a pump laser may be capable of shifting an optical signal wavelength to approximately 2 microns. The first wavelength shifter may comprise, for example, a fused silica optical fiber capable of shifting the shorter pump laser wavelength to approximately two (2) microns. In that example, a second Raman wavelength shifter is coupled to the first Raman wavelength shifter and is capable of shifting the two (2) micron signal to a wavelength in the five (5) to seven (7) micron range. In that example, the second Raman wavelength shifter comprises a chalcogenide glass fiber.

[0083] FIGURE 6A compares a surgical incision made using a 2.94 micron optical signal wavelength to a surgical incision made using a 6.45 micron optical signal wavelength. This figure illustrates that tissue damage, such as denatured tissue, can result when a medical device implements a 2.94 micron optical signal wavelength. This tissue damage tends to result from the protein temperatures in the tissue do not uniformly exceed the water temperature in the aqueous components of the tissue.

[0084] Compared to the incision performed using the 2.94 micron optical signal wavelength, the incision made using the 6.45 micron optical signal has little or no denatured tissue. This reduction in collateral tissue damage is based at least in part on the tissue's ability to absorb differential energy. For example, when using an optical signal wavelength at approximately 6.45 microns to create an incision, the protein temperatures in the tissue uniformly exceed the water temperature in the tissue and the protein begins to transform into brittle denatured protein. The brittle fracture of the proteins at the onset of explosive vaporization leads to the confinement of collateral damage. Therefore, the use of a 6.45 micron optical signal wavelength as a tissue cutting implement may minimize collateral tissue damage during laser-based surgery. By using an optical signal wavelength of 6.45 microns with a medical scope-type device, "clean" surgery may be performed for many medical procedures, such as removing cancerous polyps. Similar results can be obtained using an optical signal wavelength in the five (5) to seven (7) micron range.

[0085] FIGURE 6B illustrates example evanescent spectra in different cell-type regions (using a mouse as the biological sample). This figure illustrates that cancerous cells tend to show a distinct reduction 700 in transmission at an optical signal wavelength of approximately 6.1 microns. Medical professionals can exploit this spectral signature in various medical procedures, such as a

procedure for the early detection of cancer. Thus, an optical signal wavelength in the mid-IR range may be used to perform a medical procedure for the early detection of tissue abnormalities such as cancer cells. In other embodiments, an optical signal wavelength in the mid-IR range can be used in a diagnostic procedure, such as spectroscopy. Diagnostic techniques capable of using the mid-IR optical signal wavelength include, for example, transmission, reflection, fluorescence, and near field microscopy. Although specific examples of spectroscopy are discussed, any other appropriate form of spectroscopy may be used without departing from the scope of this disclosure.

[0086] To improve the signal-to-noise ratio of a spectroscopic measurement such as in FIGURE 6B, several methodologies may be used. First, a differential measurement may be taken between a known cancer-free area and the suspect area, for example, differential spectroscopy rather than absolute spectroscopy. In addition, measurements may be taken at several wavelengths and compared to each other. For example, measuring the differential transmission of the tissue at two or more wavelengths, such as 5 microns and 6.1 microns, may improve the signal-to-noise ratio of the cancer cell signature.

[0087] FIGURE 7 illustrates example attenuation characteristics of several optical fibers based on wavelength. This example shows that fused silica (SiO_2) fibers become lossy above approximately 2 microns in wavelength, while mid-IR optical fibers remain relatively loss-less above 2 microns. A mid-IR fiber may comprise any optical fiber capable of at least partially transmitting for at least a portion of the mid-IR range. For example, a mid-IR fiber may comprise a chalcogenide fiber, such as a sulfide fiber, a selenides fiber, or a telluride fiber. Therefore, in some cases, a pump source coupled to a medical device, such as medical device 400 of FIGURE 3, may comprise a high powered pump source coupled to a Raman wavelength shifter comprising a mid-IR fiber. In a particular embodiment, such a pump source may operate in a pulsed mode or in a continuous wave mode. The power levels required depend on the particular application. For example, spectroscopy may require a relatively low power level, while surgery may require a relatively high power level.

[0088] Conventional surgical devices capable of using a 5.0 to 6.5 micron optical signal wavelength typically implement a Free Electron Laser (FEL) pump source. However, a FEL pump source is a large and very expensive facility that tends to be impractical for surgical applications.

Unlike conventional surgical devices, a medical device, such as device 400 of FIGURE 3, can include a pump laser coupled to one or more Raman wavelength shifters capable of shifting a shorter signal wavelength to a longer signal wavelength. In that example, at least a portion of the Raman wavelength shifter can be implemented in a waveguide structure. In various embodiments, the longer signal wavelength can comprise, for example, an optical signal wavelength in the mid-IR wavelength range. Coupling a pump laser to one or more Raman wavelength shifters can result in a commercially and economically viable optical cutting implement for use in a medical device. In addition, coupling a pump laser to one or more Raman wavelength shifters can result in a significantly smaller footprint area than a FEL pump source and can significantly reduce the cost.

[0089] Conventional wavelength shifters or oscillators are typically implemented in fused silica fiber. The loss associated with fused silica fiber tends to increase rapidly for optical signal wavelengths greater than about 2 or 2.3 microns. Unlike conventional wavelength shifters, a medical device, such as device 400 of FIGURE 3, can include a Raman wavelength shifter or oscillator that is capable of transmitting in the mid-IR wavelength range, such as chalcogenide optical fibers.

[0090] FIGURES 8A through 8D are block diagrams illustrating example embodiments of Raman wavelength shifters and/or Raman oscillators capable of shifting a shorter pump signal wavelength to a longer output signal wavelength. Although particular examples of wavelength shifters are described in FIGURES 8A through 8D, any other Raman wavelength shifter can be implemented without departing from the scope of the present disclosure.

[0091] FIGURE 8A is a block diagram illustrating one example of a Raman wavelength shifter 800 capable of shifting a shorter pump signal 810 wavelength to a longer output signal wavelength 812. In this example, Raman wavelength shifter 800 operates to generate an optical signal wavelength 812 of 1.7 microns or more. In various embodiments, Raman wavelength shifter 800 can operate to generate an optical signal wavelength 812 in the mid-IR wavelength range. In other embodiments, Raman wavelength shifter 800 can operate to generate an optical signal wavelength 812 a wavelength in the five (5) to seven (7) micron range. In various embodiments, pump signal 810 can comprise, for example, a 1310 nanometer (nm) wavelength, 1390 nm wavelength, 1510 nm wavelength, or other optical signal wavelength.

[0092] Raman wavelength shifter includes a gain fiber 804 operable to facilitate shifting pump signal 810 to a desired wavelength. Gain fiber 804 may comprise any waveguide structure capable of wavelength shifting pump signal 810 to a longer wavelength or a different Raman cascade order. In this particular embodiment, gain fiber 804 comprises an optical fiber. The optical fiber used as gain fiber 804 may comprise, for example, a dispersion compensating fiber, a dispersion shifter fiber, a single mode fiber, a chalcogenide fiber, a fused silica optical fiber, or a combination of these or other fiber types. Raman wavelength shifter 800 also includes a broadband reflector 802 operable to substantially reflect all optical signal wavelengths contained within Raman wavelength shifter 800 and a pump signal coupler 806. Reflector 802 may comprise any device capable of reflecting a wide range of wavelength signals, such as a mirror. Pump signal coupler 806 may comprise any device capable of coupling pump signal 810 to Raman wavelength shifter 800, such as a wavelength division multiplexer or a power coupler.

[0093] In this example, Raman wavelength shifter 800 further includes a wavelength separator 808 capable of transmitting at least a portion of the desired wavelength from Raman wavelength shifter 800. In addition, wavelength separator 808 operates to at least partially reflect a desired wavelength to gain medium 804 to continue lasing at the desired wavelength or wavelengths. In this particular embodiment, a cavity is formed between reflector 802 and wavelength separator 808. Separator 808 could comprise, for example, a demultiplexer, one or more partially transmissive gratings, one or more partially transmitting mirrors, one or more Fabry Perot filters, one or more dielectric gratings, or any combination of these or other devices.

[0094] FIGURE 8B is a block diagram illustrating one example of a Raman wavelength shifter 820 capable of shifting a shorter pump signal 830 wavelength to a longer output signal wavelength 832. In this example, Raman wavelength shifter 820 operates to generate an optical signal wavelength 832 of 1.7 microns or more. In various embodiments, Raman wavelength shifter 820 operates to generate an optical signal wavelength 832 in the mid-IR wavelength range. In other embodiments, Raman wavelength shifter 820 operates to generate an optical signal wavelength 832 a wavelength in the five (5) to seven (7) micron range. In various embodiments, pump signal 830 can comprise, for example, a 1310 nanometer (nm) wavelength, 1390 nm wavelength, 1510 nm wavelength, or other optical signal wavelength.

[0095] In this example, Raman wavelength shifter 820 includes a reflector 822, a gain fiber 824, a pump input coupler 826, and a wavelength separator 828. In various embodiments, the structure and function of reflector 822, gain fiber 824, coupler 826, and separator 828 can be substantially similar to reflector 802, gain fiber 804, coupler 806, and separator 808 of FIGURE 8A, respectively. In this particular embodiment, at least a portion of gain fiber 824 can comprise a chalcogenide fiber.

[0096] Raman wavelength shifter 820 may also include at least a first selecting element 825a and a second selecting element 825b. Although this example may also include two selecting elements 825a and 825b, any number of selecting elements can be used without departing from the scope of the present disclosure. Selecting elements 825a and 825b can comprise any device, such as a dielectric grating or one or more Fabry Perot filters. Each selecting element operates to transmit a portion of a desired wavelength to be output from Raman wavelength shifter 820. In addition, each selecting element 825a and 825b operates to at least partially reflect a desired wavelength to gain medium 824 to allow wavelength shifter 820 to continue lasing at the desired wavelength or wavelengths. In this particular embodiment, an optical cavity is formed between reflector 822 and selecting element 825a and/or selecting element 825b.

[0097] FIGURE 8C is a block diagram illustrating one example of a Raman wavelength shifter 840 capable of shifting a shorter pump signal 850 wavelength to a longer output signal wavelength 852. In this example, Raman wavelength shifter 840 operates to generate an optical signal wavelength 852 of 1.7 microns or more. In various embodiments, Raman wavelength shifter 840 operates to generate an optical signal wavelength 852 in the mid-IR wavelength range. In other embodiments, Raman wavelength shifter 840 operates to generate an optical signal wavelength 852 a wavelength in the five (5) to seven (7) micron range. In various embodiments, pump signal 850 can comprise, for example, a 980 nanometer (nm) wavelength, a 1060 nm wavelength, a 1310 nm wavelength, a 1390 nm wavelength, a 1510 nm wavelength, or other optical signal wavelength.

[0098] In this example, Raman wavelength shifter 840 includes a gain fiber 844, a pump input coupler 846, and selecting elements 845. In various embodiments, the structure and function of gain fiber 844, coupler 826, selecting elements 845, and output coupler 848 can be substantially similar to gain fiber 824, coupler 826, selecting elements 825, and coupler 828 of FIGURE 8B,

respectively. In this particular embodiment, at least a portion of gain fiber 824 can comprise a chalcogenide fiber.

[0099] The example illustrated in FIGURE 8C differs from the example illustrated in FIGURE 8B in that wavelength shifter 840 implements a plurality of reflective gratings 847a-847n each centered on a different wavelength of a reflection band. Although this example includes three gratings, any number of gratings can be used without departing from the scope of the present disclosure. Gratings 847a-847n can comprise any device, such as a high-reflectivity dielectric grating. In this particular example, each grating 847a-847n comprises a grating with a reflectivity between ninety-five (95) to one hundred (100) percent at the center wavelength. Gratings 847a-847n operate to facilitate cascading of pump signal 850 to a desired output wavelength. In this particular embodiment, an optical cavity is formed between selecting elements 845 and gratings 847.

[0100] FIGURE 8D is a block diagram illustrating one example of a Raman wavelength shifter 860 capable of shifting a shorter pump signal 870 wavelength to a longer output signal wavelength 832. In this example, Raman wavelength shifter 860 operates to generate an optical signal wavelength 872 of 1.7 microns or more. In various embodiments, Raman wavelength shifter 860 operates to generate an optical signal wavelength 872 in the mid-IR wavelength range. In other embodiments, Raman wavelength shifter 860 operates to generate an optical signal wavelength 872 a wavelength in the five (5) to seven (7) micron range. In various embodiments, pump signal 870 can comprise, for example, a 980 nm wavelength, a 1060 nm wavelength, a 1310 nm wavelength, a 1390 nm wavelength, a 1510 nm wavelength, or other optical signal wavelength.

[0101] In this example, Raman wavelength shifter 860 includes a gain fiber 864, a pump input coupler 866, selecting elements 864, reflective gratings 867, and an output coupler 868. In various embodiments, the structure and function of gain fiber 864, input coupler 866, elements 864, gratings 867, and output coupler 868 can be substantially similar to gain fiber 844, coupler 846, elements 845, gratings 847, and coupler 848 of FIGURE 8C, respectively. Although example elements are illustrated, Raman wavelength shifter 860 may include some, none, or all of these elements. For example, in some embodiments, pump input coupler 866 and/or output coupler 868 may be optional.

[0102] The example illustrated in FIGURE 8D differs from the example illustrated in FIGURE 8C in that wavelength shifter 860 implements a Q-switcher 863 capable of transitioning from a reflective state to a transmissive state. Q-switcher 863 can comprise a device or combination of devices having a variable loss. For example, Q-switcher may comprise one or more moving mirrors, electro-optic switches, saturable absorbers, or a combination of these or other optical devices. In some cases, Q-switcher 863 can initially operate as a reflective mirror so that optical signal energy may build-up within the laser cavity. After the laser cavity contains a sufficient amount of optical energy, Q-switcher 863 can operate to substantially transmit the desired optical signal wavelength in the form of a relatively large pulse or burst. In various embodiments, Q-switcher 863 may be capable of providing an output signal having a pulse width in the range of two (2) nanoseconds to one hundred (100) milliseconds. In other embodiments, Q-switcher 863 may be capable of providing an output signal having a pulse repetition rate in the range of two (2) hertz to one hundred (100) megahertz.

[0103] FIGURES 9A through 9C are block diagrams illustrating example embodiments of pump sources that are capable of generating a pump signal for use in a Raman wavelength shifter. Although particular examples of pump sources are described in FIGURES 9A through 9C, any other pump source can be implemented without departing from the scope of the present disclosure.

[0104] FIGURE 9A is a block diagram illustrating one example embodiment of a pump source 900 capable of being coupled to a Raman wavelength shifter and/or a Raman oscillator. Pump source 900 can comprise any device capable of generating an optical signal at a desired wavelength and power. For example, pump source 900 can comprise a solid state laser, such as a Nd:YAG or Nd:YLF laser, a semiconductor laser, a laser diode, a cladding pump fiber laser, or any combination of these or other light sources. In this example, pump source 900 comprises a high powered laser 902 coupled to a Raman oscillator or a Raman wavelength shifter, such as Raman wavelength shifters 800, 820, 840, or 860 of FIGURES 8A through 8D.

[0105] FIGURE 9B is a block diagram illustrating one example embodiment of a pump source 920 capable of being coupled to a Raman wavelength shifter and/or a Raman oscillator. In this example, pump source 920 includes a pump laser 922 and an intermediate stage 924 capable of shifting the optical signal wavelength generated by pump laser 922 to a longer wavelength. The

structure and function of laser 922 may be substantially similar to the structure and function of pump source 900 of FIGURE 9A. In this particular example, intermediate state 924 comprises a first Raman wavelength shifter 924. In some embodiments, intermediate wavelength shifter 924 may advantageously be implemented using fused silica optical fiber.

