# (19) World Intellectual Property Organization

International Bureau



# 

#### (43) International Publication Date 29 January 2009 (29.01.2009)

## (10) International Publication Number WO 2009/014380 A3

(51) International Patent Classification: G01N 35/00 (2006.01)

(21) International Application Number:

PCT/KR2008/004315

23 July 2008 (23.07.2008) (22) International Filing Date:

(25) Filing Language:

Korean

(26) Publication Language:

English

(30) Priority Data:

10-2007-0073657

23 July 2007 (23.07.2007) KR

- (71) Applicant (for all designated States except US): DIGITAL BIO TECHNOLOGY CO., LTD. [KR/KR]; 304, Institute of Advanced Machinery, Seoul National Univ., San 56-1, Sillim-dong, Gwanak-gu, Seoul 151-742 (KR).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): PARK, Jun Ha [KR/KR]; 817-1905 Daewolmaeul, Jeongja 3(sam)-dong Jangan-gu, Suwon-si, Gyeonggi-do 440-729 (KR). LEE, Chang Seop [KR/KR]; 9-204, Greenville Jugong Apt.

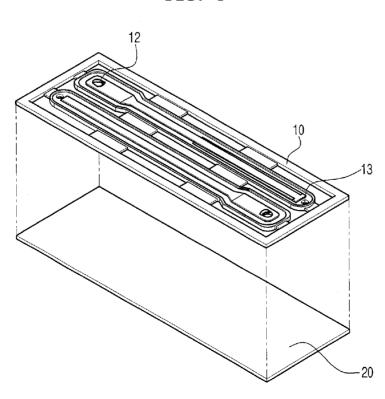
14-danji, Choji-dong Danwon-gu, Ansan-si, Gyeonggi-do 425-876 (KR). LIM, Hyun Chang [KR/KR]; 101, 116-15, Sillim 2(i)-dong Gwanak-gu, Seoul 151-855 (KR). CHUNG, Chan II [KR/KR]; 6-907, Hongsil Apt., Samseong 1(il)-dong Gangnam-gu, Seoul 135-866 (KR). CHANG, Jun Keun [KR/KR]; 501, Granciel Villa, Bangbae 4-dong Seocho-gu, Seoul (KR).

- (74) Agents: KIM, Moon-Jae et al.; KAL Bldg. 3rd Fl., 41-3, Seosomun-Dong, Jung-Gu, Seoul 100-813 (KR).
- (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, 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, 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, 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,

[Continued on next page]

(54) Title: MODULE FOR DETECTING ANALYTES IN FLUIDS AND CHIP HAVING THE SAME





(57) Abstract: Disclosed a module for rapidly detecting analytes in fluids with high effectiveness and a chip having the module. The module includes a microchannel, which has a filtering zone for removing noise materials and a reaction zone wherein labeling and reaction immobilization reaction for detection of analytes are performed, sample fluid moving through the microchannel due to capillary floating. In a case where the chip having the module is used in detecting analytes in fluids, it is possible to minimize dead volume of sample fluid so that high effective volume ratio can be implemented. Therefore, the chip can be used in detecting analytes from the minimum amount of sample fluid.

# WO 2009/014380 A3



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, MT, NL, NO, 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: 2 April 2009

International application No. **PCT/KR2008/004315** 

#### A. CLASSIFICATION OF SUBJECT MATTER

G01N 35/00(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)

IPC: G01N 35/00

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 since 1975

Japanese Utility models and applications for Utility models since 1975

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) eKIPASS(KIPO internal) & keywords: closed microchannel, filtering zone, reaction zone

#### C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	
Y	JP 2005512071 A (THE TECHNOLOGY PARTNERSHIP PUBLIC LIMITED COMPANY) 28 APRIL 2005 See paragraphs [8],[48]-[58]; figure 2.	1-16	
Y	KR 1020060017701 A (LG CHEM. LTD.) 27 FEBRUARY 2006 See page 3, line 45-52; page 7, line 45 - page 8, line 15; figures 9-10.	1-16	
A	US 5147606 A (CHARLTON, STEVEN C. et al.) 15 SEPTEMBER 1992 See abstract; claims 1-9; figures 1-5.	1-16	
A	US 5135719 A (HILLMAN, ROBERT S. et al.) 4 August 1992 See abstract; claims 1-7; figures 1-3.	1-16	

		Further documents are	listed in the	he 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
- "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 mailing of the international search report

Date of the actual completion of the international search

05 FEBRUARY 2009 (05.02.2009)

05 FEBRUARY 2009 (05.02.2009)

Name and mailing address of the ISA/KR



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

Facsimile No. 82-42-472-7140

Authorized officer

RYU Chang Yong

Telephone No. 82-42-481-5546



### INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

# PCT/KR2008/004315

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
JP 2005512071 A	28.04.2005	AU 2002350946 A1	23.06.2003
		DE 60209780 D1	04.05.2006
		EP 1450954 A1	01.09.2004
		GB 0129816 D0	30.01.2002
		WO 0304-9860A1	19.06.2003
KR 1020060017701 A	27.02.2006	EP 1787129 A1	23.05.2007
		JP 2007523355 A	16.08.2007
		TW 278626 A	11.04.2007
		WO 2006022487 A1	02.03.2006
US 5147606 A	15.09.1992	AU 626760 B2	06.08.1992
		AU 8129691 A	20.02.1992
		CA 2047038 A1	07.02.1992
		DE 69111150 D1	17.08.1995
		EP 0470438 A1	12.02.1992
		JP 04232855 A	21.08.1992
		JP 2937568 B2	23.08.1999
		JP 4232855 A	21.08.1992
		US 5208163 A	04.05.1993
US 5135719 A	04.08.1992	AU 598312 B2	21.06.1990
		AU 8043987 A	05.05.1988
		CA 1307448 C	15.09.1992
		DE 3781645 D1	15.10.1992
		EP 0269240 A1	01.06.1988
		ES 2035077 T3	16.04.1993
		GR 3006417 T3	21.06.1993
		JP 6064051 B	22.08.1994
		JP 63177059 A	21.07.1988
		US 4753776 A	28.06.1988