

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
23 March 2006 (23.03.2006)

PCT

(10) International Publication Number
WO 2006/031258 A3

(51) International Patent Classification:
G01B 11/02 (2006.01)

(21) International Application Number:
PCT/US2005/012692

(22) International Filing Date: 13 April 2005 (13.04.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/561,989 13 April 2004 (13.04.2004) US

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

AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, 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, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

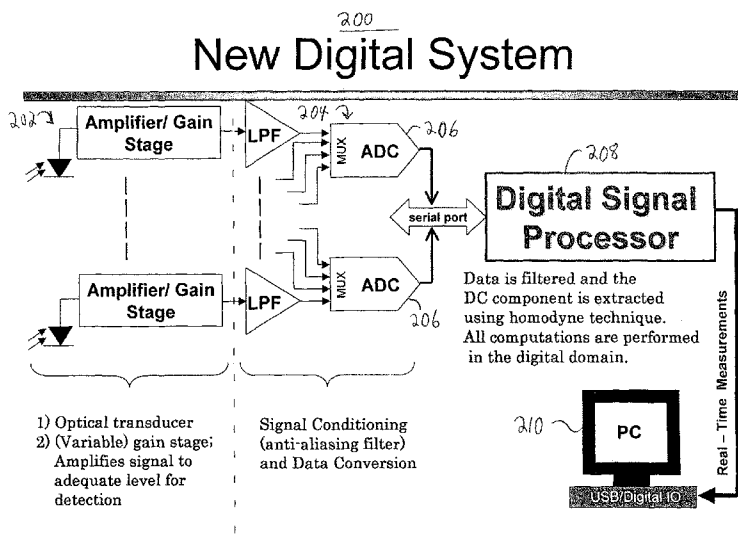
- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(88) Date of publication of the international search report:
22 November 2007

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.

(54) Title: DIGITAL SIGNAL PROCESSOR-BASED DETECTION SYSTEM, METHOD, AND APPARATUS FOR OPTICAL TOMOGRAPHY

New Digital System



(57) Abstract: The present invention provides systems, methods and apparatuses that perform digital detection for use in optical tomography. Methods and systems are provided in which digital lock-in detection is performed using an algorithm that employs a phase-independent quadrature technique. Methods and systems are provided in which a unique manipulation of an ordinary averaging filter optimized for sources discrimination and the consequent sampling constraints is presented as a novel filtering scheme for the lock-in detection. Systems and apparatuses are provided which include a digital signal processor which performs digital lock-in detection and an integrated complex programmable logic device for timing control. Apparatuses are provided which include an instrument having an integrated digital signal processor for performing digital processing and detection for use in optical tomography.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US05/12692

A. CLASSIFICATION OF SUBJECT MATTER

IPC: **G01B 11/02**(2006.01)

USPC: 356/497

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)

U.S. : 356/497, 479

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 practicable, search terms used)

Please See Continuation Sheet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	"Primate retina imaging with polarization-sensitive optical coherence tomography" Ducros et al. December 2001, J. Opt. Soc. Am. A, Vol 18, No. 12, pp. 2945-2956.	1-51

☐ 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	"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
"E"	earlier application or patent published on or after the international filing date	"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
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"O"	document referring to an oral disclosure, use, exhibition or other means	"&"	document member of the same patent family
"P"	document published prior to the international filing date but later than the priority date claimed		

Date of the actual completion of the international search

16 September 2007 (16.09.2007)

Date of mailing of the international search report

26 SEP 2007

Name and mailing address of the ISA/US

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Commissioner for Patents
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Alexandria, Virginia 22313-1450

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US05/12692

Continuation of B. FIELDS SEARCHED Item 3:
EAST (USPAT, US_PGPUBS, EPO, JPO, IBM_TDB), Google Scholar
search terms: digital, lock-in, detection, amplification, tomography