

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
27 December 2002 (27.12.2002)

PCT

(10) International Publication Number
WO 02/103371 A3

(51) International Patent Classification⁷: **G01N 33/543**,
33/553, 33/553, 33/544, 33/549, 15/06, B32B 5/16, B01J
19/08, 19/12

(74) Agent: **MEYERTONS, Eric, B.**; Meyertons, Hood,
Kivlin, Kowert & Goetzl, P.C., P.O. Box 398, Austin, TX
78767-0398 (US).

(21) International Application Number: PCT/US02/03277

(22) International Filing Date: 31 January 2002 (31.01.2002)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
09/775,342 31 January 2001 (31.01.2001) US

(71) Applicant: **BOARD OF REGENTS, THE UNIVERSITY OF TEXAS SYSTEM** [US/US]; 201 West 7th
Street, Austin, TX 78701 (US).

(72) Inventors: **MCDEVITT, John, T.**; 4812 Eagle Feather
Drive, Austin, TX 78735 (US). **ANSLYN, Eric, V.**; 8323
Young Lane, Austin, TX 78737 (US). **SHEAR, Jason,
B.**; 4433 Sacred Arrow Drive, Austin, TX 78735 (US).
NEIKIRK, Dean, P.; 6604 Auburnhill, Austin, TX 78723
(US).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU,
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,
CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,
LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,
MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG,
SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VN,
YU, ZA, ZM, ZW.

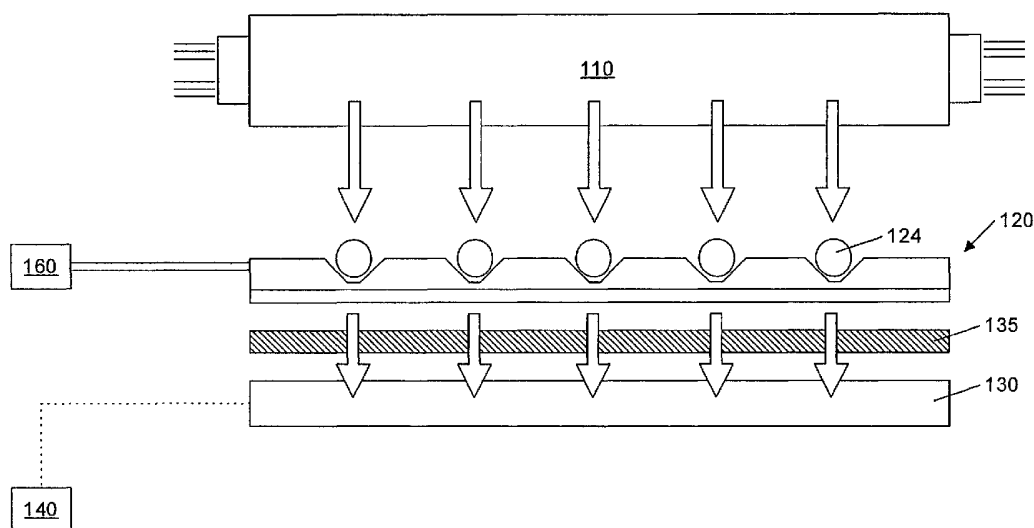
(84) Designated States (*regional*): ARIPO patent (GH, GM,
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR,
GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent
(BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR,
NE, SN, TD, TG).

Published:
— with international search report

(88) Date of publication of the international search report:
5 June 2003

[Continued on next page]

(54) Title: MAGNETIC-BASED PLACEMENT AND RETENTION OF SENSOR ELEMENTS IN A SENSOR ARRAY



(57) Abstract: A system for the rapid characterization of multi-analyte fluids, in one embodiment, includes a light source, a sensor array, and a detector. The sensor array is formed from a supporting member into which a plurality of cavities may be formed. A series of chemically sensitive particles are, in one embodiment positioned within the cavities. In an embodiment, a particle may include a magnetically active component to aid in the placement of the particle in the array. A magnetic field may be applied to the sensor array to inhibit movement of the particle. The particles may be configured to produce a signal when a receptor coupled to the particle interacts with the analyte. Using pattern recognition techniques, the analytes within a multi-analyte fluid may be characterized.



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.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US02/03277

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : G01N 33/543, 33/553, 33/544, 33/549, 15/06; B32B 5/16; B01J 19/08, 19/12
US CL : 436/526, 518, 532, 528, 535; 422/50, 68.1, 186.01, 186.05; 428/402, 403

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. : 436/526, 518, 532, 528, 535; 422/50, 68.1, 186.01, 186.05; 428/402, 403

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
NONE

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EAST, PALM

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X --- Y	US 4,795,698 A (OWEN et al.) 03 January 1989 (03.01.1989), col. 3, line 25-col. 6, line 15.	1-18 ----- 19-40
Y --- A	US 5,597,531 A (LIBERTI et al.) 28 January 1997 (28.01.1997), col. 4, line 41-col. 7, line 35.	1-18 ----- 19-116
A	US 5,240,640 A (SIIMAN et al.) 31 August 1993 (31.08.1993), col. 3, line 51-col. 5, line 10.	1-58
Y --- A	US 5,698,271 A (LIBERTI et al.) 16 December 1997 (16.12.1997), col. 5, line 15-col. 10, line 22.	1-58 ----- 59-116
Y	US 6,133,047 A (ELAISSARI et al.) 17 October 2000 (17.10.2000), col. 1, line 55-col. 4, line 62.	1-18
A,P	US 6,254,830 B1 (PIVARNIK et al.) 03 July 2001 (03.07.2001), col. 2, line 40-col. 3, line 38.	19-116



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 application or patent 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

03 November 2002 (03.11.2002)

Date of mailing of the international search report

13 FEB 2003

Name and mailing address of the ISA/US

Commissioner of Patents and Trademarks
Box PCT
Washington, D.C. 20231

Facsimile No. (703)305-3230

Authorized officer

Patrice T. Du /

Telephone No. 703-308-0196

INTERNATIONAL SEARCH REPORT

PCT/US02/03277

C. (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A,P	US 6,413,786 B1 (HANSEN et al.) 02 July 2002 (02.07.2002), col. 3, line 10-col. 3, line 30.	19-116