[0106] In some embodiments, pump sources 900 and 920 may comprise a cladding-pumped fiber laser, capable of emitting a pump signal wavelength of approximately 1 micron. In those examples, pump sources 900 and 920 can be coupled to a first or auxiliary cascaded Raman oscillator or Raman wavelength shifter. In some cases, the auxiliary Raman oscillator or Raman wavelength shifter may comprise, for example, Raman wavelength shifters 800, 820, 840, or 860 of FIGURES 8A through 8D implementing a fused silica optical fiber. Such an arrangement may be used to shift the 1 micron optical signal to approximately 2 to 2.3 microns. The 2-2.3 micron signal output from the auxiliary Raman wavelength shifter can then be shifted to a mid-IR wavelength by another cascaded Raman oscillator or Raman wavelength shifter that implements in mid-IR fiber.

[0107] FIGURE 9C is a block diagram illustrating one example embodiment of a pump source 940 capable of being coupled to a Raman wavelength shifter and/or a Raman oscillator. In this example, pump source 940 includes a pump laser 942 and a multiplexer 944 capable of combining a plurality of pump signals into a pump output signal. In this particular example, pump source 900 comprises a first laser diode 942a and a second laser diode 942b each centered at a desired wavelength and capable of generating pump signals 943a and 943b. Although this example includes two laser diodes, any number of laser diodes may be used without departing from the scope of the present disclosure. In various embodiments, laser diodes 942a and 942b can be centered on substantially the same wavelength, such as 980 nm, 1310 nm, 1390 nm, 14xx nm, or 1510 nm. In this particular embodiment, pump signals 943a and 943b are combined by multiplexer 944. Multiplexer 944 can comprise any device capable of combining pump signals 943, such as a wavelength division multiplexer. In various embodiments, multiplexer 944 can be capable of polarization and/or wavelength multiplexing pump signals 943a and 943b to form a pump output signal.

[0108] In some embodiments, a Raman wavelength shifter, such as those illustrated in FIGURES 8A through 8D, may be used to deliver an optical signal wavelength directly to the

patient. In other embodiments, a second mid-IR waveguide structure, that at least partially transmits in at least a portion of the mid-IR wavelength range, may be coupled to the output of the Raman wavelength shifter to deliver the optical signal wavelength to the patient. Coupling a second mid-IR waveguide structure to the Raman wavelength shifter can advantageously allow the delivery waveguide structure to be disposed after use within the patient. In addition, coupling a second mid-IR waveguide structure can substantially reduce the chance of breaking a fiber associated with a Raman wavelength shifter. Furthermore, it may be desirable to couple a tapered end or lens on the delivery fiber for improved focusing of optical signal on the patient.

[0109] In various embodiments, an optical signal wavelength is capable of being delivered to a medical device inserted into a patient using a waveguide structure having a relatively low coupling loss. In some cases, the waveguide structure maintain the coupling loss to, for example, 5 dB or less, 3 dB or less, or even less than 1 dB.

[0110] Although the present invention has been described with several embodiments, a multitude of changes, substitutions, variations, alterations, and modifications may be suggested to one skilled in the art, and it is intended that the invention encompass all such changes, substitutions, variations, alterations, and modifications as fall within the spirit and scope of the appended claims.

WHAT IS CLAIMED IS:

1. A light-based medical diagnostic system, comprising:
 - a pump source comprising a plurality of semiconductor diodes with pump beams;
 - a multiplexer capable of combining the plurality of semiconductor diode pump beams and generating at least a multiplexed pump beam comprising one or more wavelengths;
 - a first waveguide structure configured to receive at least a portion of the one or more wavelengths, wherein the first waveguide structure comprises at least in part a gain fiber and outputs a first optical beam; and
 - a second waveguide structure configured to receive at least a portion of the first optical beam and to communicate at least the portion of the first optical beam to an output end of the second waveguide structure to form an output beam, wherein at least a portion of the output beam comprises at least one wavelength in the range of 1.7 microns or more; and
 - a lens system configured to receive at least the portion of the output beam and to communicate at least the portion of the output beam through a patient's mouth onto a part of a patient's body comprising a patient's blood;wherein at least the portion of the output beam is adapted for use in medical diagnostics to measure a property of the patient's blood, wherein the medical diagnostics comprise a spectroscopic procedure comprising a differential measurement, wherein the differential measurement is based at least in part on a comparison of amplitudes at a plurality of associated wavelengths transmitted or reflected from the patient's blood.
2. The diagnostic system of claim 1, wherein the property of the patient's blood is blood pressure or blood oxygen level.
3. The diagnostic system of claim 1, wherein at least a portion of the first waveguide structure comprises a fused silica optical fiber, and wherein at least a portion of the second waveguide structure comprises a fused silica optical fiber.
4. The diagnostic system of claim 1, further comprising:

a processor configured to receive one or more signals from the differential measurement; and

a monitor in communication with the processor, wherein the monitor displays results from the processor based on the differential measurement.

5. The diagnostic system of claim 1, wherein the spectroscopic procedure is selected from the group consisting of transmission, reflection, fluorescence and microscopy.

6. A light-based diagnostic system, comprising:

a pump source comprising a plurality of semiconductor diodes with pump beams;

a multiplexer capable of combining the plurality of semiconductor diode pump beams and generating at least a multiplexed pump beam comprising one or more wavelengths;

a first waveguide structure configured to receive at least a portion of the one or more wavelengths, wherein the first waveguide structure comprises at least in part a fused silica fiber, and outputs a first optical beam;

a second waveguide structure configured to receive at least a portion of the first optical beam and to communicate at least the portion of the first optical beam to an output end of the second waveguide structure to form an output beam; and

a lens system configured to receive at least a portion of the output beam and to communicate at least the portion of the output beam through an orifice in a patient's body;

wherein at least the portion of the output beam is adapted for use in multi-wavelength diagnostics to measure a property of a part of the patient's body, wherein the multi-wavelength diagnostics comprise a spectroscopic procedure comprising a differential measurement, wherein the differential measurement is based at least in part on a comparison of amplitudes at a plurality of associated wavelengths transmitted or reflected from the part of the patient's body.

7. The diagnostic system of claim 6, wherein the orifice comprises a patient's mouth.

8. The diagnostic system of claim 6, wherein the property of the part of the patient's body comprises a property of a patient's blood.

9. The diagnostic system of claim 8, wherein the property of the patient's blood is blood pressure or blood oxygen level.

10. The diagnostic system of claim 6, wherein the spectroscopic procedure is selected from the group consisting of transmission, reflection, fluorescence and microscopy.

11. The diagnostic system of claim 6, further comprising:
a processor configured to receive one or more signals from the differential measurement; and
a monitor in communication with the processor, wherein the monitor displays results from the processor based on the differential measurement.

12. The diagnostic system of claim 6, wherein at least a portion of the first waveguide structure comprises a gain fiber and one or more optical gratings.

13. The diagnostic system of claim 6, wherein at least the portion of the output beam comprises at least one wavelength in the range of 1.7 microns or more.

14. The diagnostic system of claim 6, wherein the multi-wavelength diagnostics further comprise a blood sensor.

15. A light-based medical diagnostic system, comprising:
a pump source comprising a plurality of semiconductor diodes with pump beams;
a multiplexer capable of combining the plurality of semiconductor diode pump beams and generating at least a multiplexed pump beam comprising one or more wavelengths;
a first waveguide structure configured to receive at least a portion of the one or more wavelengths, wherein the first waveguide structure comprises at least in part a fused silica fiber, and outputs a first optical beam;
a second waveguide structure configured to receive at least a portion of the first optical beam and to communicate at least the portion of the first optical beam to an output end of the second waveguide structure to form an output beam; and

a lens system configured to receive at least a portion of the output beam and to communicate at least the portion of the output beam onto a part of a patient's body comprising a patient's blood.

16. The diagnostic system of claim 15, wherein at least the portion of the output beam passes through an orifice in the patient's body.

17. The diagnostic system of claim 16, wherein the orifice comprises a patient's mouth.

18. The diagnostic system of claim 15, wherein at least the portion of the output beam comprises at least one wavelength in the range of 1.7 microns or more.

19. The diagnostic system of claim 15, wherein at least the portion of the output beam is adapted for use in medical diagnostics to measure a property of the patient's blood, wherein the medical diagnostics comprise a spectroscopic procedure comprising a differential measurement, wherein the differential measurement is based at least in part on a comparison of amplitudes at a plurality of associated wavelengths transmitted or reflected from the patient's blood.

20. The diagnostic system of claim 19, further comprising:

a processor configured to receive one or more signals from the differential measurement; and

a display in communication with the processor, wherein the display shows results from the processor based on the differential measurement.

ABSTRACT

A light-based medical diagnostic system includes a plurality of semiconductor diodes with pump beams and a multiplexer capable of combining the pump beams and generating at least a multiplexed pump beam comprising one or more wavelengths. A first waveguide structure is configured to receive at least a portion of the one or more wavelengths and outputs a first optical beam. A second waveguide structure is configured to receive at least a portion of the first optical beam and to communicate at least the portion of the first optical beam to an output end of the second waveguide structure to form an output beam. A lens system is configured to receive at least a portion of the output beam and to communicate at least the portion of the output beam onto a part of a patient's body, such as a patient's blood.

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Application Number	
Filing Date	
First Named Inventor	Mohammed N. ISLAM
Title	SYSTEM AND METHOD FOR VOICE CONTROL OF MEDICAL DEVICES
Art Unit	
Examiner Name	
Attorney Docket Number	OMNI 0110 PUSP10

SIGNATURE of Applicant or Patent Practitioner

Signature	/David S. Bir/	Date (Optional)	2014-09-02
Name	David S. Bir	Registration Number	38,383
Title (if Applicant is a juristic entity)			
Applicant Name (if Applicant is a juristic entity)			

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109543

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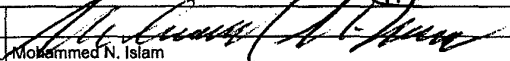
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I am the Applicant:

- ☐ Inventor or Joint Inventor
- ☐ Legal Representative of a Deceased or Legally Incapacitated Inventor
- ☒ Assignee or Person to Whom the Inventor is Under an Obligation to Assign
- ☐ Person Who Otherwise Shows Sufficient Proprietary Interest (e.g., a petition under 37 CFR 1.46(b)(2) was granted in the application or is concurrently being filed with this document)

SIGNATURE of Applicant for Patent

Signature		Date	October 10, 2012
Name	Mohammed N. Islam	Telephone	734-647-8941
Title and Company President - OMNI MEDSCI, INC.			

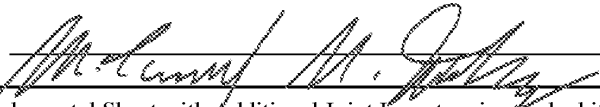
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**ASSIGNMENT AND DECLARATION (37 C.F.R. 1.63) FOR UTILITY OR DESIGN
APPLICATION USING AN APPLICATION DATA SHEET (37 C.F.R. 1.76)**

Title of Invention	SYSTEM AND METHOD FOR VOICE CONTROL OF MEDICAL DEVICES
As a below named inventor, I hereby declare that: This declaration is directed to: ☒ The attached application, or ☐ United States application or PCT international application number _____ filed on _____. (I hereby authorize the insertion of the application filing date and number when they become known.) The above-identified application was made or authorized to be made by me. I believe that I am the original inventor or an original joint inventor of a claimed invention in the application. I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims. I am aware of the duty to disclose to the U.S. Patent and Trademark Office all information known to me to be material to patentability as defined in 37 C.F.R. § 1.56. NOW, THEREFORE, for good and valuable consideration, receipt of which is hereby acknowledged, I do hereby assign, sell and set over to <u>Omni MedSci, Inc.</u>, a corporation organized and existing under the laws of the state or country of <u>MI</u>, and having a place of business at <u>1718 Newport Creek Drive, Ann Arbor, MI 48103</u>, hereinafter referred to as the ASSIGNEE, its successors, assigns or other legal representatives, my entire right, title and interest, domestic and foreign, in and to the inventions and discoveries in the above-identified application including the right of said ASSIGNEE, its successors, assigns or other legal representatives to make applications and to receive Letters Patent for said inventions and discoveries in any and all foreign countries in its or their own name or names, or in my name, at its or their election, and I hereby assign, sell and set over to said ASSIGNEE, its successors, assigns or other legal representatives, all rights of priority, including any provisional applications, in and to said inventions and discoveries in all countries, including all applications claiming benefit of the filing date hereof, continuations, continuations-in-part, divisionals, reexaminations and reissue applications. And I hereby agree for myself, my heirs, successors, assigns or other legal representatives to execute any and all papers, including applications for Letters Patent of any and all kinds and in any and all countries and to perform any and all acts which said ASSIGNEE, its successors, assigns or other legal representatives may deem necessary to secure thereto the rights herein assigned, sold and set over. And I hereby represent and warrant that I have not granted any rights inconsistent with the rights granted herein. 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) years or both.	
LEGAL NAME OF INVENTOR Inventor: <u>MOHAMMED N. ISLAM</u> Date: <u>September 3, 2014</u> Signature: 	
Page 1 (Supplemental Sheet with Additional Joint Inventors is attached if necessary)	
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Electronic Patent Application Fee Transmittal				
Application Number:				
Filing Date:				
Title of Invention:		SYSTEM AND METHOD FOR VOICE CONTROL OF MEDICAL DEVICES		
First Named Inventor/Applicant Name:		Mohammed N. ISLAM		
Filer:		David S. Bir/Pamela Demos		
Attorney Docket Number:		OMNI 0110 PUSP10		
Filed as Large Entity				
Utility under 35 USC 111(a) Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Utility application filing	1011	1	280	280
Utility Search Fee	1111	1	600	600
Utility Examination Fee	1311	1	720	720
Pages:				
Claims:				
Miscellaneous-Filing:				
Late Filing Fee for Oath or Declaration	1051	1	140	140
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 (\$)				1740

Electronic Acknowledgement Receipt	
EFS ID:	20020039
Application Number:	14476082
International Application Number:	
Confirmation Number:	6444
Title of Invention:	SYSTEM AND METHOD FOR VOICE CONTROL OF MEDICAL DEVICES
First Named Inventor/Applicant Name:	Mohammed N. ISLAM
Customer Number:	109543
Filer:	David S. Bir/Pamela Demos
Filer Authorized By:	David S. Bir
Attorney Docket Number:	OMNI 0110 PUSP10
Receipt Date:	03-SEP-2014
Filing Date:	
Time Stamp:	15:30:19
Application Type:	Utility under 35 USC 111(a)

Payment information:

