



- (51) International Patent Classification:
G01N 30/96 (2006.01) **B01J 47/00** (2006.01)
G01N 30/34 (2006.01) **C08J 5/20** (2006.01)
B01D 61/42 (2006.01) **B01D 69/14** (2006.01)
- (21) International Application Number:
PCT/US2008/083256
- (22) International Filing Date:
12 November 2008 (12.11.2008)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
11/940,892 15 November 2007 (15.11.2007) US
- (71) Applicants (for all designated States except US):
DIONEX CORPORATION [US/US]; 1228 Titan Way,
Sunnyvale, CA 94088 (US). **BOARD OF REGENTS
OF THE UNIVERSITY OF TEXAS SYSTEM**
[US/US]; 201 West 7th Street, Austin, TX 78701 (US).
- (72) Inventors; and
(75) Inventors/Applicants (for US only): **DASGUPTA, Pur-
nendu, K.** [US/US]; 2415 River Rock Circle, Arlington,
TX 76006 (US). **YANG, Bingcheng** [CN/US]; 305 Sum-
mit Ave., Apt. 4, Arlington, TX 76013 (US). **SRINI-
VASAN, Kannan** [US/US]; 2101 Cabana Lane, Tracy,
CA 95377 (US). **TAKEUCHI, Masaki** [JP/JP]; The Uni-
versity Of Tokushima, Institute Of Health, Biosciences,
Shomachi 1-78-1, Tokushima, 770-8505 (JP).
- (74) Agent: **BREZNER, David, J.**; Morgan, Lewis & Bockius
LLP, One Market, Spear Street Tower, San Francisco, CA
94105 (US).
- (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, KR,
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,

[Continued on next page]

(54) Title: BARRIER WITH A SEATED ION EXCHANGE BEAD AND METHOD

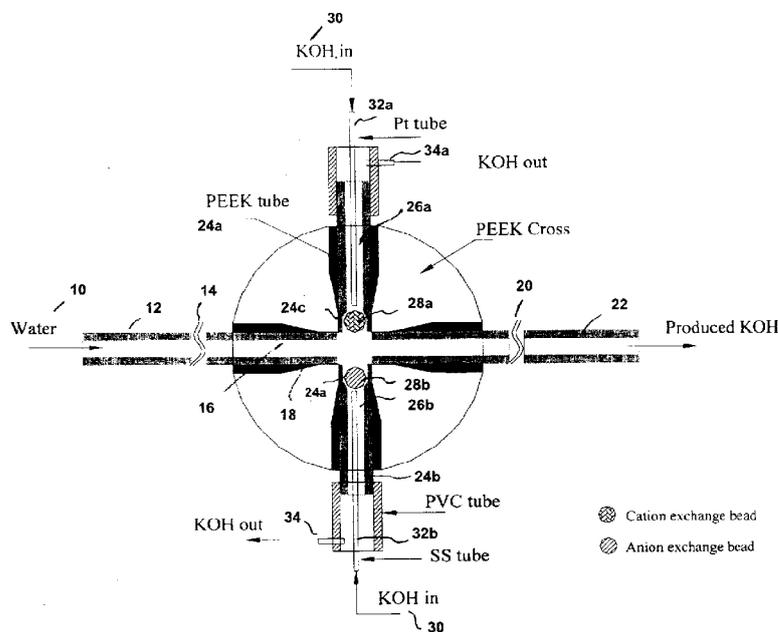


Figure 1

(57) Abstract: Ion transport apparatus (e.g. an electrolytic eluent generator or a suppressor for ion chromatography) in which ions in a first chamber are transported to a liquid in second chamber through a wall comprising an ion exchange bead sealed in a bead seat. The wall is capable of transport ions but of substantially blocking bulk liquid flow.



