

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
14 May 2010 (14.05.2010)

(10) International Publication Number
WO 2010/053916 A3

(51) International Patent Classification:

A61B 5/1473 (2006.01) A61B 1/012 (2006.01)
A61B 5/027 (2006.01)

(21) International Application Number:

PCT/US2009/063116

(22) International Filing Date:

3 November 2009 (03.11.2009)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

61/111,162 4 November 2008 (04.11.2008) US

(71) Applicant (for all designated States except US): **STERLING LC** [US/US]; 360 Wakara Way, Salt Lake City, UT 84108 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **JACOBSEN, Stephen, C.** [US/US]; 274 South 1200 East, Salt Lake City, UT 84102 (US). **MARCEAU, David** [US/US]; 1662 East Princeton Avenue, Salt Lake City, UT 84105 (US).

(74) Agents: **HANSEN, Jed, H.** et al.; Thorpe North & Western, LLP, P.O.Box 1219, Sandy, UT 84091 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM,

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

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report (Art. 21(3))
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

(88) Date of publication of the international search report:

26 August 2010

(54) Title: METHOD AND DEVICE FOR WAVELENGTH SHIFTED IMAGING

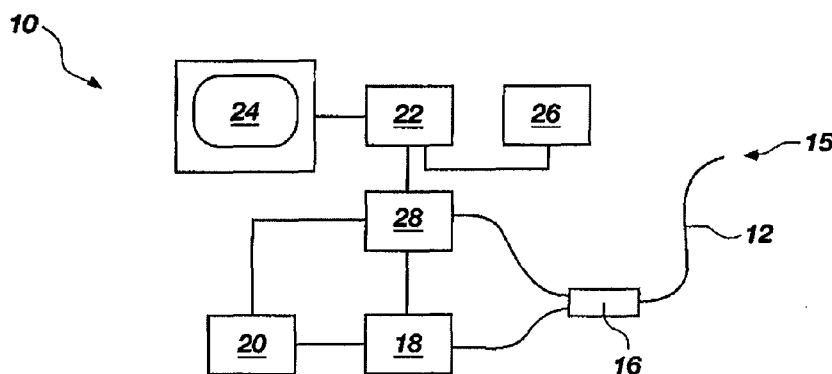


FIG. 1

(57) Abstract: A micro-camera catheter device is disclosed comprising at least one light source disposed on a distal end of a catheter. The light source is capable of propagating a predetermined wavelength of light with a wavelength between approximately 1000 nanometers and approximately 2000 nanometers onto a target. The device further comprises a lens system disposed on the distal end of the catheter, said lens system configured to receive light reflected from the target. The device further comprises a non-linear optical media disposed behind the lens system configured to modify the light reflected from the target. The device also comprises a silicon-based solid state imaging device disposed behind the non-linear optical media configured to receive light from the non-linear optical media.



WO 2010/053916 A3

A. CLASSIFICATION OF SUBJECT MATTER*A61B 5/1473(2006.01)i, A61B 5/027(2006.01)i, A61B 1/012(2006.01)i*

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

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A61B 5/1473; A61B 5/00; A61B 5/05; A61B 6/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

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

eKOMPASS(KIPO internal) & Keywords: camerar, catheter

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2004-0097804 A1 (LIOR SOBE) 20 May 2004 See paragraph [0054] - paragraph [0129]; abstract and figures 1A-15.	1-23
A	US 2003-0092995 A1 (DAVID L. THOMPSON) 15 May 2003 See paragraph [0025] - paragraph [0035]; abstract and figures 1-6.	1-23
A	US 5517997 A (FONTENOT; MARK G.) 21 May 1996 See column 3, line 20 - column 6, line 36; abstract and figures 1-3.	1-23

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

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

14 JUNE 2010 (14.06.2010)

Date of mailing of the international search report

01 JULY 2010 (01.07.2010)

Name and mailing address of the ISA/KR

Korean Intellectual Property Office
Government Complex-Daejeon, 139 Seonsa-ro, Seo-gu,
Daejeon 302-701, Republic of Korea

Facsimile No. 82-42-472-7140

Authorized officer

PARK, TAE WOOK

Telephone No. 82-42-481-8226



INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2009/063116

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2004-0097804 A1	20.05.2004	AU 2003-276673 A1	15.06.2004
		AU 2003-276673 A8	15.06.2004
		CA 2504613-A1	03.06.2004
		EP 1585434 A2	19.10.2005
		JP 2006-516203 A	29.06.2006
		US 2004-097804 A1	20.05.2004
		WO 2004-045363 A2	03.06.2004
		WO 2004-045363 A3	03.06.2004
		US 2003-0092995 A1	15.05.2003
EP 1511426 A2	09.03.2005		
JP 2005-518861 A	30.06.2005		
US 2003-092995 A1	15.05.2003		
WO 03-073942 A2	12.09.2003		
WO 03-073942 A3	12.09.2003		
US 5517997 A	21.05.1996	CA 2200063 C	25.11.2003
		EP 0781111 A1	17.11.2004
		EP 0781111 A1	02.07.1997
		EP 0781111 A4	12.11.1997
		JP 10-508222 A	18.08.1998
		US 2002-0099293 A1	25.07.2002
		US 6597941 B2	22.07.2003
		WO 96-09001 A1	28.03.1996