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Payment was successfully received in RAM	\$ 1740
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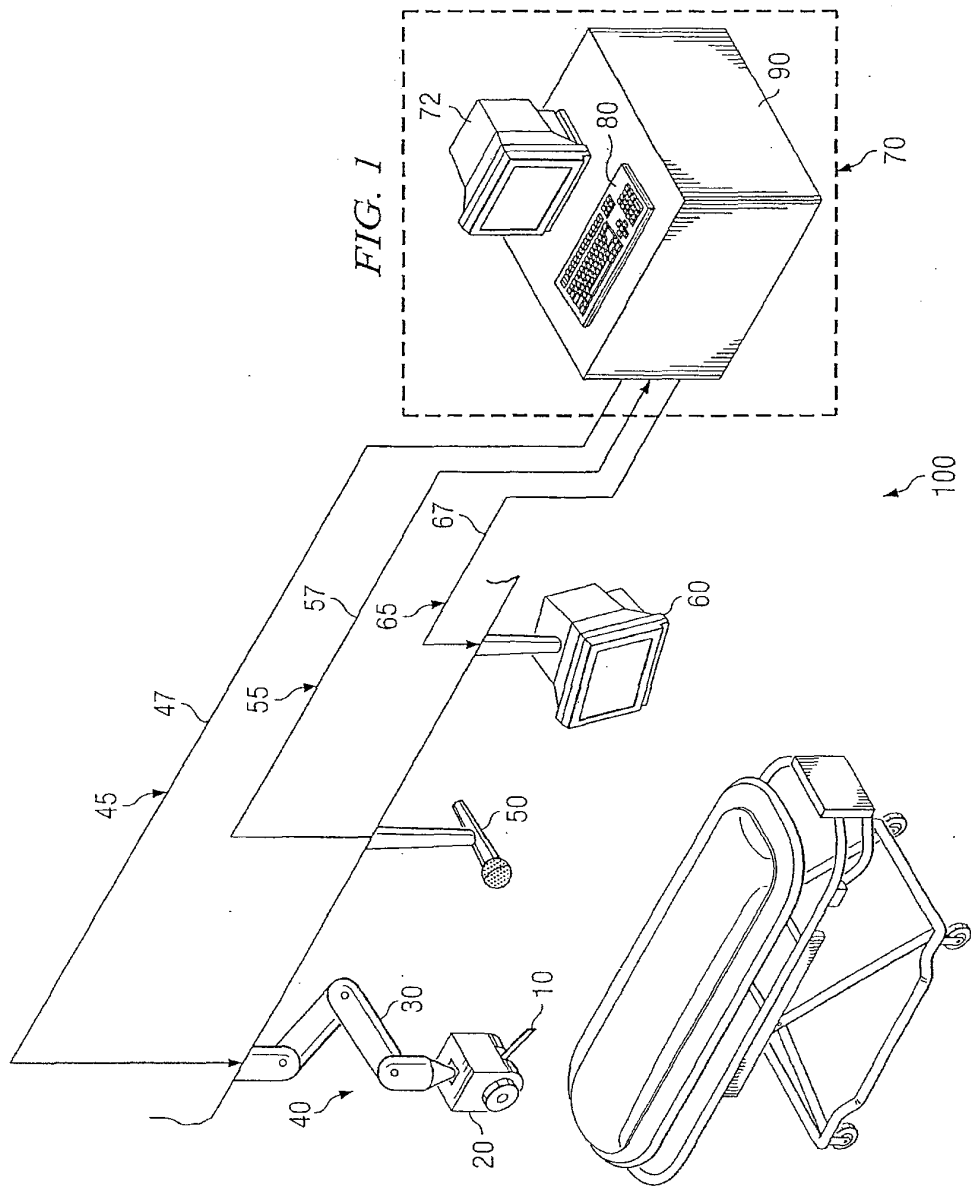
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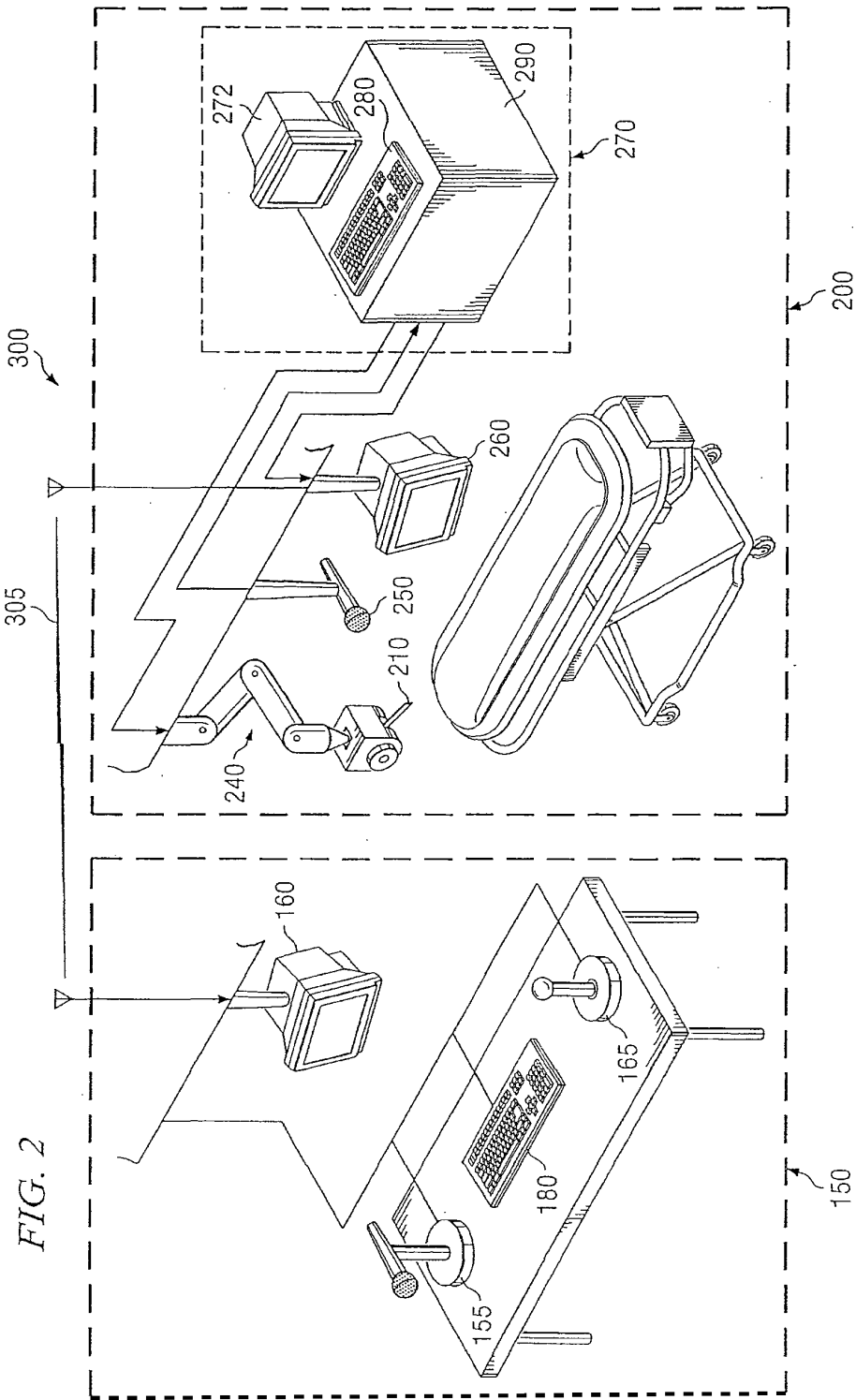
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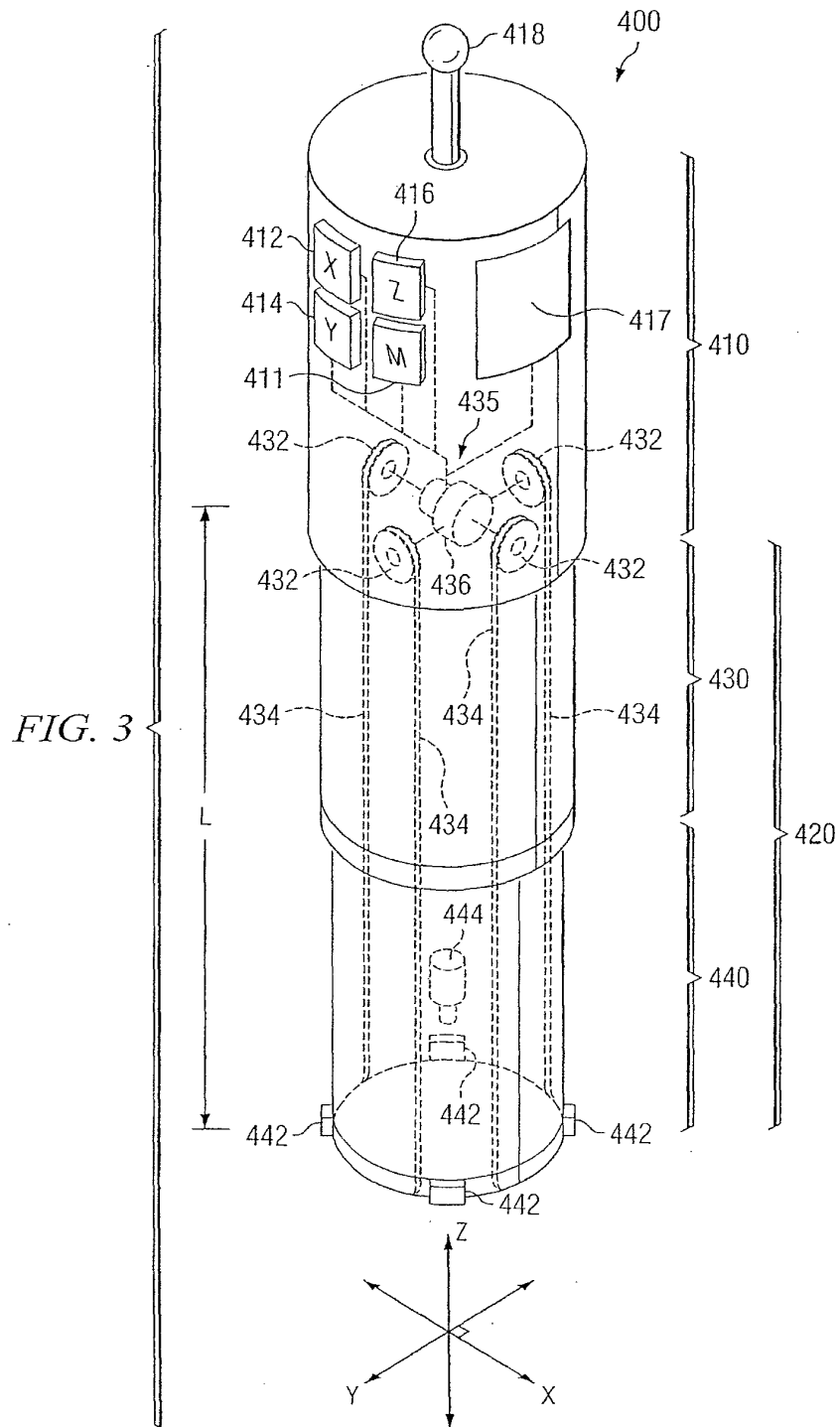
File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
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Warnings:					
Information:					
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	Specification		1	32	

	Claims		33	36
	Abstract		37	37
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Information:				
15	Power of Attorney	POA.pdf	456347 98216b0b8e13b426615e84709f07fb9950d2a031	no 2
Warnings:				
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16	Oath or Declaration filed	Executed_Assignment_Declaration.pdf	99561 bd829ee82d6e61066a77df667acc24bd489b7f	no 1
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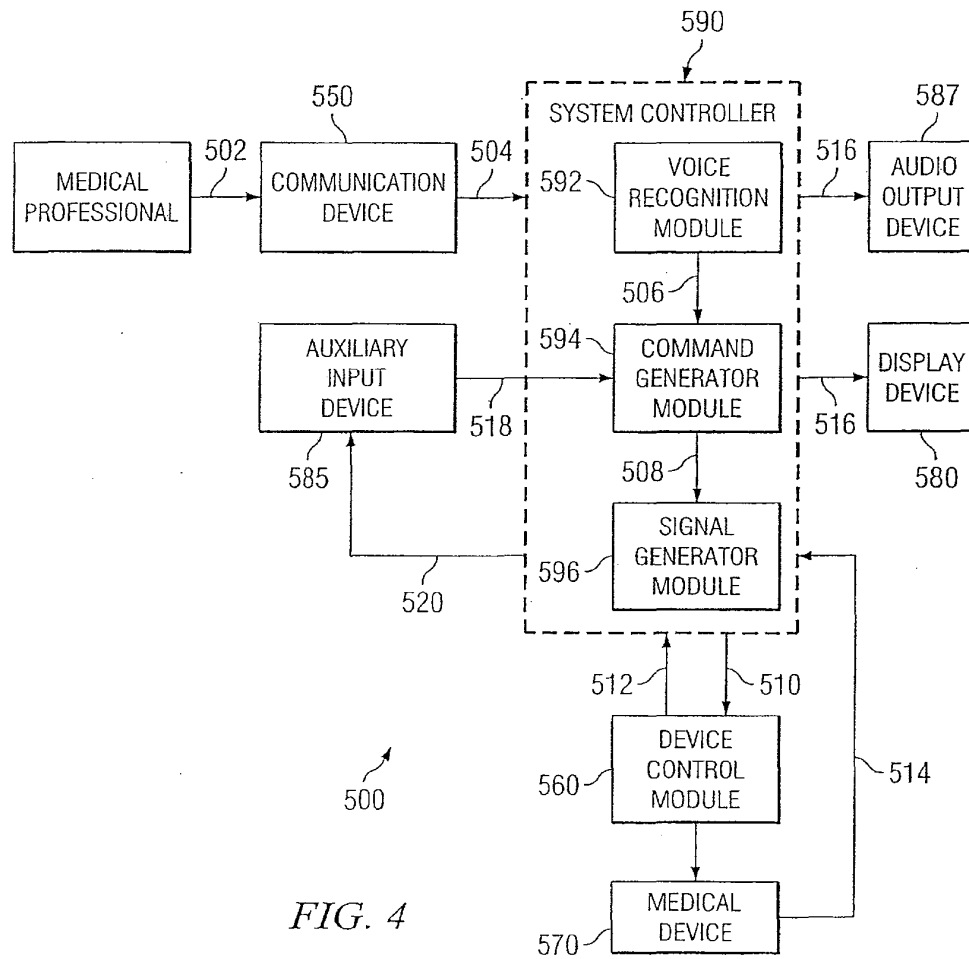


