(19) World Intellectual Property Organization International Bureau





(43) International Publication Date 7 November 2002 (07.11.2002)

PCT

(10) International Publication Number WO 02/088705 A3

(51) International Patent Classification⁷: A61B 5/00, 1/00

(21) International Application Number: PCT/US02/13947

(22) International Filing Date: 1 May 2002 (01.05.2002)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data: 60/287,899 1 May 2001 (01.05.2001) US

- (71) Applicant (for all designated States except US): THE GENERAL HOSPITAL CORPORATION [—/—]; 55 Fruit Street, Boston, MA 02114 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): TEARNEY, Guillermo, J. [US/US]; 118 Kinnaird Steet Number 3, Cambridge, MA 02139 (US). BOUMA, Brett, Eugene [US/US]; 12 Monmouth Street, Quincy, MA 02171 (US).

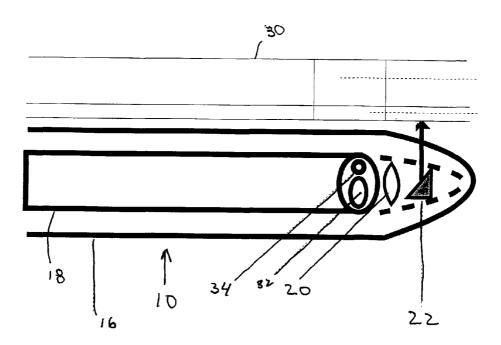
- (74) Agent: BERNSTEIN, Jason, A.; Bernstein & Associates, P.C., 6600 Peachtree Dunwoody Road, N.E., Embassy Row, Suite 495, Atlanta, GA (US).
- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW.
- (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

with international search report

[Continued on next page]

(54) Title: METHOD AND APPARATUS FOR DETERMINATION OF ATHEROSCLEROTIC PLAQUE TYPE BY MEASURE-MENT OF TISSUE OPTICAL PROPERTIES



(57) Abstract: Methods for diagnosing vulnerable atherosclerotic plaque using optical coherence tomography to measure tissue optical properties, including backreflectance of heterogeneous layers, such as plaque cap, lipid pool composition and macrophage presence. Methods also include measurement of spatially and temporally dependent reflectance, measurement of multiple wavelength reflectance, low coherence interferometry, polarization and quantification of macrophage content.



70 02/088705 A3

WO 02/088705 A3



(88) Date of publication of the international search report: 20 March 2003

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

Internat Application No PCT/US 02/13947

A. CLASSIFICATION OF SUBJECT MATTER IPC 7 A61B5/00 A61E A61B1/00 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) IPC 7 A61B Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Electronic data base consulted during the international search (name of data base and, where practical, search terms used) EPO-Internal C. DOCUMENTS CONSIDERED TO BE RELEVANT Citation of document, with indication, where appropriate, of the relevant passages Relevant to claim No. Category 9 11,12 WO 97 32182 A (TEARNEY) χ 4 September 1997 (1997-09-04) page 8, line 13 -page 10, line 20 page 19, line 14 -page 20, line 13 page 2, line 15 - line 29 13 Υ WO 93 03672 A (REDD) 4 March 1993 (1993-03-04) page 16, line 23 -page 17, line 10 US 6 048 742 A (WEYBURNE & AL) 2,3 Α 11 April 2000 (2000-04-11) column 10, line 49 -column 11, line 27 US 5 353 790 A (JACQUES & AL) 2,4 11 October 1994 (1994-10-11) column 2, line 40 -column 4, line 22 Further documents are listed in the continuation of box C. Patent family members are listed in annex. Special categories of cited documents: "T" later document published after the international filing date or priority date and not in conflict with the application but "A" document defining the general state of the art which is not cited to understand the principle or theory underlying the considered to be of particular relevance invention "E" earlier document but published on or after the international "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) 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 docu-"O" document referring to an oral disclosure, use, exhibition or ments, such combination being obvious to a person skilled document published prior to the international filing date but later than the priority date claimed "&" document member of the same patent family Date of mailing of the international search report Date of the actual completion of the international search 6 November 2002 13/11/2002 Authorized officer Name and mailing address of the ISA

Form PCT/ISA/210 (second sheet) (July 1992)

Fax: (+31-70) 340-3016

European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,

Lemercier, D

INTERNATIONAL SEARCH REPORT

Interna Application No
PCT/US 02/13947

		PCT/US 02,	/1394/		
	ation) DOCUMENTS CONSIDERED TO BE RELEVANT				
Category °	Citation of document, with indication, where appropriate, of the relevant passages		Relevant to claim No.		
A	US 6 091 984 A (PERELMAN & AL) 18 July 2000 (2000-07-18) column 7, line 21 -column 8, line 2		4		
X	US 5 486 701 A (NORTON & AL) 23 January 1996 (1996-01-23) claim 1	7			
A	US 6 033 721 A (NASSUPHIS) 7 March 2000 (2000-03-07) column 11, line 61 -column 14, line 37		8-10		

INTERNATIONAL SEARCH REPORTmation on patent family members

Application No PCT/US 02/13947

	nt document n search report		Publication date		Patent family member(s)		Publication date
WO 9	732182	A	04-09-1997	US	6134003	A	17-10-2000
5		,,	3, 00 200,	AU	1977597		16-09-1997
				EP	0883793	A1	16-12-1998
				JP	2000503237	Ţ	21-03-2000
				JP	2002214127	Α	31-07-2002
				US	6111645	Α	29-08-2000
				WO	9732182	A1	04-09-1997
				US	6160826	Α	12-12-2000
				US	6282011		28-08-2001
				US	5956355		21-09-1999
				US	2001036002	A1	01-11-2001
WO 9	303672	A	04-03-1993	AU	2519892	Α	16-03-1993
				WO	9303672	A1	04-03-1993
US 6	048742	A	11-04-2000	NONE			
US 5	353790	A	11-10-1994	NONE			
US 6	091984	 А	18-07-2000	 AU	9693298	Α	03-05-1999
				CA	2305898	A1	22-04-1999
				CN	1278153	T	27-12-2000
				EP	1021126		26-07-2000
				JP	2001519190		23-10-2001
				WO	9918845	A1	22-04-1999
US 5	486701	A	23-01-1996	US	5747813	Α	05-05-1998
US 6	033721		07-03-2000	NONE			