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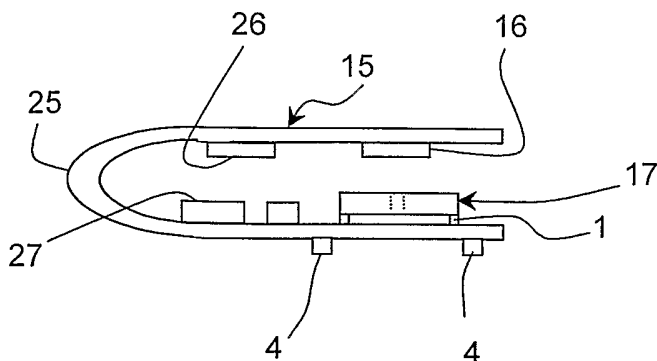
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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: AN OPTICAL DETECTOR



(57) Abstract: An optical detector (1) acts as a modular detection unit. It may for example be mounted on a separate micro-fluidic device (2) for detection of species within a channel (3) of the device (2). The detector (1) has mounting lugs (4) for mounting on the micro-fluidic device (2) for exact registry with the channel (3). A substrate (15) is folded over at a flexible part (25) through 180° and, at the top, supports a vertical emitting laser device (16). The lower branch of the substrate (15) supports an integrated circuit photo-diode array sensor (17) having chip bumps (18). The substrate (15) also supports emitter drive circuitry (26) and detector circuitry (27). The sensor (17) is a silicon integrated

circuit, having an array of integrated photo-diodes (17(a)) in a silicon wafer (17(b)). There is a vertical through-hole (17(c)) in the wafer, to act as a guide for incident radiation emitted by the emitter (16) (arrows IR). Because of the single folded-over substrate arrangement the emitter 16 can be particularly easily and accurately aligned with the guide aperture 17(c).

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INTERNATIONAL SEARCH REPORT

International application No
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A. CLASSIFICATION OF SUBJECT MATTER INV. G01N21/05 G01N21/64		
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		
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		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 1 236 807 A (UT-BATTELLE, LLC) 4 September 2002 (2002-09-04)	1-5,7,8, 10-12, 14,16-20
Y	figures 1,3,23 paragraphs [0154], [0155], [0185], [0191]	6,9,13
Y	----- US 6 246 479 B1 (JUNG WAYNE D ET AL) 12 June 2001 (2001-06-12) figure 9	6
Y	----- EP 0 790 496 A (SHIMADZU CORPORATION) 20 August 1997 (1997-08-20) figures 1A,6	9,13
X	----- US 6 592 733 B1 (FOLEY BARBARA ET AL) 15 July 2003 (2003-07-15) figures 1,2	1-3,10, 13,14,16
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<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> 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 <p style="text-align: center; font-size: 1.2em;">29 November 2005</p>	Date of mailing of the international search report <p style="text-align: center; font-size: 1.2em;">23. 03. 2006</p>	
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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	EP 0 840 113 A (SHIMADZU CORPORATION) 6 May 1998 (1998-05-06) figure 2 -----	1-3
X	US 6 381 025 B1 (BORNHOP DARRYL J ET AL) 30 April 2002 (2002-04-30) figure 7 -----	1-3,9-11
X	US 5 073 024 A (VALETTE ET AL) 17 December 1991 (1991-12-17) figure 2 -----	1-3

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IE2005/000085

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.:

1-20

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: 1-20

The first group covers details concerning optical aspects of the detector.

2. claims: 21-28

These claims deal with mechanical problems like mounting the detector on a sample system and in particular embodiments of the substrate allowing to fold the substrate to build a compact detector.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No PCT/IE2005/000085

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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