FIG. 4

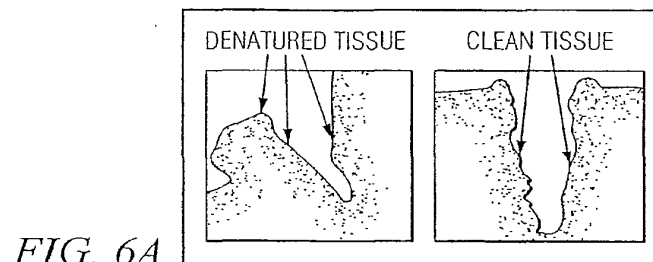
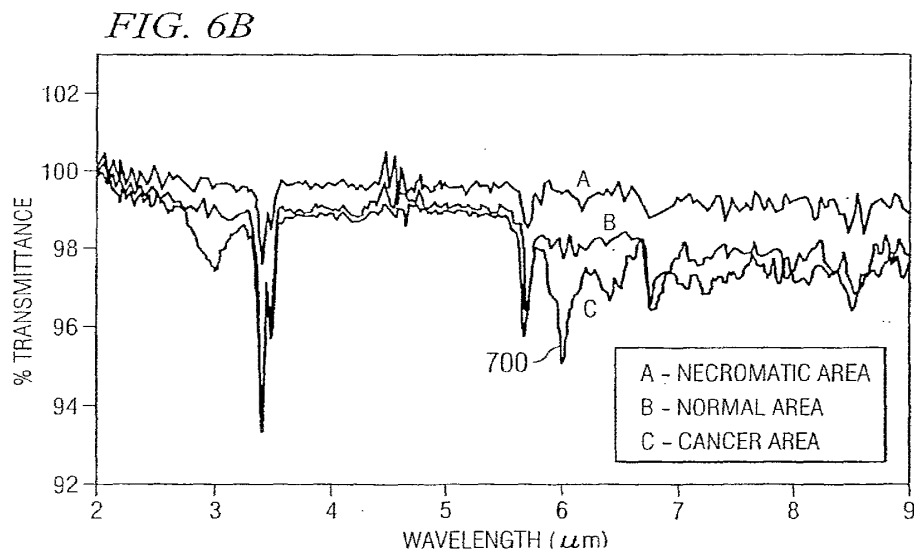
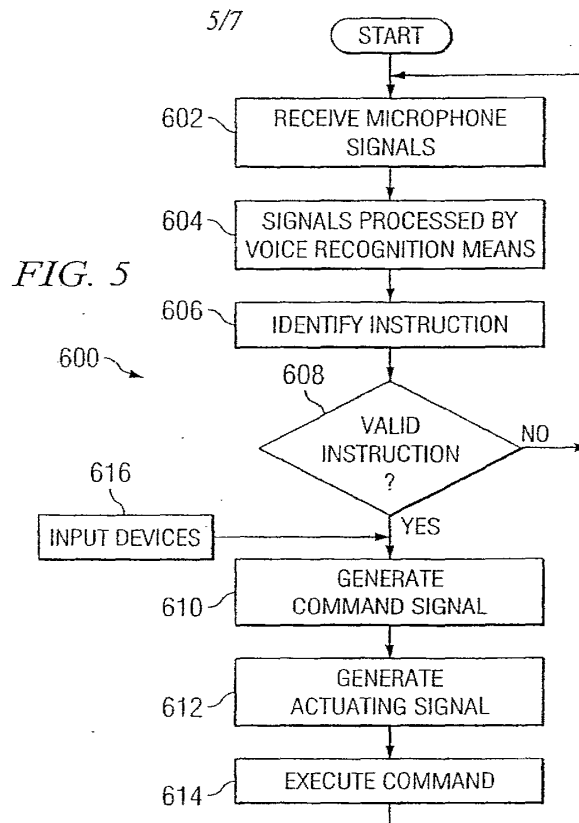
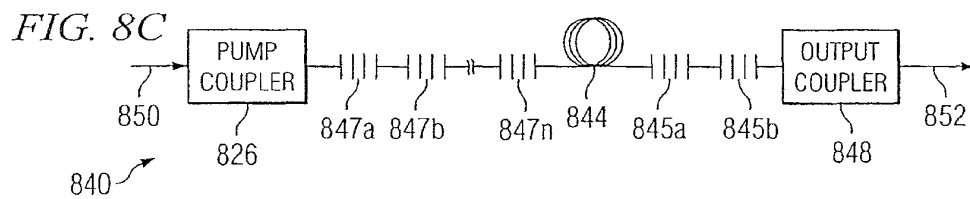
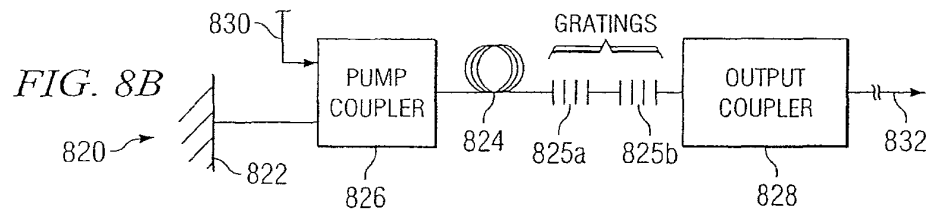
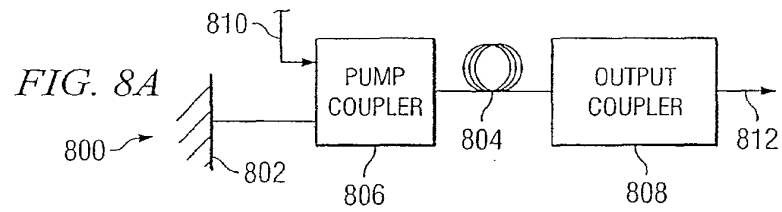
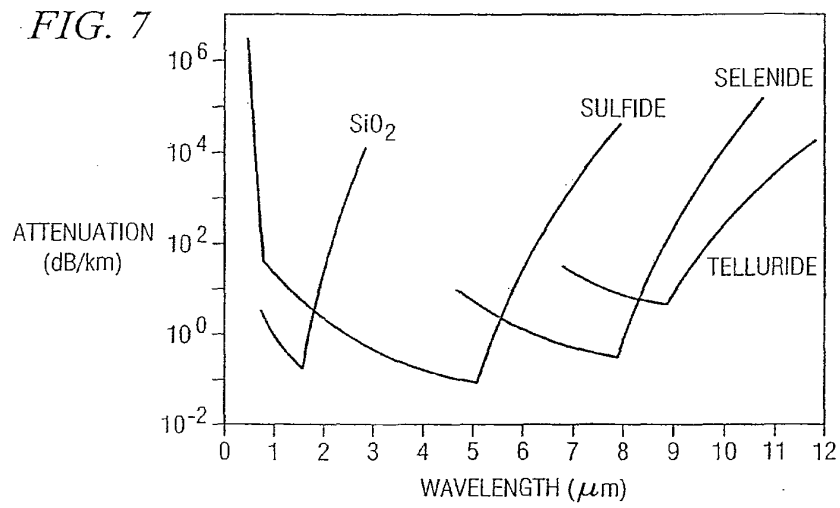
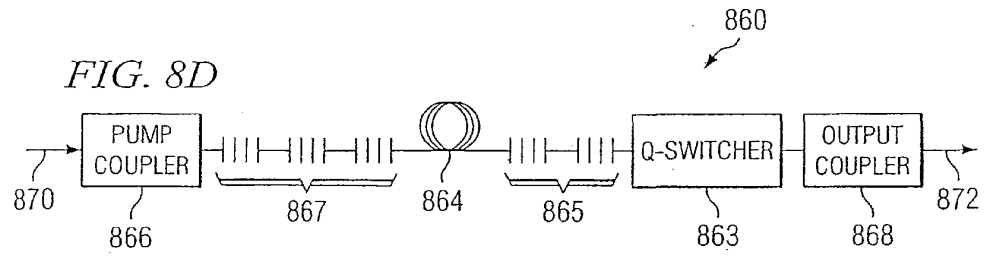
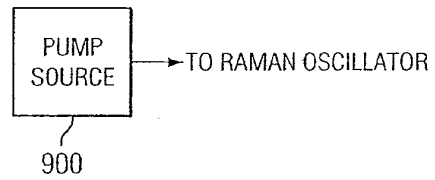
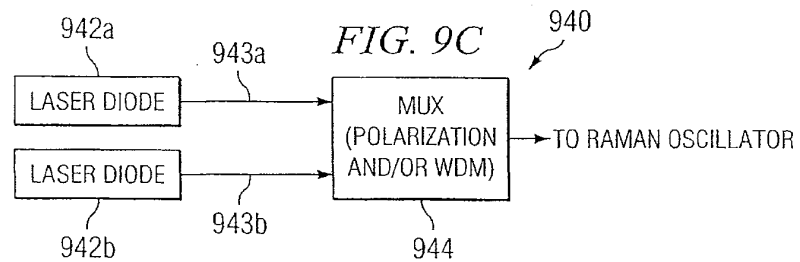
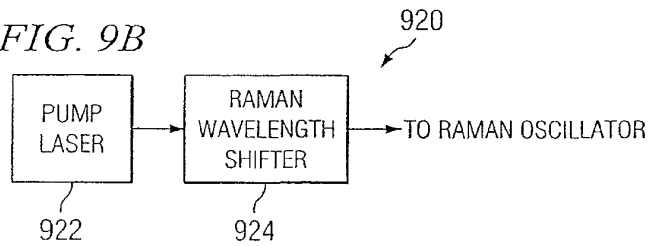


FIG. 6A





*FIG. 9A**FIG. 9B*

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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	OMNI 0110 PUSP10
		Application Number	
Title of Invention	SYSTEM AND METHOD FOR VOICE CONTROL OF MEDICAL DEVICES		
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.)
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Legal Name						
Prefix	Given Name	Middle Name	Family Name	Suffix		
	Mohammed	N.	ISLAM			
Residence Information (Select One) ☒ US Residency ☐ Non US Residency ☐ Active US Military Service						
City	Ann Arbor	State/Province	MI	Country of Residence i	US	
Mailing Address of Inventor:						
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Application Information:

Title of the Invention	SYSTEM AND METHOD FOR VOICE CONTROL OF MEDICAL DEVICES		
Attorney Docket Number	OMNI 0110 PUSP10	Small Entity Status Claimed	☐
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	7	Suggested Figure for Publication (if any)	
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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	OMNI 0110 PUSP10
		Application Number	
Title of Invention	SYSTEM AND METHOD FOR VOICE CONTROL OF MEDICAL DEVICES		

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

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.

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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.

When referring to the current application, please leave the application number blank.

Prior Application Status	Pending	Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
14186814	Continuation of	13913678	2013-06-10
Prior Application Status	Pending	Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
13913678	Continuation of	13531853	2012-06-25
Prior Application Status	Patented	Remove	

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Application Data Sheet 37 CFR 1.76		Attorney Docket Number		OMNI 0110 PUSP10	
		Application Number			
Title of Invention	SYSTEM AND METHOD FOR VOICE CONTROL OF MEDICAL DEVICES				

Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
13531853	Continuation of	13349244	2012-01-12	8472108	2013-06-25
Prior Application Status		Pending		Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)		
13349244	Continuation of	13078547	2011-04-01		
Prior Application Status		Patented		Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
13078547	Division of	12625253	2009-11-24	8098423	2012-01-17
Prior Application Status		Patented		Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
12265253	Division of	12206432	2008-09-08	7633673	2009-12-15
Prior Application Status		Patented		Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
12206432	Division of	10812608	2004-03-30	7433116	2008-10-07
Prior Application Status		Patented		Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
10812608	Continuation of	10757341	2004-01-13	7259906	2007-08-21
Prior Application Status		Abandoned		Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)		
10757341	Continuation of	10652276	2003-08-29		
Prior Application Status		Expired		Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)		
10652276	Claims benefit of provisional	60408025	2002-09-03		
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Application Number	Country ⁱ	Filing Date (YYYY-MM-DD)	Access Code ^j (if applicable)

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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	OMNI 0110 PUSP10
		Application Number	
Title of Invention	SYSTEM AND METHOD FOR VOICE CONTROL OF MEDICAL DEVICES		
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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: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

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☒ Authorization to Permit Access to the Instant Application by the Participating Offices
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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	OMNI 0110 PUSP10
		Application Number	
Title of Invention	SYSTEM AND METHOD FOR VOICE CONTROL OF MEDICAL DEVICES		

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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.					
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If the Applicant is an Organization check here. ☒					
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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	OMNI 0110 PUSP10
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Title of Invention	SYSTEM AND METHOD FOR VOICE CONTROL OF MEDICAL DEVICES		

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			38383	

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	Examiner Name		
	Attorney Docket Number	OMNI 0110 PUSP10	

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	Filing Date		
	First Named Inventor	Mohammed N. ISLAM	
	Art Unit		
	Examiner Name		
	Attorney Docket Number	OMNI 0110 PUSP10	

1	Hori, Takashi, et al., "Flatly broadened, wideband and low noise supercontinuum generation in highly nonlinear hybrid fiber", OPTICS EXPRESS, Vol. 12, No. 2, January 26, 2004, pages 317-324.	☐
2	Wadsworth, W. J., et al., "Supercontinuum and four-wave mixing with Q-switched pulses in endlessly single-mode photonic crystal fibres", OPTICS EXPRESS, Vol. 12, No. 2, January 26, 2004, pages 299-309.	☐
3	Hilligsoe, Karen Marie, et al., "Supercontinuum generation in a photonic crystal fiber with two zero dispersion wavelengths", OPTICS EXPRESS, Vol. 12, No. 6, March 22, 2004, pages 1045-1054.	☐
4	Venugopalan, V., "Optical Society of America BIOMED Topical Meeting Tutorial on Tissue Optics", April 27, 2004, pages 1-32.	☐
5	Slusher, Richard E., et al., "Large Raman gain and nonlinear phase shifts in high-purity As2S3 chalcogenide fibers", J. Opt. Soc. Am. B, Vol. 21, No. 6, June 2004, pages 1146-1155.	☐
6	Leon-Saval, S. G., et al., "Supercontinuum generation in submicron fibre waveguides", OPTICS EXPRESS, Vol. 12, No. 13, June 28, 2004, pages 2864-2869.	☐
7	Nicholson, J. W., et al., "High power, single mode, all-fiber source of femtosecond pulses at 1550 nm and its use in supercontinuum generation", OPTICS EXPRESS, Vol. 12, No. 13, June 28, 2004, pages 3025-3034.	☐
8	Genty, G., et al., "Enhanced bandwidth of supercontinuum generated in microstructured fibers", OPTICS EXPRESS, Vol. 12, No. 15, July 26, 2004, pages 3471-3480.	☐
9	Champert, Pierre-Alain, et al., "White-light supercontinuum generation in normally dispersive optical fiber using original multi-wavelength pumping system", OPTICS EXPRESS, Vol. 12, No. 19, September 20, 2004, pages 4366-4371.	☐
10	Nicholson, J. W., "Supercontinuum generation in ultraviolet-irradiated fibers", OPTICS LETTERS, Vol. 29, No. 20, October 15, 2004, pages 2363-2365.	☐
11	Hori, Takashi, et al., "Experimental and numerical analysis of widely broadened supercontinuum generation in highly nonlinear dispersion-shifted fiber with a femtosecond pulse", J. Opt. Soc. Am. B, Vol. 21, No. 11, November 2004, pages 1969-1980.	☐

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		
	Filing Date		
	First Named Inventor	Mohammed N. ISLAM	
	Art Unit		
	Examiner Name		
	Attorney Docket Number	OMNI 0110 PUSP10	

12	Demircan, Ayhan, et al., "Supercontinuum generation by the modulation instability", Optics Communications 244, 2005, pages 181-185.	☐
13	Papernyi, S. B., et al., "Sixth-Order Cascaded Raman Amplification", OFC/NFOEC, 2005, 3 pages.	☐
14	Tanaka, Keiji, "Optical nonlinearity in photonic glasses", Journal of Materials Science: Materials in Electronics 16, 2005, pages 633-643.	☐
15	Westbrook, Paul S., "Improved Supercontinuum Generation Through UV Processing of Highly Nonlinear Fibers", Journal of Lightwave Technology, Vol. 23, No. 1, January 2005, pages 13-18.	☐
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Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

☐ See attached certification statement.

☐ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/David S. Bir/	Date (YYYY-MM-DD)	2014-09-02
Name/Print	David S. Bir	Registration Number	38383

This collection of information is required by 37 CFR 1.97 and 1.98. 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 1 hour 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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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.
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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.

Doc code: IDS

Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (01-10)

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	First Named Inventor	Mohammed N. ISLAM	
	Art Unit		
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	2	6115673		2000-09-05	Malin	
	3	6512936	B1	2003-01-28	MONFRE	
	4	6534012	B1	2003-04-01	VISWANATHAN	
	5	6640117		2003-10-28	Makarewicz	
	6	6788965	B2	2004-09-07	RUCHTI	
	7	6816241		2004-11-09	Grubisic	
	8	6738652	B2	2004-05-18	MATTU	

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	9	6587702	B1	2003-07-01	RUCHTI	
	10	6864978	B1	2005-03-08	HAZEN	
	11	6990364		2006-01-24	Ruchti	
	12	7010336	B2	2006-03-07	LORENZ	
	13	7133710	B2	2006-11-07	Acosta	
	14	7233816	B2	2007-06-19	BLANK	
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	16	7317938	B2	2008-01-08	Lorenz	
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	19	7620674	B2	2009-11-17	RUCHTI	

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	20	7697966	B2	2010-04-13	MONFRE	
	21	7787924		2010-08-31	Acosta	
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	4	20060223032	A1	2006-10-05	FRIED	

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	5	20100322490	A1	2010-12-23	PAN	
	6	20120013722	A1	2012-01-19	WONG	

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	1	HAZEN, K.H., M.A. Arnold, G.W. Small, "Measurement of glucose and other analytes in undiluted human serum with near-infrared transmission spectroscopy," Analytica Chimica Acta, vol. 371, pp. 255-267 (1998).						☐
	2	MALIN, S.F., T.L. Ruchti, T.B. Blank, S.N. Thennadil, S.L. Monfre, "Noninvasive prediction of glucose by near-infrared diffuse reflectance spectroscopy," Clinical Chemistry, vol. 45, no. 9, pp. 1651-1658 (1999).						☐
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	4	TROY, T.L., S.N. Thennadil, "Optical properties of human skin in the near infrared wavelength range of 1000 to 2200nm," Journal of Biomedical Optics, vol. 6, no. 2, pp. 167-176, (2001).						☐

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5	BLANK, T.B., T.L. Ruchti, A.D. Lorenz, S.L. Monfre, M.R. Makarewicz, M. Mattu, K.H. Hazen, "Clinical results from a non-invasive blood glucose monitor," Optical Diagnostics and Sensing of Biological Fluids and Glucose and Cholesterol Monitoring II, A.V. Priezzhev and G.L. Cote, Editors, Proceedings of SPIE, Vol. 4624, pp. 1019 (2002).	☐
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9	Olesberg, J.T., L. Liu, V.V. Zee, M.A. Arnold, "In vivo near-infrared spectroscopy of rat skin tissue with varying blood glucose levels," Analytic Chemistry, vol. 78, no. 1, pp. 215-223 (2006).	☐
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14	Pezzaniti, J.L., T.W. Jeng, L. McDowell, G.M. Oosta, "Preliminary investigation of near-infrared spectroscopic measurements of urea, creatinine, glucose, protein and ketone in urine," Clinical Biochemistry, vol. 34, pp. 239-246 (2001).	☐
15	LUSSI, A., R. Hibst, R. Paulus, "Diagnodent: An optical method for caries detection," Journal of Dental Research, vol. 83, special issue C, pp. C80-C83 (2004).	☐