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, 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 (Art. 21(3))
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

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

24 September 2009

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2008/083256

A. CLASSIFICATION OF SUBJECT MATTER

INV. G01N30/96 G01N30/34 B01D61/42 B01J47/00
ADD. C08J5/20 B01D69/14

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 B01D B01J C08J

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, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2006/057733 A1 (LIU YAN [US] ET AL) 16 March 2006 (2006-03-16) abstract the whole document	1-34
Y	US 6 682 701 B1 (LIU YAN [US] ET AL) 27 January 2004 (2004-01-27) cited in the application abstract figure 1	1,21,24
Y	WO 2004/024302 A (DIONEX CORP [US]; LIU YAN [US]; AVDALOVIC NEBOJSA [US]) 25 March 2004 (2004-03-25) abstract page 19, line 24 - line 31 figures 3,16	1,21,24
	----- -/--	

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

16 July 2009

Date of mailing of the international search report

24/07/2009

Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040,
Fax: (+31-70) 340-3016

Authorized officer

Bravin, Michel

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2008/083256

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>SJOOGREN A ET AL: "CAPILLARY ION CHROMATOGRAPHY WITH ON-LINE HIGH-PRESSURE ELECTRODIALYTIC NaOH ELUENT PRODUCTION AND GRADIENT GENERATION" ANALYTICAL CHEMISTRY, AMERICAN CHEMICAL SOCIETY. COLUMBUS, US, vol. 69, no. 7, 1 April 1997 (1997-04-01), pages 1385-1391, XP000689731 ISSN: 0003-2700 abstract page 1386, column 2, last paragraph - page 1388, column 1, paragraph 3 page 1389, column 1, paragraph 2 figures 1-3</p>	1,18,21,24,30
Y	<p>US 4 253 900 A (DEGE GERALD J ET AL) 3 March 1981 (1981-03-03) abstract column 2, line 5 - line 20 examples 1-4</p>	1-34
Y	<p>US 2 903 406 A (MILLER WALTER E) 8 September 1959 (1959-09-08) column 1, line 15 - line 17 column 2, line 9 - line 50 column 3, line 43 - column 4, line 13 column 7, line 58 - column 8, line 10 figures 1-8</p>	1-34
Y	<p>US 4 187 333 A (KLEIN ELIAS [US] ET AL) 5 February 1980 (1980-02-05) abstract figures 1-3 column 2, line 65 - column 3, line 44 column 6, line 8 - line 48 column 9, line 40 - line 57 column 12, line 20 - line 33</p>	1,18,24,30
P,X	<p>YANG B ET AL: "On-Line Gas-Free Electrodialytic Eluent Generator for Capillary Ion Chromatography" ANALYTICAL CHEMISTRY, AMERICAN CHEMICAL SOCIETY. COLUMBUS, US, vol. 80, no. 1, 7 December 2007 (2007-12-07), pages 40-47, XP002525026 ISSN: 0003-2700 abstract figure 3</p>	1,21,24

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2008/083256

Patent document cited in search report	Publication date	Patent family member(s)	Publication date			
US 2006057733	A1	16-03-2006	AU 2005286938 A1	30-03-2006		
			CA 2579821 A1	30-03-2006		
			CN 101044399 A	26-09-2007		
			EP 1789780 A1	30-05-2007		
			JP 2008513790 T	01-05-2008		
			KR 20070053344 A	23-05-2007		
			WO 2006034182 A1	30-03-2006		
			<hr/>			
US 6682701	B1	27-01-2004	AT 406202 T	15-09-2008		
			AU 736022 B2	26-07-2001		
			AU 2475999 A	16-08-1999		
			CA 2284285 A1	05-08-1999		
			EP 0979131 A1	16-02-2000		
			JP 3566308 B2	15-09-2004		
			JP 2001520752 T	30-10-2001		
			US 6225129 B1	01-05-2001		
			WO 9938595 A1	05-08-1999		
			US 2005258048 A1	24-11-2005		
			US 6955922 B1	18-10-2005		
			<hr/>			
			WO 2004024302	A	25-03-2004	AT 382419 T
AU 2003270551 A1	30-04-2004					
CA 2498217 A1	25-03-2004					
CN 1703269 A	30-11-2005					
DE 60318455 T2	18-12-2008					
EP 1536879 A1	08-06-2005					
HK 1076267 A1	18-04-2002					
JP 2005538382 T	15-12-2005					
KR 20050042815 A	10-05-2005					
US 2004048389 A1	11-03-2004					
US 2006211125 A1	21-09-2006					
<hr/>						
US 4253900	A	03-03-1981				NONE
<hr/>						
US 2903406	A	08-09-1959	NONE			
<hr/>						
US 4187333	A	05-02-1980	NONE			
<hr/>						