

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
22 November 2001 (22.11.2001)

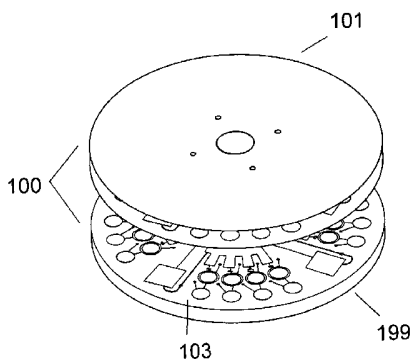
PCT

(10) International Publication Number  
**WO 01/087486 A3**

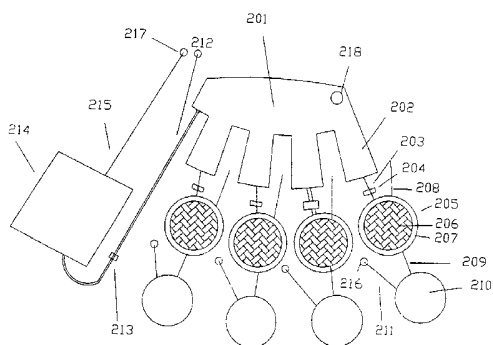
- (51) International Patent Classification<sup>7</sup>: **B01L 3/00**, B01F 13/00, B01J 19/00, G01N 21/07, 27/447
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- (21) International Application Number: PCT/US01/15823
- (72) Inventors; and
- (22) International Filing Date: 15 May 2001 (15.05.2001)
- (75) Inventors/Applicants (for US only): **CARVALHO, Bruce** [US/US]; 50 Merrill Road, Watertown, MA 02472 (US). **SHEPPARD, Norman, F., Jr.** [US/US]; 6 Battle Flagg Road, Bedford, MA 01730 (US). **FEAKES, Christina** [US/US]; 87 Antwerp Street, Brighton, MA 02135 (US). **KELLOGG, Greg** [US/US]; 34 Belknap Street, #3, Somerville, MA 02144 (US).
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data: 60/204,265 15 May 2000 (15.05.2000) US
- (74) Agent: **NOONAN, Kevin, E.**; McDonnell Boehnen Hulbert & Berghoff, 300 South Wacker Drive, Chicago, IL 60606 (US).
- (63) Related by continuation (CON) or continuation-in-part (CIP) to earlier application:  
US 60/204,265 (CON)  
Filed on 15 May 2000 (15.05.2000)
- (81) Designated States (national): AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE,

[Continued on next page]

(54) Title: MICROFLUIDICS DEVICES AND METHODS FOR PERFORMING CELL BASED ASSAYS



(57) Abstract: This invention provides methods and apparatus for performing microanalytic analyses and procedures, particularly miniaturized cell based assays. These methods are useful for performing a variety of cell-based assays, including drug candidate screening, life sciences research, and clinical and molecular diagnostics.



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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, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW.

**Published:**

— *with international search report*

**(84) Designated States (regional):** ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, 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, GW, ML, MR, NE, SN, TD, TG).

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

24 October 2002

*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/US 01/15823

<b>A. CLASSIFICATION OF SUBJECT MATTER</b> IPC 7 B01L3/00 B01F13/00 B01J19/00 G01N21/07 G01N27/447		
According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b> Minimum documentation searched (classification system followed by classification symbols) IPC 7 B01L B01F B01J C12Q G01N		
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, PAJ		
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y	GB 2 341 924 A (AMERSHAM PHARM BIOTECH AB) 29 March 2000 (2000-03-29)  page 1, line 12 -page 1, line 19 page 5, line 21 -page 6, line 7 page 9, line 16 -page 9, line 28 page 10, line 25 -page 10, line 30 page 11, line 25 -page 13, line 8 example 2 figures 1-8  --- -/--	1, 3, 5, 9, 10, 33, 34 4, 32, 36-42
<input checked="" type="checkbox"/> Further documents are listed in the continuation of box C.		
<input checked="" type="checkbox"/> Patent family members are listed in annex.		
° Special categories of cited documents :		
<ul style="list-style-type: none"> <li>*A* document defining the general state of the art which is not considered to be of particular relevance</li> <li>*E* earlier document but published on or after the international filing date</li> <li>*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)</li> <li>*O* document referring to an oral disclosure, use, exhibition or other means</li> <li>*P* document published prior to the international filing date but later than the priority date claimed</li> <li>*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</li> <li>*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</li> <li>*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.</li> <li>* &amp; * document member of the same patent family</li> </ul>		
Date of the actual completion of the international search  28 February 2002		Date of mailing of the international search report  08/03/2002
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016		Authorized officer  Koch, A