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16	REESE, E.L, E.E. Fisher, D.A. Horowitz, "Photoelectric densitometry of the circulation of the human dental pulp," The Journal of the Baltimore College of Dental Surgery, Vol. 26, no. 1, pp. 6-18 (1971).	☐
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In re application of:

Group Art Unit: N/A

Mohammed N. ISLAM

Examiner: N/A

Serial No.: 14/476,082

Filed: September 3, 2014

For: SYSTEM AND METHOD FOR VOICE CONTROL OF MEDICAL
DEVICES

Attorney Docket No.: OMNI 0110 PUSP10

PRELIMINARY AMENDMENT UNDER 37 C.F.R. § 1.115

Commissioner for Patents
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Commissioner:

Prior to examination, please amend the above-identified application as follows:

Amendments to the Specification:

Please insert the following paragraphs on Page 2, after “SUMMARY OF EXAMPLE EMBODIMENTS” and before Paragraph [0004]:

In one embodiment, a diagnostic system includes a light source comprising a plurality of semiconductor diodes with light beams, a multiplexer capable of combining the plurality of semiconductor diode light beams and generating at least a multiplexed light beam comprising one or more wavelengths, and one or more waveguide structures configured to receive at least a portion of the one or more wavelengths and to communicate at least the portion of the one or more wavelengths to an output end of the one or more waveguide structures to form an output beam. A lens system is configured to receive at least a portion of the output beam and to communicate at least the portion of the output beam onto a part of a user's body comprising blood to perform a measurement on a user. A software application is capable of generating data based at least in part on the measurement on the user, wherein the data represents at least in part physiological information associated with the user, and the software application is capable of operating on a control system adapted to receive, store and process at least a portion of the physiological information. The control system may have a touch-screen, a proximity sensor, and a wireless transceiver to transmit wireless data over a wireless link, the wireless data comprising at least a part of the physiological information, wherein the control system is further capable of receiving voice input signals and manually entered input signals. A host comprises a digital file for receiving and storing at least a portion of the wireless data, control logic at the host to process at least the portion of the wireless data to generate a status of the user, a memory storage device for recording the status, and an output for communicating at least a portion of the status or associated information over a communication link to one or more display output devices, wherein the one or more display output devices are located remotely from the host.

In another embodiment, a diagnostic system includes a light source comprising one or more semiconductor diodes generating an input light beam. A lens system is configured to receive at least a portion of the input light beam and to communicate at least the portion of the input light beam onto a part of a user's body comprising blood, wherein at least the portion of the input light beam is used in a measurement on a user. A software application is capable of

generating data based at least in part on the measurement on the user, wherein the data represents at least in part physiological information associated with the user. The software application is capable of operating on a control system adapted to receive, store and process at least a portion of the physiological information. The control system may have a touch-screen, circuitry for obtaining position information from a location sensor, and a wireless transceiver to transmit wireless data over a wireless link, the wireless data comprising at least a part of the physiological information, wherein the control system is further capable of receiving voice input signals and manually entered input signals. A host comprises a digital file for receiving and storing at least a portion of the wireless data, control logic at the host to process at least the portion of the wireless data to generate a status of the user, a memory storage device for recording the status, and an output for communicating at least a portion of the status or associated information over a communication link to one or more display output devices, wherein the one or more display output devices are located remotely from the host.

In yet another embodiment, a diagnostic system includes a light source comprising one or more semiconductor diodes generating an input light beam. A lens system is configured to receive at least a portion of the input light beam and to communicate at least the portion of the input light beam onto a part of a user's body comprising blood, wherein at least the portion of the input light beam is used in a measurement on a user, wherein the measurement comprises a spectroscopic procedure to measure a property of the blood, and wherein the spectroscopic procedure is based at least in part on a comparison of amplitudes at a plurality of associated wavelengths transmitted or reflected from the blood. A software application is capable of generating data based at least in part on the measurement on the user, wherein the data represents at least in part physiological information associated with the user. The software application is capable of operating on a control system adapted to receive, store and process at least a portion of the physiological information. The control system may have a touch-screen, circuitry for obtaining position information from a location sensor, and a wireless transceiver to transmit wireless data over a wireless link, the wireless data comprising at least a part of the physiological information, wherein the control system is further capable of receiving voice input signals and manually entered input signals, and wherein the control system is further coupled to an audio output device. A host comprises a digital file for receiving and storing at least a portion of the wireless data, control logic at the host to process at least the portion of the wireless data to

generate a status of the user, wherein the control logic includes a voice recognition software to process at least a portion of the voice input signals. The host further comprises a memory storage device for recording the status, and an output for communicating at least a portion of the status or associated information over a communication link to one or more display output devices, wherein the one or more display output devices are located remotely from the host.

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1-20. (Canceled)

21. (New) A diagnostic system comprising:

a light source comprising:

a plurality of semiconductor diodes with light beams;

a multiplexer capable of combining the plurality of semiconductor diode light beams and generating at least a multiplexed light beam comprising one or more wavelengths;

one or more waveguide structures configured to receive at least a portion of the one or more wavelengths and to communicate at least the portion of the one or more wavelengths to an output end of the one or more waveguide structures to form an output beam; and

a lens system configured to receive at least a portion of the output beam and to communicate at least the portion of the output beam onto a part of a user's body comprising blood to perform a measurement on a user;

a software application capable of generating data based at least in part on the measurement on the user, wherein the data represents at least in part physiological information associated with the user;

the software application capable of operating on a control system adapted to receive, store and process at least a portion of the physiological information, the control system having a touch-screen, a proximity sensor, and a wireless transceiver to transmit wireless data over a wireless link, the wireless data comprising at least a part of the physiological information, wherein the control system is further capable of receiving voice input signals and manually entered input signals; and

a host comprising:

a digital file for receiving and storing at least a portion of the wireless data;

control logic at the host to process at least the portion of the wireless data to generate a status of the user;

a memory storage device for recording the status; and

an output for communicating at least a portion of the status or associated information over a communication link to one or more display output devices, wherein the one or more display output devices are located remotely from the host.

22. (New) The diagnostic system of Claim 21, wherein at least the portion of the output beam is adapted for use in a diagnostics to measure a property of the blood, wherein the diagnostics comprise a spectroscopic procedure, wherein the spectroscopic procedure is based at least in part on a comparison of amplitudes at a plurality of associated wavelengths transmitted or reflected from the blood.

23. (New) The diagnostic system of Claim 21, wherein the physiological information is blood pressure, heart rate or blood oxygen level.

24. (New) The diagnostic system of Claim 21, wherein the control system is further coupled to a headset or a heads-up display.

25. (New) The diagnostic system of Claim 21, wherein the control logic includes voice recognition software to process at least a portion of the voice input signals, and wherein the control system further comprises a voice recognition module.

26. (New) The diagnostic system of Claim 21, wherein the control system is further coupled to an audio output device capable of communicating at least a part of the processed portion of the physiological information.

27. (New) A diagnostic system comprising:

a light source comprising:

one or more semiconductor diodes generating an input light beam; and

a lens system configured to receive at least a portion of the input light beam and to communicate at least the portion of the input light beam onto a part of a user's body comprising blood, wherein at least the portion of the input light beam is used in a measurement on a user;

a software application capable of generating data based at least in part on the measurement on the user, wherein the data represents at least in part physiological information associated with the user;

the software application capable of operating on a control system adapted to receive, store and process at least a portion of the physiological information, the control system having a touch-screen, circuitry for obtaining position information from a location sensor, and a wireless transceiver to transmit wireless data over a wireless link, the wireless data comprising at least a part of the physiological information, wherein the control system is further capable of receiving voice input signals and manually entered input signals; and

a host comprising:

a digital file for receiving and storing at least a portion of the wireless data;

control logic at the host to process at least the portion of the wireless data to generate a status of the user;

a memory storage device for recording the status; and

an output for communicating at least a portion of the status or associated information over a communication link to one or more display output devices, wherein the one or more display output devices are located remotely from the host.

28. (New) The diagnostic system of Claim 27, wherein the light source comprises a plurality of semiconductor diodes that are further coupled to a multiplexer capable of combining the plurality of semiconductor diodes and generating the input light beam comprising one or more wavelengths.

29. (New) The diagnostic system of Claim 28, wherein the multiplexer is further coupled to one or more waveguide structures configured to receive at least a portion of the one or more wavelengths and to communicate at least the portion of the input light beam.

30. (New) The diagnostic system of Claim 27, wherein at least the portion of the input light beam is adapted for use in a diagnostics to measure a property of the blood, wherein the diagnostics comprise a spectroscopic procedure, wherein the spectroscopic procedure is based at least in part on a comparison of amplitudes at a plurality of associated wavelengths transmitted or reflected from the blood.

31. (New) The diagnostic system of Claim 27, wherein the control system is further coupled to a headset or a heads-up display.

32. (New) The diagnostic system of Claim 27, wherein the control logic includes voice recognition software to process at least a portion of the voice input signals, and wherein the control system further comprises a voice recognition module.

33. (New) The diagnostic system of Claim 27, wherein the physiological information is blood pressure, heart rate or blood oxygen level.

34. (New) The diagnostic system of Claim 27, wherein the control system is further coupled to a proximity sensor.

35. (New) The diagnostic system of Claim 27, wherein the control system is further coupled to an audio output device capable of communicating at least a part of the processed portion of the physiological information.

36. (New) A diagnostic system comprising:
a light source comprising:

one or more semiconductor diodes generating an input light beam; and
a lens system configured to receive at least a portion of the input light beam and to communicate at least the portion of the input light beam onto a part of a user's body comprising blood, wherein at least the portion of the input light beam is used in a measurement on a user, wherein the measurement comprises a spectroscopic procedure to measure a property of the blood, and wherein the

spectroscopic procedure is based at least in part on a comparison of amplitudes at a plurality of associated wavelengths transmitted or reflected from the blood;

a software application capable of generating data based at least in part on the measurement on the user, wherein the data represents at least in part physiological information associated with the user;

the software application capable of operating on a control system adapted to receive, store and process at least a portion of the physiological information, the control system having a touch-screen, circuitry for obtaining position information from a location sensor, and a wireless transceiver to transmit wireless data over a wireless link, the wireless data comprising at least a part of the physiological information, wherein the control system is further capable of receiving voice input signals and manually entered input signals, and wherein the control system is further coupled to an audio output device; and

a host comprising:

a digital file for receiving and storing at least a portion of the wireless data;

control logic at the host to process at least the portion of the wireless data to generate a status of the user, wherein the control logic includes a voice recognition software to process at least a portion of the voice input signals;

a memory storage device for recording the status; and

an output for communicating at least a portion of the status or associated information over a communication link to one or more display output devices, wherein the one or more display output devices are located remotely from the host.

37. (New) The diagnostic system of Claim 36, wherein the control system is further coupled to a headset or a heads-up display.

38. (New) The diagnostic system of Claim 37, wherein gesture signals are capable of being generated in response to a head motion.

39. (New) The diagnostic system of Claim 36, wherein the control system is further coupled to a proximity sensor.

40. (New) The diagnostic system of Claim 36, wherein the host is adapted to permit access of the status or associated information stored on the host from two or more different locations remote from the host.

Amendments to the Abstract:

Please replace the ABSTRACT with below:

ABSTRACT

A diagnostic system includes a plurality of semiconductor diodes, a multiplexer, and one or more waveguide structures to form an output beam. A lens system communicates some of the output beam onto a part of a user's body comprising blood to perform a measurement. A software application is capable of generating data based at least in part on the measurement, and it operates on a control system that may have a touch-screen, a proximity sensor, and a wireless transceiver to transmit wireless data over a wireless link. A host comprises a digital file, control logic at the host to process at least the portion of the wireless data to generate a status of the user, a memory storage device for recording the status, and an output for communicating at least a portion of the status or associated information over a communication link to one or more remote display output devices.

Remarks

Please enter this Preliminary Amendment prior to substantive examination.

Claims 1-20 originally appearing in the parent application have been cancelled. New claims 21-40 have been added. The summary and abstract have been amended based on the new claims.

The Examiner is invited to telephone Applicants' attorney if it would advance the prosecution of this application.

Please charge any fees or credit any overpayments as a result of the filing of this paper to our Deposit Account No. 02-3978.

Respectfully submitted,

Mohammed N. ISLAM

By: /David S. Bir/

David S. Bir

Reg. No. 38,383

Attorney/Agent for Applicant

Date: September 4, 2014

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Electronic Acknowledgement Receipt	
EFS ID:	20040859
Application Number:	14476082
International Application Number:	
Confirmation Number:	6444
Title of Invention:	SYSTEM AND METHOD FOR VOICE CONTROL OF MEDICAL DEVICES
First Named Inventor/Applicant Name:	Mohammed N. ISLAM
Customer Number:	109543
Filer:	David S. Bir/Pamela Demos
Filer Authorized By:	David S. Bir
Attorney Docket Number:	OMNI 0110 PUSP10
Receipt Date:	04-SEP-2014
Filing Date:	
Time Stamp:	09:47:17
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		PreliminaryAmendment.pdf	62251 6c6d2372d710ab4745f2e9a358755fadf8af695b	yes	12

	Multipart Description/PDF files in .zip description		
	Document Description	Start	End
	Preliminary Amendment	1	4
	Claims	5	10
	Abstract	11	11
	Applicant Arguments/Remarks Made in an Amendment	12	12
Warnings:			
Information:			
Total Files Size (in bytes):		62251	
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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	OMNI 0110 PUSP10
		Application Number	
Title of Invention	SYSTEM AND METHOD FOR VOICE CONTROL OF MEDICAL DEVICES		
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		
	Mohammed	N.	ISLAM			
Residence Information (Select One) ☒ US Residency ☐ Non US Residency ☐ Active US Military Service						
City	Ann Arbor	State/Province	MI	Country of Residence	US	
Mailing Address of Inventor:						
Address 1		1718 Newport Creek Drive				
Address 2						
City	Ann Arbor	State/Province	MI			
Postal Code	48103	Country	US			
All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the Add button.						
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Correspondence Information:

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☐ An Address is being provided for the correspondence information of this application.	
Customer Number	109543
Email Address	
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Application Information:

Title of the Invention	SYSTEM AND METHOD FOR VOICE CONTROL OF MEDICAL DEVICES		
Attorney Docket Number	OMNI 0110 PUSP10	Small Entity Status Claimed	☐
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	7	Suggested Figure for Publication (if any)	
Filing By Reference :			

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	OMNI 0110 PUSP10
	Application Number	
Title of Invention	SYSTEM AND METHOD FOR VOICE CONTROL OF MEDICAL DEVICES	

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

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	109543		

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.

When referring to the current application, please leave the application number blank.

Prior Application Status	<u>Pending</u>	Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
	<u>Continuation of</u>	<u>14186814</u>	<u>2014-02-21</u>
Prior Application Status	Pending	Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
14186814	Continuation of	13913678	2013-06-10
Prior Application Status	Pending	Remove	

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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	OMNI 0110 PUSP10	
		Application Number		
Title of Invention	SYSTEM AND METHOD FOR VOICE CONTROL OF MEDICAL DEVICES			

Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
13913678	Continuation of	13531853	2012-06-25
Prior Application Status	Patented	Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
13531853	Continuation of	13349244	2012-01-12
Prior Application Status	Pending	Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
13349244	Continuation of	13078547	2011-04-01
Prior Application Status	Patented	Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
13078547	Division of	12625253	2009-11-24
Prior Application Status	Patented	Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
12625253	Division of	12206432	2008-09-08
Prior Application Status	Patented	Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
12206432	Division of	10812608	2004-03-30
Prior Application Status	Patented	Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
10812608	Continuation of	10757341	2004-01-13
Prior Application Status	Abandoned	Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
10757341	Continuation of	10652276	2003-08-29
Prior Application Status	Expired	Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
10652276	Claims benefit of provisional	60408025	2002-09-03

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Foreign Priority Information:

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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	OMNI 0110 PUSP10
		Application Number	
Title of Invention	SYSTEM AND METHOD FOR VOICE CONTROL OF MEDICAL DEVICES		

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

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: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.
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Authorization to Permit Access:

☒	Authorization to Permit Access to the Instant Application by the Participating Offices
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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	OMNI 0110 PUSP10
		Application Number	
Title of Invention	SYSTEM AND METHOD FOR VOICE CONTROL OF MEDICAL DEVICES		

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.

