

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
3 May 2007 (03.05.2007)

PCT

(10) International Publication Number
WO 2007/050539 A3

(51) International Patent Classification:

G01N 21/25 (2006.01) **B01L 3/00** (2006.01)

(21) International Application Number:

PCT/US2006/041352

(22) International Filing Date: 23 October 2006 (23.10.2006)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

11/259,643 26 October 2005 (26.10.2005) US

11/259,712 26 October 2005 (26.10.2005) US

11/507,689 22 August 2006 (22.08.2006) US

(63) Related by continuation (CON) or continuation-in-part (CIP) to earlier application:

US 11/507,689 (CON)

Filed on 22 August 2006 (22.08.2006)

(71) Applicant (for all designated States except US): **GENERAL ELECTRIC COMPANY** [US/US]; (A NEW YORK CORPORATION), 1 River Road, Schenectady, NY 12345 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **SHRIKHANDE,**

Prashant, V. [IN/US]; 600 Old Street Road, Apt. F102, Trevoose, PA 19053 (US). **BOYETTE, Scott, M.** [US/US]; 111 Greenbrook Court, New Hope, PA 18938 (US). **XIAO, Caibin** [CN/US]; 208 Norwyck Way, Harleysville, PA 19438 (US). **POTYRAILO, Radislav, A.** [UA/US]; 52 County Clare Lane, Niskayuna, NY 12309 (US). **LEACH, Andrew, M.** [US/US]; 6 Deer Run Hollow, Clifton Park, NY 12065 (US).

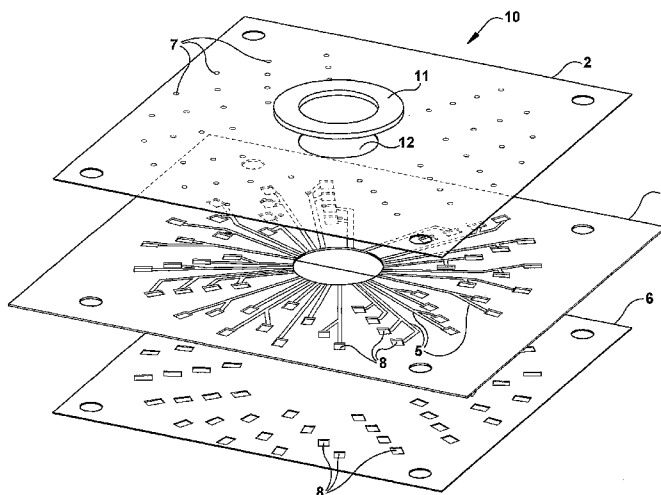
(74) Agents: **TOOP, Barbara, A.** et al.; GENERAL ELECTRIC COMPANY, GLOBAL PATENT OPERATION, 187 Danbury Road, Suite 204, Wilton, CT 06897 (US).

(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, GT, 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, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US (patent), 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,

[Continued on next page]

(54) Title: METHODS AND SYSTEMS FOR DELIVERY OF FLUIDIC SAMPLES TO SENSOR ARRAYS



(57) Abstract: Total analysis systems and methods for simultaneously monitoring a suite of biological and/or chemical species in water and/or other process systems are disclosed. The system provides a sample- volume controlled sensor array comprising a fluid delivery device and a plurality of optical sensor elements for determining the presence and total concentrations of multiple analytes in the process system simultaneously. Delivery means are provided to deliver a metered quantity of sample fluid to the sensor array. Image identification algorithms are provided for identifying the analytes based on image intensity, color pattern, positional arrangement, and the like. The methods incorporate multivariate optimization algorithms to analyze multiple sensor responses. This produces analytical results that are typically difficult to obtain without full system or variable compensation. The improved array response may then be utilized to measure, monitor, and control the concentration of analytes in the chemical or biological sample or water system.



WO 2007/050539 A3



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).

Declarations under Rule 4.17:

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*
- *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

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:

30 August 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.