## INTERNATIONAL SEARCH REPORT

International Application No

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## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 98 28623 A (GAMERA BIOSCIENCE CORP) 2 July 1998 (1998-07-02)	1, 2, 6-8, 35
Y	<p>page 1, line 30 -page 2, line 2  page 4, line 1 -page 4, line 2  page 4, line 16 -page 5, line 30  page 6, line 26 -page 7, line 2  page 7, line 24 -page 7, line 27  page 8, line 1 -page 8, line 17  page 8, line 25 -page 9, line 1  page 9, line 27 -page 10, line 17  page 12, line 4 -page 13, line 10  page 21, line 29 -page 22, line 11  page 23, line 6 -page 23, line 10  page 32, line 30 -page 33, line 21  page 41, line 25 -page 42, line 29  page 46, line 1 -page 46, line 14  page 47, line 8 -page 47, line 16  page 48, line 11 -page 48, line 15  page 48, line 25 -page 49, line 7  examples 2,3  figures 2-6</p> <p style="text-align: center;">---</p>	4, 36-42
X	<p>WO 97 21090 A (GAMERA BIOSCIENCE)  12 June 1997 (1997-06-12)  page 5, line 1 -page 5, line 15  page 5, line 28 -page 5, line 32  page 11, line 20 -page 12, line 11  page 17, line 24 -page 17, line 33  page 39, line 31 -page 40, line 9  page 53, line 31 -page 54, line 15  page 55, line 14 -page 56, line 19  example 14  figures 17-29</p> <p style="text-align: center;">---</p>	10-14
X	<p>WO 98 07019 A (KIEFFER HIGGINS STEPHEN G  ;MIAN ALEC (US); KELLOGG GREGORY (US); G)  19 February 1998 (1998-02-19)</p> <p style="text-align: center;">---</p>	1, 5, 33-35
Y	<p>page 5, line 11 -page 6, line 9  page 7, line 17 -page 7, line 24  page 8, line 7 -page 8, line 31  page 21, line 10 -page 21, line 26  page 41, line 17 -page 42, line 7  page 43, paragraph 3  examples 1,2  page 52, line 8 -page 52, line 29  figures 9,11-14</p> <p style="text-align: center;">-----</p>	4, 32, 36-40

## INTERNATIONAL SEARCH REPORT

International Application No. PCT/US 01 15823

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box I.2

Claims Nos.: 15-28,30,31,43

Too many independent claims per category, resulting in too many alternatives for the device which is claimed; therefore: lack of conciseness as required by Article 6, PCT. (Due to a mistake in numbering the claims, claim 40 is followed again by a second set of claims 38-40 which have been re-numbered as claims 41-43 here and in the search report.)

The applicant's attention is drawn to the fact that claims, or parts of claims, relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure.

## INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 01/15823

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
GB 2341924	A	29-03-2000	AU 3624399	A 29-11-1999
			EP 1077771	A1 28-02-2001
			GB 2350678	A 06-12-2000
			WO 9958245	A1 18-11-1999
WO 9828623	A	02-07-1998	AU 5895898	A 17-07-1998
			WO 9828623	A1 02-07-1998
			US 6319468	B1 20-11-2001
			US 6143247	A 07-11-2000
WO 9721090	A	12-06-1997	AU 702403	B2 18-02-1999
			AU 1283397	A 27-06-1997
			CA 2239613	A1 12-06-1997
			CN 1208464	A 17-02-1999
			EP 0865606	A1 23-09-1998
			NO 982563	A 05-08-1998
			WO 9721090	A1 12-06-1997
			US 2001055812	A1 27-12-2001
			US 6319469	B1 20-11-2001
			AU 4144897	A 06-03-1998
			EP 0917648	A1 26-05-1999
			JP 2001503854	T 21-03-2001
			WO 9807019	A1 19-02-1998
			US 6143248	A 07-11-2000
WO 9807019	A	19-02-1998	US 2001055812	A1 27-12-2001
			AU 4144897	A 06-03-1998
			EP 0917648	A1 26-05-1999
			JP 2001503854	T 21-03-2001
			WO 9807019	A1 19-02-1998
			US 6319469	B1 20-11-2001
			AU 702403	B2 18-02-1999
			AU 1283397	A 27-06-1997
			CA 2239613	A1 12-06-1997
			CN 1208464	A 17-02-1999
			EP 0865606	A1 23-09-1998
			NO 982563	A 05-08-1998
			WO 9721090	A1 12-06-1997
			US 6143248	A 07-11-2000