Applicant 1

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.

- | | | |
|---|--|--------------------------------------|
| ☒ 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. ☒

Organization Name Omni MedSci, Inc.

Mailing Address Information For Applicant:

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Address 2

City Ann Arbor

State/Province

MI

Country US

Postal Code

48103

Phone Number

Fax Number

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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	OMNI 0110 PUSP10
		Application Number	
Title of Invention	SYSTEM AND METHOD FOR VOICE CONTROL OF MEDICAL DEVICES		
Email Address			
Additional Applicant Data may be generated within this form by selecting the Add button.			

Assignee Information including Non-Applicant Assignee 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.				
Assignee 1				
Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.				
If the Assignee or Non-Applicant Assignee is an Organization check here. ☐				
Prefix	Given Name	Middle Name	Family Name	Suffix
Mailing Address Information For Assignee including Non-Applicant Assignee:				
Address 1				
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City		State/Province		
Country ⁱ		Postal Code		
Phone Number		Fax Number		
Email Address				
Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button.				

Signature:

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications.				
Signature	/David S. Bir/		Date (YYYY-MM-DD)	2014-09-02
First Name	David	Last Name	Bir	Registration Number
38383				
Additional Signature may be generated within this form by selecting the Add button.				

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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	OMNI 0110 PUSP10
		Application Number	
Title of Invention	SYSTEM AND METHOD FOR VOICE CONTROL OF MEDICAL DEVICES		

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.**

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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)).
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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 Acknowledgement Receipt	
EFS ID:	20049487
Application Number:	14476082
International Application Number:	
Confirmation Number:	6444
Title of Invention:	SYSTEM AND METHOD FOR VOICE CONTROL OF MEDICAL DEVICES
First Named Inventor/Applicant Name:	Mohammed N. ISLAM
Customer Number:	109543
Filer:	David S. Bir
Filer Authorized By:	
Attorney Docket Number:	OMNI 0110 PUSP10
Receipt Date:	04-SEP-2014
Filing Date:	
Time Stamp:	17:40:54
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Application Data Sheet	Corrected_ADS.pdf	1145929 24bf9aace1b9c28ad2478941886751f8486d42d8	no	8

Warnings:

Information:

This is not an USPTO supplied ADS fillable form

Total Files Size (in bytes):

1145929

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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.

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.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875				Application or Docket Number 14/476,082		Filing Date 09/03/2014		☐ 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), (l), 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))									
					TOTAL				
APPLICATION AS AMENDED – PART II									
(Column 1)		(Column 2)		(Column 3)					
AMENDMENT	09/04/2014	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)		
	Total (37 CFR 1.16(i))	* 20	Minus	** 20	= 0	X \$80 =	0		
	Independent (37 CFR 1.16(h))	* 3	Minus	*** 3	= 0	X \$420 =	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.									

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 14/476,082	
APPLICATION AS FILED - PART I							
(Column 1)		(Column 2)		SMALL ENTITY		OTHER THAN SMALL ENTITY	
FOR	NUMBER FILED	NUMBER EXTRA	RATE(\$)	FEE(\$)		RATE(\$)	FEE(\$)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	280
SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A	N/A			N/A	600
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	720
TOTAL CLAIMS (37 CFR 1.16(i))	20	minus 20 = *				x 80 =	0.00
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3	minus 3 = *				x 420 =	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			TOTAL	1600
APPLICATION AS AMENDED - PART II							
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY	
AMENDMENT A	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)	RATE(\$)	ADDITIONAL FEE(\$)
	Total (37 CFR 1.16(i))	*	Minus **	=	x =	x =	=
	Independent (37 CFR 1.16(h))	*	Minus ***	=	x =	x =	=
	Application Size Fee (37 CFR 1.16(s))						
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
			TOTAL ADD'L FEE			TOTAL ADD'L FEE	
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY	
AMENDMENT B	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)	RATE(\$)	ADDITIONAL FEE(\$)
	Total (37 CFR 1.16(i))	*	Minus **	=	x =	x =	=
	Independent (37 CFR 1.16(h))	*	Minus ***	=	x =	x =	=
	Application Size Fee (37 CFR 1.16(s))						
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
			TOTAL ADD'L FEE			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.							



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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
14/476,082	09/03/2014	2879	1600	OMNI 0110 PUSP10	20	3

CONFIRMATION NO. 6444

109543

Brooks, Kushman P.C./Cheetah Omni MedSci
1000 Town Center
Twenty Second Floor
Southfield, MI 48075

FILING RECEIPT



0000000070701442

Date Mailed: 09/11/2014

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)

Mohammed N. ISLAM, Ann Arbor, MI;

Applicant(s)

Omni MedSci, Inc., Ann Arbor, MI

Power of Attorney: The patent practitioners associated with Customer Number 109543

Domestic Priority data as claimed by applicant

This application is a CON of 14/186,814 02/21/2014
which is a CON of 13/913,678 06/10/2013 PAT 8848282
which is a CON of 13/531,853 06/25/2012 PAT 8679011
which is a CON of 13/349,244 01/12/2012 PAT 8472108
which is a CON of 13/078,547 04/01/2011
which is a DIV of 12/625,253 11/24/2009 PAT 8098423
which is a DIV of 12/206,432 09/08/2008 PAT 7633673
which is a DIV of 10/812,608 03/30/2004 PAT 7433116
which is a CON of 10/757,341 01/13/2004 PAT 7259906
which is a CON of 10/652,276 08/29/2003 ABN
which claims benefit of 60/408,025 09/03/2002

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see <http://www.uspto.gov> for more information.) - None.

Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access - A proper **Authorization to Permit Access to Application by Participating Offices** (PTO/SB/39 or its equivalent) has been received by the USPTO.

If Required, Foreign Filing License Granted: 09/11/2014

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 14/476,082**

Projected Publication Date: 12/18/2014

Non-Publication Request: No

Early Publication Request: No

Title

SYSTEM AND METHOD FOR VOICE CONTROL OF MEDICAL DEVICES

Preliminary Class

313

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.

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page 2 of 4

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/476,082	09/03/2014	Mohammed N. ISLAM	OMNI 0110 PUSP10

CONFIRMATION NO. 6444

PUBLICATION NOTICE



OC000000072461261

109543
Brooks, Kushman P.C./Cheetah Omni MedSci
1000 Town Center
Twenty Second Floor
Southfield, MI 48075

Title:SYSTEM AND METHOD FOR VOICE CONTROL OF MEDICAL DEVICES

Publication No.US-2014-0371555-A1

Publication Date:12/18/2014

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 publicly 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 Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

Group Art Unit: 3777

Mohammed N. ISLAM

Examiner: N/A

Serial No.: 14/476,082

Filed: September 3, 2014

For: SYSTEM AND METHOD FOR VOICE CONTROL OF MEDICAL
DEVICES

Attorney Docket No.: OMNI 0110 PUSP10

PRELIMINARY AMENDMENT “B” UNDER 37 C.F.R. § 1.115

Commissioner for Patents
U.S. Patent & Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

Commissioner:

Prior to examination, please amend the above-identified application as follows:

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1-20. (Canceled)

21. (Previously Presented) A diagnostic system comprising:

a light source comprising:

a plurality of semiconductor diodes with light beams;

a multiplexer capable of combining the plurality of semiconductor diode light beams and generating at least a multiplexed light beam comprising one or more wavelengths;

one or more waveguide structures configured to receive at least a portion of the one or more wavelengths and to communicate at least the portion of the one or more wavelengths to an output end of the one or more waveguide structures to form an output beam; and

a lens system configured to receive at least a portion of the output beam and to communicate at least the portion of the output beam onto a part of a user's body comprising blood to perform a measurement on a user;

a software application capable of generating data based at least in part on the measurement on the user, wherein the data represents at least in part physiological information associated with the user;

the software application capable of operating on a control system adapted to receive, store and process at least a portion of the physiological information, the control system having a touch-screen, a proximity sensor, and a wireless transceiver to transmit wireless data over a wireless link, the wireless data comprising at least a part of the physiological information, wherein the control system is further capable of receiving voice input signals and manually entered input signals; and

a host comprising:

a digital file for receiving and storing at least a portion of the wireless data;

control logic at the host to process at least the portion of the wireless data to generate a status of the user;

a memory storage device for recording the status; and

an output for communicating at least a portion of the status or associated information over a communication link to one or more display output devices, wherein the one or more display output devices are located remotely from the host.

22. (Previously Presented) The diagnostic system of Claim 21, wherein at least the portion of the output beam is adapted for use in a diagnostics to measure a property of the blood, wherein the diagnostics comprise a spectroscopic procedure, wherein the spectroscopic procedure is based at least in part on a comparison of amplitudes at a plurality of associated wavelengths transmitted or reflected from the blood.

23. (Currently Amended) The diagnostic system of Claim 21, wherein the physiological information is blood pressure, heart rate or blood oxygen level, control system is further capable of providing feedback control data associated at least in part with the physiological information or a position information to a device control module.

24. (Previously Presented) The diagnostic system of Claim 21, wherein the control system is further coupled to a headset or a heads-up display.

25. (Previously Presented) The diagnostic system of Claim 21, wherein the control logic includes voice recognition software to process at least a portion of the voice input signals, and wherein the control system further comprises a voice recognition module.

26. (Previously Presented) The diagnostic system of Claim 21, wherein the control system is further coupled to an audio output device capable of communicating at least a part of the processed portion of the physiological information.

27. (Previously Presented) A diagnostic system comprising:
a light source comprising:

one or more semiconductor diodes generating an input light beam; and

a lens system configured to receive at least a portion of the input light beam and to communicate at least the portion of the input light beam onto a part of a user's body comprising blood, wherein at least the portion of the input light beam is used in a measurement on a user;

a software application capable of generating data based at least in part on the measurement on the user, wherein the data represents at least in part physiological information associated with the user;

the software application capable of operating on a control system adapted to receive, store and process at least a portion of the physiological information, the control system having a touch-screen, circuitry for obtaining position information from a location sensor, and a wireless transceiver to transmit wireless data over a wireless link, the wireless data comprising at least a part of the physiological information, wherein the control system is further capable of receiving voice input signals and manually entered input signals; and

a host comprising:

a digital file for receiving and storing at least a portion of the wireless data;

control logic at the host to process at least the portion of the wireless data to generate a status of the user;

a memory storage device for recording the status; and

an output for communicating at least a portion of the status or associated information over a communication link to one or more display output devices, wherein the one or more display output devices are located remotely from the host.

28. (Previously Presented) The diagnostic system of Claim 27, wherein the light source comprises a plurality of semiconductor diodes that are further coupled to a multiplexer capable of combining the plurality of semiconductor diodes and generating the input light beam comprising one or more wavelengths.

29. (Canceled)

30. (Previously Presented) The diagnostic system of Claim 27, wherein at least the portion of the input light beam is adapted for use in a diagnostics to measure a property of the blood, wherein the diagnostics comprise a spectroscopic procedure, wherein the spectroscopic procedure is based at least in part on a comparison of amplitudes at a plurality of associated wavelengths transmitted or reflected from the blood.

31. (Previously Presented) The diagnostic system of Claim 27, wherein the control system is further coupled to a headset or a heads-up display.

32. (Previously Presented) The diagnostic system of Claim 27, wherein the control logic includes voice recognition software to process at least a portion of the voice input signals, and wherein the control system further comprises a voice recognition module.

33. (Currently Amended) The diagnostic system of Claim 27, wherein the control system is further capable of providing feedback control data associated at least in part with the physiological information or the position information to a device control module.~~physiological information is blood pressure, heart rate or blood oxygen level.~~

34. (Previously Presented) The diagnostic system of Claim 27, wherein the control system is further coupled to a proximity sensor.

35. (Previously Presented) The diagnostic system of Claim 27, wherein the control system is further coupled to an audio output device capable of communicating at least a part of the processed portion of the physiological information.

36. (Previously Presented) A diagnostic system comprising:
a light source comprising:

one or more semiconductor diodes generating an input light beam; and
a lens system configured to receive at least a portion of the input light beam and to communicate at least the portion of the input light beam onto a part of a user's body comprising blood, wherein at least the portion of the input light beam is used in a measurement on a user, wherein the measurement comprises a

spectroscopic procedure to measure a property of the blood, and wherein the spectroscopic procedure is based at least in part on a comparison of amplitudes at a plurality of associated wavelengths transmitted or reflected from the blood;

a software application capable of generating data based at least in part on the measurement on the user, wherein the data represents at least in part physiological information associated with the user;

the software application capable of operating on a control system adapted to receive, store and process at least a portion of the physiological information, the control system having a touch-screen, circuitry for obtaining position information from a location sensor, and a wireless transceiver to transmit wireless data over a wireless link, the wireless data comprising at least a part of the physiological information, wherein the control system is further capable of receiving voice input signals and manually entered input signals, and wherein the control system is further coupled to an audio output device; and

a host comprising:

a digital file for receiving and storing at least a portion of the wireless data;

control logic at the host to process at least the portion of the wireless data to generate a status of the user, wherein the control logic includes a voice recognition software to process at least a portion of the voice input signals;

a memory storage device for recording the status; and

an output for communicating at least a portion of the status or associated information over a communication link to one or more display output devices, wherein the one or more display output devices are located remotely from the host.

37. (Previously Presented) The diagnostic system of Claim 36, wherein the control system is further coupled to a headset or a heads-up display.

38. (Previously Presented) The diagnostic system of Claim 37, wherein gesture signals are capable of being generated in response to a head motion.

39. (Previously Presented) The diagnostic system of Claim 36, wherein the control system is further coupled to a proximity sensor.

40. (Previously Presented) The diagnostic system of Claim 36, wherein the host is adapted to permit access of the status or associated information stored on the host from two or more different locations remote from the host.

41. (New) The diagnostic system of Claim 36, wherein the control system is further capable of providing feedback control data associated at least in part with the physiological information or the position information to a device control module.

Remarks

Please enter this Preliminary Amendment “B” prior to substantive examination.

Claim 29 has been canceled without prejudice. Claims 23 and 33 have been amended. Claim 41 has been added.

The Examiner is invited to telephone Applicants’ attorney if it would advance the prosecution of this application.

No additional fee is believed to be due as a result of filing this paper. However, please charge any fees or credit any overpayments as a result of the filing of this paper to our Deposit Account No. 02-3978.

Respectfully submitted,

Mohammed N. ISLAM

By: /David S. Bir/

David S. Bir

Reg. No. 38,383

Attorney/Agent for Applicant

Date: February 4, 2015

BROOKS KUSHMAN P.C.

1000 Town Center, 22nd Floor

Southfield, MI 48075-1238

Phone: 248-358-4400

Fax: 248-358-3351

Electronic Acknowledgement Receipt	
EFS ID:	21396126
Application Number:	14476082
International Application Number:	
Confirmation Number:	6444
Title of Invention:	SYSTEM AND METHOD FOR VOICE CONTROL OF MEDICAL DEVICES
First Named Inventor/Applicant Name:	Mohammed N. ISLAM
Customer Number:	109543
Filer:	David S. Bir
Filer Authorized By:	
Attorney Docket Number:	OMNI 0110 PUSP10
Receipt Date:	04-FEB-2015
Filing Date:	03-SEP-2014
Time Stamp:	18:14:01
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		Prelim_Amd_B.pdf	46104 fd2569c5d9ca9e58d1dff2de502087aa57bd dacc	yes	8

	Multipart Description/PDF files in .zip description		
	Document Description	Start	End
	Preliminary Amendment	1	1
	Claims	2	7
	Applicant Arguments/Remarks Made in an Amendment	8	8
Warnings:			
Information:			
Total Files Size (in bytes):		46104	
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. <u>New Applications Under 35 U.S.C. 111</u> 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. <u>National Stage of an International Application under 35 U.S.C. 371</u> 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. <u>New International Application Filed with the USPTO as a Receiving Office</u> 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.			

