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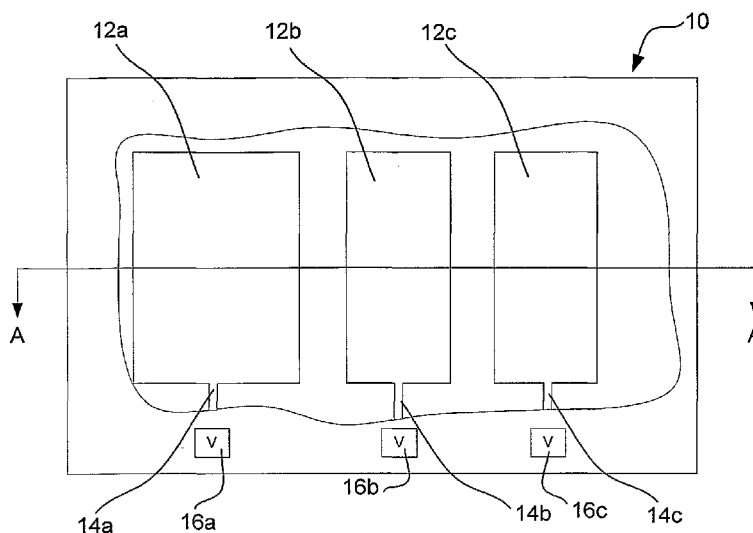
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29 March 2007

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.

(54) Title: MICROFLUIDIC CARTRIDGE WITH RESERVOIRS FOR INCREASED SHELF LIFE OF INSTALLED REAGENTS



(57) Abstract: A microfluidic cartridge that includes at least one reservoir for storing a reagent or the like for an extended period of time. In one illustrative embodiment, at least part of a wall of a reservoir includes a hydrophobic material, such as a poly-monochlorotrifluoroethylene (PCTFE) homopolymer and/or copolymer. The hydrophobic material may help reduce leaching, evaporation, diffusion and/or other transfer of the reagent or one of its components from the reservoir. When the reagent or the like is lyophilized, the hydrophobic material may help keep water, water vapor and/or other gases or liquids from entering the reservoir prior to use of the microfluidic cartridge.

WO 2006/118586 A3

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2005/026293

A. CLASSIFICATION OF SUBJECT MATTER
INV. B01L3/00

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)
B01L

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, PAJ, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2004/241042 A1 (PUGIA MICHAEL J ET AL) 2 December 2004 (2004-12-02) the whole document	1-11, 14, 24-63
A	US 6 329 139 B1 (NOVA MICHAEL P ET AL) 11 December 2001 (2001-12-11) the whole document	1-11, 14, 24-63
A	EP 1 486 455 A (HITACHI CHEMICAL COMPANY, LTD) 15 December 2004 (2004-12-15) the whole document	1-11, 14, 24-63
A	US 6 582 662 B1 (KELLOGG GREGORY J ET AL) 24 June 2003 (2003-06-24) the whole document	1-11, 14, 24-63

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.
- *Z* document member of the same patent family

Date of the actual completion of the international search

7 December 2005

Date of mailing of the international search report

09/11/2006

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INTERNATIONAL SEARCH REPORT

International application no. PCT/US2005/026293

Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

3. Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- The additional search fees were accompanied by the applicant's protest.
- No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-11,14,24-63

A reservoir with PCTFE in a micro-fluidic cartridge

1.1. claims: 11-13,15-23

A reservoir with an hydrophobic substance in a micro-fluidic cartridge using other substances than PCTFE

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application no

PCT/US2005/026293

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2004241042	A1	02-12-2004	CA 2527534 A1 09-12-2004
			EP 1634071 A2 15-03-2006
			WO 2004105946 A2 09-12-2004
<hr/>			
US 6329139	B1	11-12-2001	NONE
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EP 1486455	A	15-12-2004	AU 2003211695 A1 09-09-2003
			CN 1639054 A 13-07-2005
			WO 03070623 A1 28-08-2003
			JP 2004174701 A 24-06-2004
			TW 579367 B 11-03-2004
			US 2005249637 A1 10-11-2005
<hr/>			
US 6582662	B1	24-06-2003	US 2003232403 A1 18-12-2003