

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
4 January 2007 (04.01.2007)

PCT

(10) International Publication Number
WO 2007/002580 A3

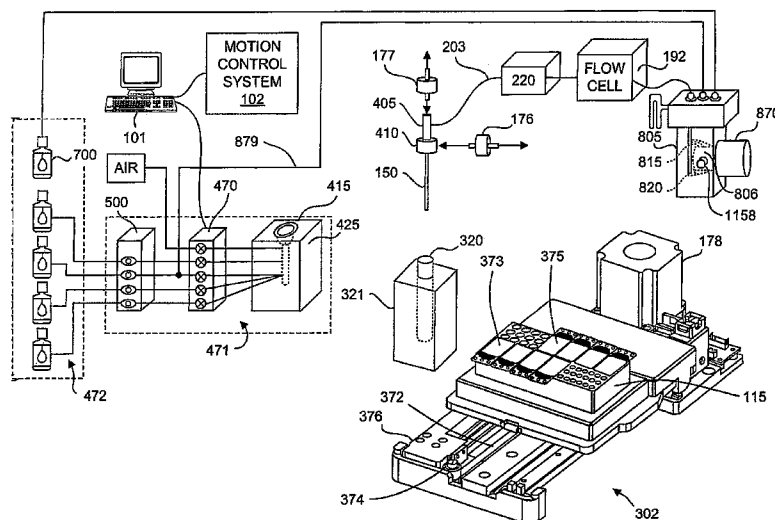
- (51) International Patent Classification:
G01N 35/00 (2006.01) *G01N 21/76* (2006.01)
- (21) International Application Number:
PCT/US2006/024791
- (22) International Filing Date: 23 June 2006 (23.06.2006)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
60/693,049 23 June 2005 (23.06.2005) US
- (71) Applicant (for all designated States except US):
BIOVERIS CORPORATION [US/US]; 16020 Industrial Drive, Gaithersburg, Maryland 20877 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **KOCHAR, Manish Swarnaraj** [US/US]; 15612 Thistlebridge Drive, Rockville, Maryland 20879 (US). **DAVIS, Charles Quentin** [US/US]; 3621 Byron Circle, Frederick, Maryland 21704 (US). **LELAND, Jonathan K.** [US/US]; 14236 Amberleigh Terrace, Silver Spring, Maryland 20877 (US). **MANTEUFFEL, Richard** [US/US]; 22550 Sweetleaf Lane, Laytonsville, Maryland 20882 (US). **COOK, Richard A.** [US/US]; 6912 Tennyson Terrace, Deerwood, Maryland 20855 (US).

- (74) Agent: **GARRETT, Arthur A.**; FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER, LLP, 901 New York Avenue, Nw, Washington, District Of Columbia 20001-4181 (US).
- (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, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, 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, HU, IE, IS, IT, LT, LU, LV, 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

[Continued on next page]

(54) Title: DIAGNOSTIC AS SAY SYSTEM WITH MULTI -WELL REAGENT CONTAINER



(57) Abstract: A biological detection system used to measure one or more analytes in a sample through the use of binding reactions comprises a detector (192) configured to detect a label used in the binding reactions; a holder (115,150) to hold at least one multi-well reagent container (373,375,500) containing the label and binding reagents for a plurality of binding reactions; a probe (150) to distribute a portion of a sample into the multi-well reagent containers; a pump (870) fluidically connected to the probe; and a liquid-level detector (LLD) for determining the presence and/or amount of liquid in at least one of a sample container and the multi-well reagent container. The system may also comprise magnetic capture zones for magnetisable beads and filter means for filtering the sample. The labelled binding partner may be a compound useful for an electrochemiluminescent (ECL) assay, and the system may include an electrode for initiating ECL.

WO 2007/002580 A3



— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

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.