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.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875				Application or Docket Number 14/476,082		Filing Date 09/03/2014		☐ 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), (l), 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))												
						TOTAL						
* If the difference in column 1 is less than zero, enter "0" in column 2.												
APPLICATION AS AMENDED – PART II												
(Column 1)		(Column 2)		(Column 3)								
AMENDMENT	02/04/2015		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR		PRESENT EXTRA		RATE (\$)		ADDITIONAL FEE (\$)	
	Total (37 CFR 1.16(i))		* 20		Minus ** 20		= 0		X \$80 =		0	
	Independent (37 CFR 1.16(h))		* 3		Minus *** 3		= 0		X \$420 =		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.												

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
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

109543 7590 04/20/2015
Brooks, Kushman P.C./Cheetah Omni MedSci
1000 Town Center
Twenty Second Floor
Southfield, MI 48075

EXAMINER

HELLNER, MARK

ART UNIT

PAPER NUMBER

3645

DATE MAILED: 04/20/2015

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/476,082	09/03/2014	Mohammed N. ISLAM	OMNI 0110 PUSP10	6444

TITLE OF INVENTION: SYSTEM AND METHOD FOR VOICE CONTROL OF MEDICAL DEVICES

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$960	\$0	\$0	\$960	07/20/2015

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)

109543 7590 04/20/2015
Brooks, Kushman P.C./Cheetah Omni MedSci
1000 Town Center
Twenty Second Floor
Southfield, MI 48075

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.
14/476,082	09/03/2014	Mohammed N. ISLAM	OMNI 0110 PUSP10	6444

TITLE OF INVENTION: SYSTEM AND METHOD FOR VOICE CONTROL OF MEDICAL DEVICES

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$960	\$0	\$0	\$960	07/20/2015

EXAMINER	ART UNIT	CLASS-SUBCLASS
HELLNER, MARK	3645	359-334000

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, 1 _____
- (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. 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
- ☐ Applicant asserting small entity status. See 37 CFR 1.27
- ☐ Applicant changing to regular undiscounted fee status.

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.

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.

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. _____



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 NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/476,082	09/03/2014	Mohammed N. ISLAM	OMNI 0110 PUSP10	6444

109543 7590 04/20/2015
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1000 Town Center
Twenty Second Floor
Southfield, MI 48075

EXAMINER

HELLNER, MARK

ART UNIT	PAPER NUMBER
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3645

DATE MAILED: 04/20/2015

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.

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. 14/476,082	Applicant(s) ISLAM, MOHAMMED N.	
	Examiner MARK HELLNER	Art Unit 3645	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 _____.
☐ 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 21-28 and 30-41. 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)	5. ☐ Examiner's Amendment/Comment
2. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date <u>9/3/2014</u>	6. ☒ Examiner's Statement of Reasons for Allowance
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material	7. ☐ Other _____.
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____.	

/MARK HELLNER/ Primary Examiner, Art Unit 3645	
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The present application is being examined under the pre-AIA first to invent provisions.

REASONS FOR ALLOWANCE

The following is an examiner's statement of reasons for allowance:

The cited prior art does not teach or suggest the whole combination of elements set forth by claims 21-28 and 30-41. For example, there is no teaching or suggestion in the prior art for combining:

a plurality of semiconductor diodes with light beams; a multiplexer capable of combining the plurality of semiconductor diode light beams and generating at least a multiplexed light beam comprising one or more wavelengths; one or more waveguide structures configured to receive at least a portion of the one or more wavelengths and to communicate at least the portion of the one or more wavelengths to an output end of the one or more waveguide structures to form an output beam; and a lens system configured to receive at least a portion of the output beam and to communicate at least the portion of the output beam onto a part of a user's body comprising blood to perform a measurement on a use;

Wherein the combination above used with:

a software application capable of generating data based at least in part on the measurement on the user, wherein the data represents at least in part physiological information associated with the user; the software application capable of operating on a control system adapted to receive, store and process at least a portion of the physiological information, the control system having a touch-screen, a proximity sensor,

Art Unit: 3645

and a wireless transceiver to transmit wireless data over a wireless link, the wireless data comprising at least a part of the physiological information, wherein the control system is further capable of receiving voice input signals and manually entered input signals; and a host comprising: a digital file for receiving and storing at least a portion of the wireless data; control logic at the host to process at least the portion of the wireless data to generate a status of the user; a memory storage device for recording the status; and an output for communicating at least a portion of the status or associated information over a communication link to one or more display output devices, wherein the one or more display output devices are located remotely from the host.

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."

Any inquiry concerning this communication should be directed to MARK HELLNER at telephone number (571)272-6981.

/MARK HELLNER/

Primary Examiner, Art Unit 3645

Notice of References Cited	Application/Control No. 14/476,082		Applicant(s)/Patent Under Reexamination ISLAM, MOHAMMED N.	
	Examiner MARK HELLNER		Art Unit 3645	Page 1 of 1

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*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
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*	B	US-8,679,011	03-2014	Islam, Mohammed N.	600/300
	C	US-			
	D	US-			
	E	US-			
	F	US-			
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EAST Search History**EAST Search History (Prior Art)**

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L1	1340	h01s3/302.cpc.	US-PGPUB; USPAT	OR	OFF	2015/03/19 14:55
L2	444	a61b5/0013.cpc.	US-PGPUB; USPAT	OR	OFF	2015/03/19 14:56
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L5	722	a61b5/7445.cpc.	US-PGPUB; USPAT	OR	OFF	2015/03/19 14:56
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L8	62	a61b5/749.cpc.	US-PGPUB; USPAT	OR	OFF	2015/03/19 14:57
L9	7854	1 or 2 or 3 or 4 or 5 or 6 or 7	US-PGPUB; USPAT	OR	OFF	2015/03/19 14:58
L10	129230	semiconductor with diode\$1	US-PGPUB; USPAT	OR	OFF	2015/03/19 14:58
L11	392	9 and 10	US-PGPUB; USPAT	OR	OFF	2015/03/19 14:59
L12	25891	(output with (light or beam or ray)) same (body or patient)	US-PGPUB; USPAT	OR	OFF	2015/03/19 15:00
L13	24	11 and 12	US-PGPUB; USPAT	OR	OFF	2015/03/19 15:00

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Application Number

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32	U.S. Patent and Trademark Office, Notice of Allowance and Fee(s) Due for USSN 12/206,432, filed 09/08/2008, Mohammed N. Islam, Attorney Docket No. 074036.0154, Date filed: August 28, 2009	☐

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Name/Print	David S. Bir	Registration Number	38383

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	Art Unit		
	Examiner Name		
	Attorney Docket Number	OMNI 0110 PUSP10	

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	1	EP1148666	EP		2001-10-24	Grant Andrew R et al.		☐
	~~2~~	~~WO04158959~~	~~WO~~		~~0000-00-00~~	~~No Inventor~~		☐
	~~3~~	~~WO09715249~~	~~WO~~		~~0000-00-00~~	~~No Inventor~~		☐
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☐ See attached certification statement.

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SIGNATURE

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Signature	/David S. Bir/	Date (YYYY-MM-DD)	2014-09-02
Name/Print	David S. Bir	Registration Number	38383

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Signature	/David S. Bir/	Date (YYYY-MM-DD)	2014-09-02
Name/Print	David S. Bir	Registration Number	38383

This collection of information is required by 37 CFR 1.97 and 1.98. 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 1 hour 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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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.
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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.

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ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /M.H./

Index of Claims 	Application/Control No. 14476082	Applicant(s)/Patent Under Reexamination ISLAM, MOHAMMED N.
	Examiner MARK HELLNER	Art Unit 3645

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant			☐ CPA			☐ T.D.			☐ R.1.47			
CLAIM			DATE									
Final	Original	03/19/2015										
	1	-										
	2	-										
	3	-										
	4	-										
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12	33	=										
13	34	=										
14	35	=										
15	36	=										

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CLAIM		DATE									
Final	Original	03/19/2015									
16	37	=									
17	38	=									
18	39	=									
19	40	=									
20	41	=									

EAST Search History**EAST Search History (Prior Art)**

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	1612	islam.in.	US-PGPUB; USPAT	OR	OFF	2015/03/19 14:42
L2	164568	medical with device	US-PGPUB; USPAT	OR	OFF	2015/03/19 14:42
L3	27	1 and 2	US-PGPUB; USPAT	OR	OFF	2015/03/19 14:43

3/ 19/ 2015 2:45:44 PM

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	Filing Date		
	First Named Inventor	Mohammed N. ISLAM	
	Art Unit		
	Examiner Name		
	Attorney Docket Number	OMNI 0110 PUSP10	

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	1	6885683		2005-04-26	FERMANN ET AL.	
	2	6281471	B1	2001-08-28	SMART	
	3	6340806		2002-01-22	SMART ET AL.	
	4	6301271	B1	2001-10-09	SANDERS ET AL.	
	5	7294105	B1	2007-11-13	ISLAM	
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	1	20100046067	A1	2010-02-25	FERMANN ET AL.	

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	2	20080105665	A1	2008-05-08	KONDO	
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	1	ISTEPANIAN, ROBERT H., "The Comparative Performance of Mobile Telemedical Systems based on the IS-54 and GSM Cellular Telephone Standards"; Journal of Telemedicine and Telecare 1999; pp 97-104						☐
	2	ARIS, ISHAK BIN, "An Internet-Based Blood Pressure Monitoring System for Patients"; Journal of Telemedicine and Telecare 2001; pp 51-53.						☐

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First Named Inventor	Mohammed N. ISLAM
Art Unit	
Examiner Name	
Attorney Docket Number	OMNI 0110 PUSP10

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☐ See attached certification statement.

☐ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

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Signature	/David S. Bir/	Date (YYYY-MM-DD)	2014-09-02
Name/Print	David S. Bir	Registration Number	38383

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	First Named Inventor	Mohammed N. ISLAM	
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	Examiner Name		
	Attorney Docket Number	OMNI 0110 PUSP10	

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	1	5084880		1992-01-28	Esterowitz, et al.	
	2	5180378		1993-01-19	Kung, et al.	
	3	5400165		1995-03-21	Gnauck, et al.	
	4	5458122		1995-10-17	Hethuin	
	5	5617871		1997-04-08	Burrows	
	6	5631758		1997-05-20	Knox, et al.	
	7	5687734		1997-11-18	Dempsey, et al.	
	8	5696778		1997-12-09	MacPherson	

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	Examiner Name		
	Attorney Docket Number	OMNI 0110 PUSP10	

	9	5704351		1998-01-06	Mortara, et al.	
	10	5718234		1998-02-17	Warden, et al.	
	11	5748103		1998-05-05	Flach, et al.	
	12	5855550		1999-01-05	Lai, et al.	
	13	5862803		1999-01-26	Besson, et al.	
	14	5867305		1999-02-02	Waarts, et al.	
	15	5912749		1999-06-15	Harstead, et al.	
	16	5944659		1999-08-31	Flach, et al.	
	17	5957854		1999-09-28	Besson, et al.	
	18	6014249		2000-01-11	Fermann, et al.	
	19	6043927		2000-03-28	Islam	

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Application Number

Filing Date

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Mohammed N. ISLAM

Art Unit

Examiner Name

Attorney Docket Number

OMNI 0110 PUSP10

20	6289238		2001-09-11	Besson, et al.	
21	6333803		2001-12-25	Kurotori, et al.	
22	6364834		2002-04-02	Reuss, et al.	
23	6381391		2002-04-30	Islam, et al.	
24	6402691		2002-06-11	Peddicord, et al.	
25	6407853		2002-06-18	Samson, et al.	
26	6441747		2002-08-27	Khair, et al.	
27	6443890		2002-09-03	Schulze, et al.	
28	6454705		2002-09-24	Cosentino, et al.	
29	6480656		2002-11-12	Islam, et al.	
30	6549702		2003-04-15	Islam, et al.	

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	31	6603910		2003-08-05	Islam, et al.	
	32	6659947		2003-12-09	Carter, et al.	
	33	6802811		2004-10-12	Slepian	
	34	7167300		2007-01-23	Fermann, et al.	
	35	7209657		2007-04-24	Islam	
	36	7263288		2007-08-28	Islam	
	37	7519253		2009-04-14	Islam	

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	1	20020013518		2002-01-31	West, Kenneth G. ; et al.	
	2	20020019584		2002-02-14	Schulze, Arthur E. ; et al.	

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	Examiner Name		
	Attorney Docket Number	OMNI 0110 PUSP10	

	3	20020032468		2002-03-14	Hill, Michael R.S. ; et al.	
	4	20020082612		2002-06-27	Moll, Frederic H. ; et al.	
	5	20020109621		2002-08-15	Khair, Mohammad ; et al.	
	6	20020115914		2002-08-22	Russ, Tomas	
	7	20020178003		2002-11-28	Gehrke, James K. ; et al.	
	8	20040174914		2004-09-09	Fukatsu, Susumu	
	9	20040240037		2004-12-02	Harter, Donald J.	
	10	20050111500		2005-05-26	Harter, Donald J. ; et al.	
	11	20060245461		2006-11-02	Islam; Mohammed N.	
	12	20060268393		2006-11-30	Islam; Mohammed N.	
	13	20070078348		2007-04-05	Holman; Hoi-Ying N.	

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	14	20090028193		2009-01-29	Islam; Mohammed N.	
	15	20090204110		2009-08-13	Islam; Mohammed N.	

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	1	200189362	WO		2001-11-29	West Kenneth G et al.		☐
	2	200227640	WO		2002-04-04	Whittington Charles Lynn et al.		☐
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☐ Fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ None

SIGNATURE

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Signature	/David S. Bir/	Date (YYYY-MM-DD)	2014-09-02
Name/Print	David S. Bir	Registration Number	38383

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	Filing Date		
	First Named Inventor	Mohammed N. ISLAM	
	Art Unit		
	Examiner Name		
	Attorney Docket Number	OMNI 0110 PUSP10	

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Application Number

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Mohammed N. ISLAM

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OMNI 0110 PUSP10

1	Islam, M. N., et al., "Broad bandwidths from frequency-shifting solitons in fibers", OPTICS LETTERS, Vol. 14, No. 7, April 1, 1989, pages 370-372.	☐
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3	Busse, Lynda E., et al., "Design Parameters for Fluoride Multimode Fibers", Journal of Lightwave Technology, Vol. 9, No. 7, July 1991, pages 828-831.	☐
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12	latridis, James C., et al., "Is the Nucleus Pulposus a Solid or a Fluid? Mechanical Behaviors of the Nucleus Pulposus of the Human Intervertebral Disc", Spine, Volume 21(10), May 15, 1996, pages 1174-1184.	☐
13	Asobe, Masaki, "Nonlinear Optical Properties of Chalcogenide Glass Fibers and Their Application to All-Optical Switching", Optical Fiber Technology, Volume 3, Article No. OF970214, 1997, pages 142-148.	☐
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19	Lucas, Jacques, "Infrared glasses", Current Opinion in Solid State & Materials Science 4, 1999, pages 181-187.	☐
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21	Nishida, Yoshiki, et al., "Reliability of Fluoride Fiber Module for Optical Amplifier Use", IEEE Photonics Technology Letters, Vol. 11, No. 12, December 1999, pages 1596-1598.	☐
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23	Urban, J. P. G., et al., "The Nucleus of the Intervertebral Disc from Development to Degeneration" Amer. Zool., Volume 40, 2000, pages 53-61.	☐
24	Hamilton, James D., et al., "High Frequency Optoacoustic Arrays Using Etalon Detection", IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control, Vol. 47, No. 1, January 2000, pages 160-169.	☐
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34	Harbold, J. M., et al., "Highly nonlinear As-S-Se glasses for all-optical switching", OPTICS LETTERS, Vol. 27, No. 2, January 15, 2002, pages 119-121.	☐
35	Coen, Stephane, et al., "Supercontinuum generation by stimulated Raman scattering and parametric four-wave mixing in photonic crystal fibers", J. Opt. Soc. Am. B, Vol. 19, No. 4, April 2002, pages 753-764.	☐
36	Dudley, John M., et al., "Supercontinuum generation in air-silica microstructured fibers with nanosecond and femtosecond pulse pumping", J. Opt. Soc. Am. B, Vol. 19, No. 4, April 2002, pages 765-771.	☐
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43	Sobol, Emil, et al., "Time-resolved, light scattering measurements of cartilage and cornea denaturation due to free electron laser radiation", Journal of Biomedical Optics, Vol. 8, No. 2, April 2003, pages 216-222.	☐
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45	Faralli, S., et al., "Impact of Double Rayleigh Scattering Noise in Distributed Higher Order Raman Pumping Schemes", IEEE Photonics Technology Letters, Vol. 15, No. 6, June 2003, pages 804-806.	☐
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Application Number	
Filing Date	
First Named Inventor	Mohammed N. ISLAM
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Signature	/David S. Bir/	Date (YYYY-MM-DD)	2014-09-02
Name/Print	David S. Bir	Registration Number	38383

