

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
29 November 2007 (29.11.2007)

PCT

(10) International Publication Number  
**WO 2007/136779 A3**

(51) International Patent Classification:  
**G02B 6/30** (2006.01)

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(21) International Application Number:  
PCT/US2007/011955

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(22) International Filing Date: 18 May 2007 (18.05.2007)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
60/801,910 19 May 2006 (19.05.2006) US  
60/801,943 19 May 2006 (19.05.2006) US  
11/750,569 18 May 2007 (18.05.2007) US

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(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

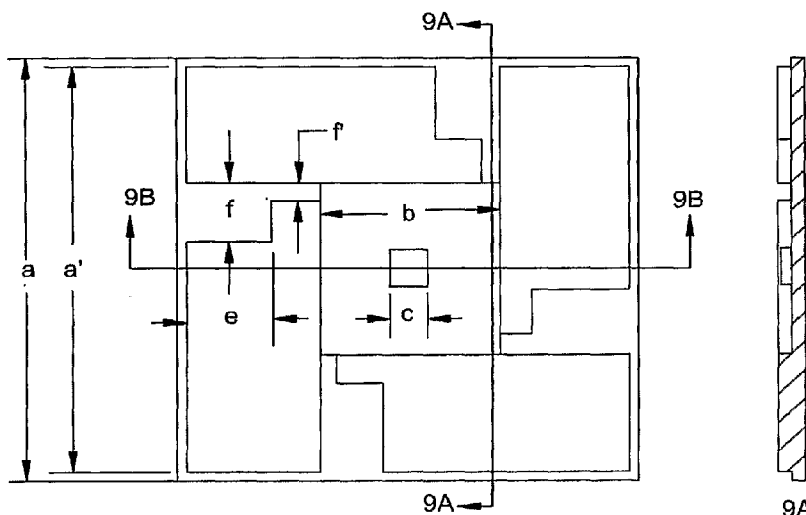
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Published:  
— with international search report

[Continued on next page]

(54) Title: ALIGNED EMBOSSED DIAPHRAGM BASED FIBER OPTIC SENSOR



(57) Abstract: The present invention is a diaphragm-fiber optic sensor (DFOS), interferometric sensor. This DFOS is based on the principles of Fabry-Perot and Michelson/Mach-Zehnder. The sensor is low cost and is designed with high efficiency, reliability, and Q-point stability, fabricated using MEMS (micro mechanic- electrical system) technology, and has demonstrated excellent performance. A DFOS according to the invention includes a cavity between two surfaces: a diaphragm made of silicon or other material with a rigid body (or boss) at the center and clamped along its edge, and the endface of a single mode optical fiber. By utilizing MEMS technology, the gap width between the diaphragm and the fiber endface is made accurately, ranging from 1 micron to 10 microns. To stabilize the Q-point of the DFOS when in use as an acoustic sensor, a system of microchannels is built in the structure of the diaphragm so that the pressure difference on two sides of the diaphragm is kept a constant, independent of the hydraulic pressure and/or low frequency noise when the device is inserted in liquid mediums.

WO 2007/136779 A3



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**(88) Date of publication of the international search report:**  
2 May 2008

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US07/11955

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - G02B 6/30 (2007.10)

USPC - 385/49

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(8) - G02B 6/30 (2007.10)

USPC - 257/432; 356/73.1; 367/149; 385/49

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 practicable, search terms used)

USPTO EAST System (US, USPG-PUB, EPO, JPO, FPRS, DERWENT), GoogleScholar

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X ---	US 5,311,485 A (KUZMENKO et al) 10 May 1994 (10.05.1994) entire document	8-11, 14, 15 ---
Y		1-7, 12, 13, 16-21
Y	US 6,631,638 B2 (JAMES et al) 14 October 2003 (14.10.2003) column 4, lines 55-59	1-7, 12, 17-21
Y	US 2004/0119981 A1 (MAY) 24 June 2004 (24.06.2004) paragraphs [0005], [0006], [0008], [0009]	7, 13, 20
Y	US 2005/0134837 A1 (SARKOZI et al) 23 June 2005 (23.06.2005) paragraphs [0027-[0030]	16, 21
Y	US 6,928,879 B2 (PARTRIDGE et al) 16 August 2005 (16.08.2005) column 3, line 66 - column 4, line 27, column 2, lines 45-53	19

Further documents are listed in the continuation of Box C.

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"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

12 November 2007

Date of mailing of the international search report

13 FEB 2008

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US, Commissioner for Patents

P.O. Box 1450, Alexandria, Virginia 22313-1450

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PCT OSP: 571-272-7774

