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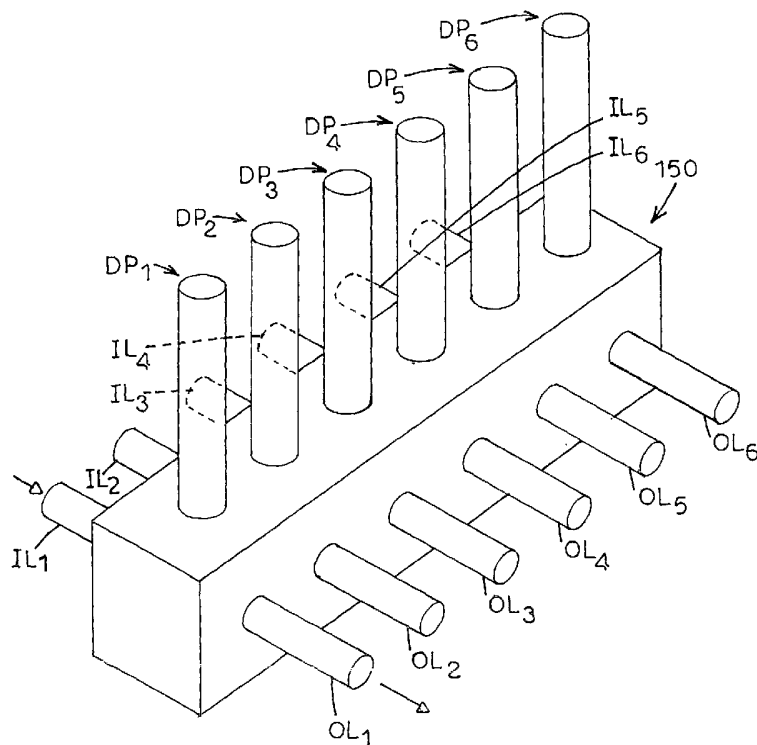
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(54) Title: A MANIFOLD DEVICE COMPRISING A PLURALITY OF FLOW CELLS AND FIBER-OPTIC PROBES FOR DISSOLUTION SYSTEMS, AND METHOD



(57) Abstract: A dissolution system (10) provides remote flow cells (F1-F6) integrated into a manifold device (150). The manifold device (150) communicates with liquid input (IL1-IL6) and output lines (OL1-OL6) associated with each flow cell (F1-F6), as well as fiber-optic input and output lines (DP1-DP6) associated with each flow cell (F1-F6). Liquid samples are respectively drawn from dissolution vessels, optically-related measurements are taken, and the samples are thereafter returned their respective vessels (V1-V6). The manifold device (150) can be adapted to receive probe-type instruments (DP1-DP6) that incorporate the fiber-optics, wherein each probe-type instrument (DP1-DP6) is associated with each flow cell (F1-F6). Alternatively, each corresponding pair of fiberoptic input and output lines (DP1-DP6) are disposed in opposing, optically-aligned relation and probe-type instruments are not used. The gap between the ends of the opposing fiber-optic lines (DP1-DP6) provides a light path across the corresponding flow cell (F1-F6). Calibration procedures using blank and/or standard media (BV, SV) are performed using the same flow cells (F1-F6), with provisions (M1, M2, S13, S14) made for bypassing the vessels (V1-V6) in which the samples to be analyzed are held.

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INTERNATIONAL SEARCH REPORT

Int. Patent Application No  
PCT/US 02/34251

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 G01N21/03 G01N21/05 G01N21/25 G01N33/15

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)  
IPC 7 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)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2001/035947 A1 (DYAS MICHAEL R ET AL) 1 November 2001 (2001-11-01)	1, 4, 5
Y	paragraph '0191!; figure 1A paragraph '0194! - paragraph '0195!; figures 1C, 1D paragraph '0199!; figure 2A paragraph '0208!; figure 4 ---	6-23
Y	US 4 108 602 A (BARR GRAHAM S S ET AL) 22 August 1978 (1978-08-22) column 5, line 1 - line 5; figure 1 column 5, line 55 - line 60 column 16, line 36 - line 38; figure 5 column 17, line 16 --- -/--	6-23

Further documents are listed in the continuation of box C.

Patent family members are listed in 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

15 April 2003

Date of mailing of the international search report

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Name and mailing address of the ISA

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## INTERNATIONAL SEARCH REPORT

 International Application No  
 PCT/US 02/34251

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	GB 2 312 044 A (PERKIN ELMER CORP) 15 October 1997 (1997-10-15) page 9, line 32 -page 10, line 12; figure 2 ---	1,4,5,8, 11,18,20
A	US 6 174 497 B1 (BYNUM KEVIN ET AL) 16 January 2001 (2001-01-16) cited in the application column 7, line 15 - line 31; figures 12,13 ---	2,3,6,7, 15
A	US 3 418 053 A (PELAVIN MILTON H) 24 December 1968 (1968-12-24)  column 2, line 15 -column 4, line 33; figure 4 ---	1-3,5-8, 11,15, 19,20
A	US 6 162 465 A (ZACKRISSON GUNNAR ET AL) 19 December 2000 (2000-12-19) column 3, line 22 - line 37; figure 2 column 4, line 18 - line 26; figure 1 ---	5,6,15, 19,20
A	US 3 791 222 A (GOODHART F ET AL) 12 February 1974 (1974-02-12) column 3, line 42 - line 51; figure 2 ---	5,7,19
A	US 4 229 179 A (LEE LAP Y) 21 October 1980 (1980-10-21) column 2, line 28 -column 4, line 9; figure 1 ---	1,2,4-9, 15-19
A	US 3 764 268 A (FERRARI A ET AL) 9 October 1973 (1973-10-09)  column 4, line 47 -column 7, line 69; figure 1 ---	1,2,4-7, 9,12,13, 15,16, 19,20, 22,23
A	US 6 060 024 A (HUTCHINS BURLEIGH M ET AL) 9 May 2000 (2000-05-09) cited in the application column 2, line 41 -column 4, line 48; figures 2,6 -----	2,5-7, 15,19

INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US 02/34251

**Box I Observations where certain claims were found unsearchable (Continuation of item 1 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 II Observations where unity of invention is lacking (Continuation of item 2 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: 1-5

Manifold device

2. Claims: 6-23

Media sampling system and method

## INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 02/34251

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