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

31 May 2007

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2006/024791

A. CLASSIFICATION OF SUBJECT MATTER
INV. G01N35/00 G01N21/76
ADD. G01N33/58

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)
G01N B01L

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

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 358 691 A (CLARK FREDERIC L [US] ET AL) 25 October 1994 (1994-10-25)	1
Y	column 18 - column 22; figures 3,10A-C column 29, lines 14,15 column 26, lines 25-38 ----- -/--	1,2, 4-12, 14-24, 33-62, 67-90, 106-116

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 document 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 another 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

8 December 2006

Date of mailing of the international search report

06.03.2007

Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2230 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Hodson, Mark

INTERNATIONAL SEARCH REPORT

International application No

PCT/US2006/024791

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	<p>US 6 090 545 A (WOHLSTADTER JACOB [US] ET AL) 18 July 2000 (2000-07-18)</p> <p>column 41, line 39 - column 43, line 2 columns 7-9 column 20, line 30 - column 22, line 55 column 25, lines 37-57 column 39, lines 13-34 column 39, lines 45-58 columns 43-47</p>	<p>1,2, 4-12, 14-24, 33-62, 67-90, 106-116</p>
A	<p>US 5 700 427 A (GHAED ALI [US] ET AL) 23 December 1997 (1997-12-23)</p> <p>columns 6-9</p>	<p>1-5,14, 24, 28-32, 67-77, 106-112</p>
A	<p>JP 2003 329696 A (HORIBA LTD; PREC SYSTEM SCIENCE CO LTD) 19 November 2003 (2003-11-19)</p> <p>paragraphs [0011], [0012], [0021], [0022], [0026]; figures 1-4,8,11</p>	<p>1,4,5, 14, 22-24, 28, 33-44, 51,53, 59-76, 81,84, 107-119</p>
X	<p>EP 0 895 088 A2 (ORTHO CLINICAL DIAGNOSTICS INC [US]) 3 February 1999 (1999-02-03)</p> <p>paragraphs [0069] - [0079], [0104], [0108], [0150] - [0153]; figures</p>	<p>1,4,5, 13-21, 24-44, 84, 107-115</p>
A	<p>US 5 417 922 A (MARKIN RODNEY S [US] ET AL) 23 May 1995 (1995-05-23) abstract; figures</p>	<p>24-32</p>

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2006/024791

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5358691	A	25-10-1994	AU 3968093 A	08-11-1993
			CA 2129245 A1	14-10-1993
			EP 0632896 A1	11-01-1995
			JP 3384567 B2	10-03-2003
			JP 7506184 T	06-07-1995
			JP 3425567 B2	14-07-2003
			JP 2003161734 A	06-06-2003
			WO 9320450 A1	14-10-1993
			US 5376313 A	27-12-1994
			US 5451528 A	19-09-1995
US 6090545	A	18-07-2000	AU 720625 B2	08-06-2000
			AU 5420596 A	02-10-1996
			BR 9607193 A	11-11-1997
			CA 2213854 A1	19-09-1996
			CN 1186513 A	01-07-1998
			CN 1661115 A	31-08-2005
			CZ 9702844 A3	14-10-1998
			EA 1198 B1	25-12-2000
			EP 0821726 A1	04-02-1998
			HU 9801679 A2	28-10-1998
			JP 11502617 T	02-03-1999
			JP 2006047321 A	16-02-2006
			NZ 306051 A	29-11-1999
			TW 555852 B	01-10-2003
			WO 9628538 A1	19-09-1996
			US 6066448 A	23-05-2000
US 5700427	A	23-12-1997	AU 7562694 A	07-03-1996
			US 5466416 A	14-11-1995
			US 5720922 A	24-02-1998
			US 5632956 A	27-05-1997
			US 5624637 A	29-04-1997
			US 5543112 A	06-08-1996
JP 2003329696	A	19-11-2003	JP 3839349 B2	01-11-2006
EP 0895088	A2	03-02-1999	AT 331221 T	15-07-2006
			AU 752927 B2	03-10-2002
			AU 7859598 A	11-02-1999
			CA 2244397 A1	01-02-1999
			DE 69834983 T2	04-01-2007
			JP 2000028619 A	28-01-2000
US 5417922	A	23-05-1995	US 5427743 A	27-06-1995

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2006/024791

Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

3. Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

4. No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-91,106-119

Remark on Protest

- The additional search fees were accompanied by the applicant's protest.
- No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-91,106-119

biological detection system with multi-well reagent
container and liquid-level detector

2. claims: 92-105

biological detection system and method with magnetic capture

3. claims: 153-172

multi-well reagent container comprising vessels in a
receptacle
