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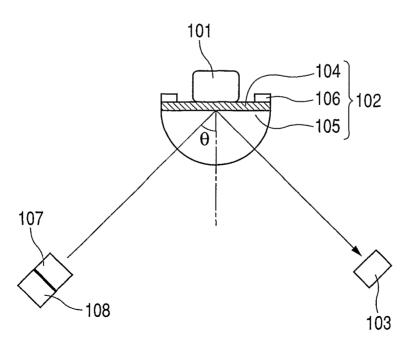
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(54) Title: SENSOR DEVICE



(57) Abstract: It has been requested to enhance sensitivity of a surface plasmon resonance sensor in a frequency region from a millimeter wave band to a terahertz band, from 30 GHz to 30 THz. Then, the present invention provides a sensor whose sensitivity is further improved by an analyte holding portion being equipped with a semiconductor and a medium.



INTERNATIONAL SEARCH REPORT

international application No

PCT/JP2006/317697 A. CLASSIFICATION OF SUBJECT MATTER INV. G01N21/55 G01N21/35 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) GO1N 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, INSPEC C. DOCUMENTS CONSIDERED TO BE RELEVANT Category* Citation of document, with indication, where appropriate, of the relevant passages Relevant to claim No. Υ US 2003/175160 A1 (ARCHIBALD WILLIAM B 1,2 [US] ET AL) 18 September 2003 (2003-09-18) paragraphs [0011], [0037], [0042], [0062], [0090]; figures 4-6 HOMOLA J ET AL: "Surface plasmon Υ 1,2,9 resonance sensors: review" SENSORS AND ACTUATORS B, ELSEVIER SEQUOIA S.A., LAUSANNE, CH, vol. 54, no. 1-2, 25 January 1999 (1999-01-25), pages 3-15,

Further documents are listed in the continuation of Box C.	X 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 7 February 2007	Date of mailing of the international search report $16/02/2007$
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 Brison, Olivier

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cited in the application page 4, left-hand column

INTERNATIONAL SEARCH REPORT

International application No
PCT/JP2006/317697

C(Continua	tion). DOCUMENTS CONSIDERED TO BE RELEVANT	
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Υ	US 2004/113077 A1 (FRANZEN STEFAN [US] ET AL) 17 June 2004 (2004-06-17) abstract; figures 1A,1B,2,5A paragraphs [0014], [0049], [0050], [0066] - [0069], [0071] - [0077], [0082], [0083], [0112]	9
Α	[0002], [0112]	3–6
Α	US 6 421 128 B1 (SALAMON ZDZISLAW [US] ET AL) 16 July 2002 (2002-07-16) abstract	3,4
Α	US 2002/179834 A1 (FEYGIN HYA [US]) 5 December 2002 (2002-12-05) paragraph [0056]	7
Α	WO 99/05509 A (ECOLE POLYTECH [CH]; VOGEL HORST [CH]; KELLER THOMAS [CH]; LILEY MARTH) 4 February 1999 (1999-02-04) page 4, lines 34-36 page 6, lines 23-27	8
P,A A	EP 1 630 542 A (AISIN SEIKI [JP]) 1 March 2006 (2006-03-01) the whole document & JP 2004 354246 A (AISIN SEIKI; TANAKA KOICHIRO) 16 December 2004 (2004-12-16) cited in the application	1-9
A	US 6 738 141 B1 (THIRSTRUP CARSTEN [DK]) 18 May 2004 (2004-05-18) column 17, lines 30-50	1,2,9

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/JP2006/317697

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2003175160	A1 18-09-2003	NONE	. -
US 2004113077	A1 17-06-2004	NONE	
US 6421128	B1 16-07-2002	AU 7484401 A CA 2409486 A1 EP 1299712 A1 JP 2003533691 T WO 0188509 A1	26-11-2001 22-11-2001 09-04-2003 11-11-2003 22-11-2001
US 2002179834	A1 05-12-2002	WO 02099399 A1	12-12-2002
WO 9905509	A 04-02-1999	AU 3356597 A EP 1002226 A1	16-02-1999 24-05-2000
EP 1630542	A 01-03-2006	JP 2004354246 A WO 2004106900 A1 US 2006231762 A1	16-12-2004 09-12-2004 19-10-2006
JP 2004354246	A 16-12-2004	EP 1630542 A1 WO 2004106900 A1 US 2006231762 A1	01-03-2006 09-12-2004 19-10-2006
US 6738141	B1 18-05-2004	NONE	