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	Examiner MARK HELLNER	Art Unit 3645

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Symbol	Date	Examiner
H01S3/302; A61B5/0013; A61B5/0075; A61B5/7264; A61B5/7445; A61B5/02042; A61B5/742; A61B5/749	3/19/2015	/MH/

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Issue Classification 	Application/Control No. 14476082	Applicant(s)/Patent Under Reexamination ISLAM, MOHAMMED N.	
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CPC					
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A61B	5	0075		F	2013-01-01
H01S	3	302		I	2013-01-01
A61B	5	1455		I	2013-01-01
A61B	5	0013		I	2013-01-01
A61B	5	02042		I	2013-01-01
A61B	5	021		I	2013-01-01
A61B	5	14551		I	2013-01-01
A61B	5	7264		I	2013-01-01
A61B	5	7445		I	2013-01-01
A61B	5	749		I	2013-01-01
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Issue Classification 	Application/Control No. 14476082	Applicant(s)/Patent Under Reexamination ISLAM, MOHAMMED N.
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		
	Filing Date		
	First Named Inventor	Mohammed N. ISLAM	
	Art Unit		
	Examiner Name		
	Attorney Docket Number	OMNI 0110 PUSP10	

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Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear
	1	6246896	B1	2001-06-12	DUMOULIN	
	2	6285897	B1	2001-09-04	KILCOYNE	
	3	6847336	B1	2005-01-25	LEMELSON	
	4	6868285	B2	2005-03-15	MULLER-DETHLEFS	
	5	7236618	B1	2007-06-26	CHUI ET AL.	
	6	7456965	B2	2008-11-25	WANG	
	7	7633673	B1	2009-12-15	ISLAM	
	8	7949017	B2	2011-05-24	MARCIANTE ET AL.	

/Mark Hellner/

03/18/2015

Receipt date: 09/03/2014 INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number			
	Filing Date			
	First Named Inventor	Mohammed N. ISLAM		
	Art Unit			
	Examiner Name			
	Attorney Docket Number	OMNI 0110 PUSP10		

	9	8098423	B2	2012-01-17	ISLAM	
	10	8472108	B2	2013-06-25	ISLAM	

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Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T ⁵
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	Filing Date		
	First Named Inventor	Mohammed N. ISLAM	
	Art Unit		
	Examiner Name		
	Attorney Docket Number	OMNI 0110 PUSP10	

EXAMINER SIGNATURE			
Examiner Signature	/Mark Hellner/	Date Considered	03/18/2015
*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.			
¹ See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. ² Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). ³ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁴ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁵ Applicant is to place a check mark here if English language translation is attached.			

Receipt date: 09/03/2014

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**
(Not for submission under 37 CFR 1.99)

Application Number	
Filing Date	
First Named Inventor	Mohammed N. ISLAM
Art Unit	
Examiner Name	
Attorney Docket Number	OMNI 0110 PUSP10

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

☐ See attached certification statement.

☐ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/David S. Bir/	Date (YYYY-MM-DD)	2014-09-02
Name/Print	David S. Bir	Registration Number	38383

This collection of information is required by 37 CFR 1.97 and 1.98. 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 1 hour 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.**

/Mark Hellner/

03/18/2015

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.

/Mark Hellner/

03/18/2015

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /M.H./



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 Alexandria, Virginia 22313-1450
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BIB DATA SHEET

CONFIRMATION NO. 6444

SERIAL NUMBER	FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.		
14/476,082	09/03/2014	359	3645	OMNI 0110 PUSP10		
RULE						
APPLICANTS Omni MedSci, Inc., Ann Arbor, MI, Assignee (with 37 CFR 1.172 Interest); INVENTORS Mohammed N. ISLAM, Ann Arbor, MI;						
** CONTINUING DATA ***** This application is a CON of 14/186,814 02/21/2014 which is a CON of 13/913,678 06/10/2013 PAT 8848282 which is a CON of 13/531,853 06/25/2012 PAT 8679011 which is a CON of 13/349,244 01/12/2012 PAT 8472108 which is a CON of 13/078,547 04/01/2011 which is a DIV of 12/625,253 11/24/2009 PAT 8098423 which is a DIV of 12/206,432 09/08/2008 PAT 7633673 which is a DIV of 10/812,608 03/30/2004 PAT 7433116 which is a CON of 10/757,341 01/13/2004 PAT 7259906 which is a CON of 10/652,276 08/29/2003 ABN which claims benefit of 60/408,025 09/03/2002						
** FOREIGN APPLICATIONS *****						
** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ** 09/11/2014						
Foreign Priority claimed ☐ Yes ☒ No 35 USC 119(a-d) conditions met ☐ Yes ☒ No Verified and Acknowledged <u>/MARK HELLNER/</u> Examiner's Signature		☐ Met after Allowance Initials	STATE OR COUNTRY MI	SHEETS DRAWINGS 7	TOTAL CLAIMS 20	INDEPENDENT CLAIMS 3
ADDRESS Brooks, Kushman P.C./Cheetah Omni MedSci 1000 Town Center Twenty Second Floor Southfield, MI 48075 UNITED STATES						
TITLE SYSTEM AND METHOD FOR VOICE CONTROL OF MEDICAL DEVICES						
FILING FEE RECEIVED 1600	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		

Receipt date: 09/03/2014

Doc code: IDS

Doc description: Information Disclosure Statement (IDS) Filed

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	Filing Date		
	First Named Inventor	Mohammed N. ISLAM	
	Art Unit		
	Examiner Name		
	Attorney Docket Number	OMNI 0110 PUSP10	

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Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear
	1	7789800		2010-09-07	Watterson, et al.	
	2	6701271		2004-03-02	Willner, et al.	
	3	6585622		2003-07-01	Shum, et al.	
	4	5676138		1997-10-14	Zawilinski	
	5	5906581		1999-05-25	Tsuda	
	6	5598849		1997-02-04	Browne	
	7	6193631		2001-02-27	Hickman	
	8	4867442		1989-09-19	Matthews	

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Receipt date: 09/03/2014 INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		
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	First Named Inventor	Mohammed N. ISLAM	
	Art Unit		
	Examiner Name		
	Attorney Docket Number	OMNI 0110 PUSP10	

	9	3744712		1973-07-10	Papadopoulos, et al.	
	10	6292688		2001-09-18	Patton	
	11	6013007		2000-01-11	Root, et al.	
	12	4860763		1989-08-29	Schminke	
	13	6605038		2003-08-12	Teller, et al.	
	14	6463385		2002-10-08	Fry	
	15	6198394		2001-03-06	Jacobsen, et al.	

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	1	20020111541		2002-08-15	Bibl, et al.	

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	Attorney Docket Number	OMNI 0110 PUSP10	

Examiner Initial*	Cite No	Foreign Document Number ³	Country Code ² i	Kind Code ⁴	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear	T ⁵
	1	WO9930613	WO		1998-12-09	Margulis, et al.		☐
	2	WO8705727	WO		1987-03-11	Schweikhardt, et al.		☐
	3	WO1999030613	WO		1998-12-09	Margulis, et al.		☐
	4	WO1997049077	WO		1997-06-16	Kuusela, et al.		☐

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	1		☐

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First Named Inventor	Mohammed N. ISLAM
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Examiner Name	
Attorney Docket Number	OMNI 0110 PUSP10

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☐ See attached certification statement.

☐ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/David S. Bir/	Date (YYYY-MM-DD)	2014-09-02
Name/Print	David S. Bir	Registration Number	38383

This collection of information is required by 37 CFR 1.97 and 1.98. 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 1 hour 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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/Mark Hellner/

03/18/2015

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /M.H./

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)

109543 7590 04/20/2015
 Brooks, Kushman P.C./Cheetah Omni MedSci
 1000 Town Center
 Twenty Second Floor
 Southfield, MI 48075

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.
14/476,082	09/03/2014	Mohammed N. ISLAM	OMNI 0110 PUSP10	6444

TITLE OF INVENTION: SYSTEM AND METHOD FOR VOICE CONTROL OF MEDICAL DEVICES

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$960	\$0	\$0	\$960	07/20/2015

EXAMINER	ART UNIT	CLASS-SUBCLASS
HELLNER, MARK	3645	359-334000

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 Brooks Kushman P.C.

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

OMNI MEDSCI, INC.

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Ann Arbor, MI

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 02-3978 (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

☐ Applicant asserting small entity status. See 37 CFR 1.27

☐ Applicant changing to regular undiscounted fee status.

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.

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.

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 /David S. Bir/

Date April 28, 2015

Typed or printed name David S. Bir

Registration No. 38,383

Electronic Patent Application Fee Transmittal				
Application Number:		14476082		
Filing Date:		03-Sep-2014		
Title of Invention:		SYSTEM AND METHOD FOR VOICE CONTROL OF MEDICAL DEVICES		
First Named Inventor/Applicant Name:		Mohammed N. ISLAM		
Filer:		David S. Bir/Pamela Demos		
Attorney Docket Number:		OMNI 0110 PUSP10		
Filed as Large Entity				
Filing Fees for Utility under 35 USC 111(a)				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
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Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Utility Appl Issue Fee	1501	1	960	960

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				960

Electronic Acknowledgement Receipt	
EFS ID:	22184952
Application Number:	14476082
International Application Number:	
Confirmation Number:	6444
Title of Invention:	SYSTEM AND METHOD FOR VOICE CONTROL OF MEDICAL DEVICES
First Named Inventor/Applicant Name:	Mohammed N. ISLAM
Customer Number:	109543
Filer:	David S. Bir
Filer Authorized By:	
Attorney Docket Number:	OMNI 0110 PUSP10
Receipt Date:	28-APR-2015
Filing Date:	03-SEP-2014
Time Stamp:	14:09:10
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$ 960
RAM confirmation Number	404
Deposit Account	023978
Authorized User	BIR, DAVID S.

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees)

Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)

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)	312_Amendment.pdf	27490 3e41f1be1c6eccaf736c2f47571a4627043af689f	no	3
Warnings:					
Information:					
2	Issue Fee Payment (PTO-85B)	Issue_Fee_Transmittal.pdf	299574 56427c6e46a4c0aac6581084266b043f24d7b6d0	no	1
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	30677 fab42749f88ed254a41f047a27002337e38aa075	no	2
Warnings:					
Information:					
Total Files Size (in bytes):			357741		
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. <u>New Applications Under 35 U.S.C. 111</u> 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. <u>National Stage of an International Application under 35 U.S.C. 371</u> 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. <u>New International Application Filed with the USPTO as a Receiving Office</u> 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

In re application of:

Group Art Unit: 3645

Mohammed N. ISLAM

Examiner: Mark Hellner

Serial No.: 14/476,082

Filed: September 3, 2014

For: SYSTEM AND METHOD FOR VOICE CONTROL OF MEDICAL
DEVICES

Attorney Docket No.: OMNI 0110 PUSP10

AMENDMENT AFTER ALLOWANCE UNDER 37 C.F.R. § 1.312

Commissioner for Patents
U.S. Patent & Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

Commissioner:

Please amend the above-identified application as follows:

Amendments to the Specification:

On page 1, after Paragraph [0002], please delete the section title “OVERVIEW”.

On pages 1-2, please delete the entire Paragraph [0003] in addition to the preceding section title “OVERVIEW” as noted above.

Remarks

Applicant has deleted the “OVERVIEW” section including the title and associated text of paragraph [0003] as it is a description of one embodiment of the invention, which does not embody the scope of the allowed claims.

Upon review of the published application (US 2014/0371555 A1) Applicant notes that changes to the specification made by preliminary amendment filed on 9/14/2014 to the “SUMMARY OF EXAMPLE EMBODIMENTS” section were not included in the publication, although changes to the claims and abstract made in that preliminary amendment were incorporated into the publication. As such, the Examiner is requested to verify that the specification changes to the “SUMMARY OF EXAMPLE EMBODIMENTS” was properly entered into the record.

The Examiner is invited to telephone the undersigned to discuss any issues that may advance prosecution of this application.

Please charge any fees or credit any overpayments as a result of the filing of this paper to our Deposit Account No. 02-3978.

Respectfully submitted,

Mohammed N. ISLAM

By: /David S. Bir/
David S. Bir
Reg. No. 38,383
Attorney/Agent for Applicant

Date: April 28, 2015

BROOKS KUSHMAN P.C.
1000 Town Center, 22nd Floor
Southfield, MI 48075-1238
Phone: 248-358-4400
Fax: 248-358-3351

OK TO ENTER: /M.H./

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

Group Art Unit: 3645

Mohammed N. ISLAM

Examiner: Mark Hellner

Serial No.: 14/476,082

Filed: September 3, 2014

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AMENDMENT AFTER ALLOWANCE UNDER 37 C.F.R. § 1.312

Commissioner for Patents
U.S. Patent & Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

Commissioner:

Please amend the above-identified application as follows:



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/476,082	09/03/2014	Mohammed N. ISLAM	OMNI 0110 PUSP10	6444
109543 7590 05/20/2015 Brooks, Kushman P.C./Cheetah Omni MedSci 1000 Town Center Twenty Second Floor Southfield, MI 48075			EXAMINER HELLNER, MARK	
			ART UNIT 3645	PAPER NUMBER
			NOTIFICATION DATE 05/20/2015	DELIVERY MODE ELECTRONIC

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.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docketing@brookskushman.com

Response to Rule 312 Communication	Application No. 14/476,082	Applicant(s) ISLAM, MOHAMMED N.
	Examiner MARK HELLNER	Art Unit 3645
-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address -- 1. ☒ The amendment filed on <u>28 April 2015</u> 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.		
		/MARK HELLNER/ Primary Examiner, Art Unit 3645

Amendments to the Specification:

On page 1, after Paragraph [0002], please delete the section title “OVERVIEW”.

On pages 1-2, please delete the entire Paragraph [0003] in addition to the preceding section title “OVERVIEW” as noted above.

Receipt date: 09/03/2014

Doc code: IDS

Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (01-10)

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.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		
	Filing Date		
	First Named Inventor	Mohammed N. ISLAM	
	Art Unit		
	Examiner Name		
	Attorney Docket Number	OMNI 0110 PUSP10	

U.S. PATENTS						Remove
Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear
	1	5747806		1998-05-05	Khalil	
	2	6115673		2000-09-05	Malin	
	3	6512936	B1	2003-01-28	MONFRE	
Change(s) applied to document, /M.K./ 5/6/2015	4	6534012	B1	~~2003-04-01~~	~~WOWANATHAN~~ Hazen, et al.	March 18, 2003
	5	6640117		2003-10-28	Makarewicz	
	6	6788965	B2	2004-09-07	RUCHTI	
	7	6816241		2004-11-09	Grubisic	
	8	6738652	B2	2004-05-18	MATTU	

/Mark Hellner/

03/18/2015



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APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/476,082	06/16/2015	9055868	OMNI 0110 PUSP10	6444

109543 7590 05/27/2015
Brooks, Kushman P.C./Cheetah Omni MedSci
1000 Town Center
Twenty Second Floor
Southfield, MI 48075

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 0 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):

Mohammed N. ISLAM, Ann Arbor, MI;
Omni MedSci, Inc., Ann Arbor, MI;

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.