(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
17 November 2005 (17.11.2005)

PCT

(10) International Publication Number
WO 2005/107938 A3

(51) International Patent Classification[7]: B01L 3/00, 3/02, G01N 21/00, 31/22, 15/06

(21) International Application Number:
PCT/US2005/015352

(22) International Filing Date: 2 May 2005 (02.05.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

10/837,885	2 May 2004 (02.05.2004)	US
10/876,046	23 June 2004 (23.06.2004)	US
11/043,895	25 January 2005 (25.01.2005)	US
11/058,106	14 February 2005 (14.02.2005)	US

(71) Applicant *(for all designated States except US)*: **FLUIDIGM CORPORATION** [US/US]; 7100 Shoreline Court, South San Francisco, California 94080 (US).

(72) Inventors; and

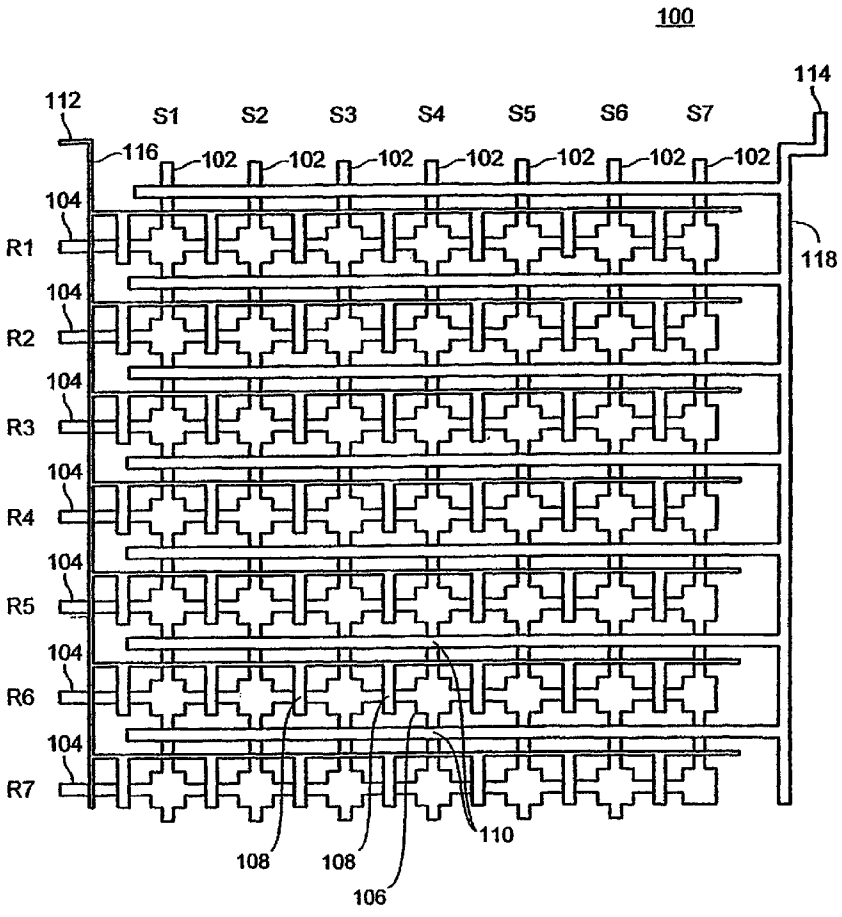
(75) Inventors/Applicants *(for US only)*: **GOODSAID, Federico** [US/US]; 19916 Bette Chase Drive, Laytonville, Maryland 20882 (US). **UNGER, Marc, A.** [US/US]; 3700 Fernwood, San Mateo, California 94403 (US). **HUANG, Jiang** [CN/US]; 918 Forest Ridge Dr., San Jose, California 94129 (US). **QUAN, Emerson** [US/US]; 2415 Ardee Lane, South San Francisco, California 94080 (US). **GROSSMAN, Robert** [US/US]; 751 Park Way, South San Francisco, California 94080 (US). **LAM, Phillip** [US/US]; 1759 27th Avenue, San Francisco, California 94122 (US). **CHOU, Hou-Pu** [—/US]; 1397 Wright Avenue, Sunnyvale, California 94087 (US). **KIMBALL, Jake** [US/US]; 4481 Montgomery Street, Oakland, California 94611 (US). **PIEPRZYK, Martin** [US/US]; 703 16th Avenue, Menlo Park, California 94025 (US). **FACER, Geoffrey** [AU/US]; 940 Guerrero Street, Apr. 18, San Francisco, California 94110 (US).

(74) Agents: **BOUCHER, Patrick** et al.; Townsend and Townsend and Crew LLP, Two Embarcadero Center, Eighth Floor, San Francisco, California 94111-3834 (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,

[Continued on next page]

(54) Title: THERMAL REACTION DEVICE AND METHOD FOR USING THE SAME



(57) Abstract: An M x N matrix microfluidic device for performing a matrix of reactions, the device (100) having a plurality of reaction cells (106) in communication with one of either a sample inlet (120) or a reagent t inlet (124) through a via formed within an elastomeric block of the device. Methods provided include a method for forming vias in parallel in an elastomeric layer of an elastomeric block of a microfluidic device, the method includes using patterned photoresist masks and etching reagents to etch away regions or portions of an elastomeric layer of the elastomeric block.

WO 2005/107938 A3

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, US, 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*

(88) Date of publication of the international search report:
12 January 2006

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.