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(54) Title: IMPLANTABLE ANALYTE SENSOR

(57) Abstract: An implantable analyte sensor includes a substrate, electrodes on the substrate, and a membrane on the electrodes. The membrane can comprise elemental silicon. The sensor can exhibit a signal drift of less than 20 % per day in vivo.



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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 A61B5/00 C12Q1/00 G01N27/40

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 A61B C12Q 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, WPI Data, PAJ, INSPEC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 284 518 A (KARUBE ISAO ;FUJITSU LTD (JP)) 28 September 1988 (1988-09-28) column 9, line 24 - line 48 column 11, line 54 - line 60 column 13, line 58 -column 14, line 1 ---	1-3,8, 10,11, 15-17, 19-23
A	WO 98 38906 A (MARKWELL MEDICAL INST INC; SHULTS MARK C (US); UPDIKE STUART J (US) 11 September 1998 (1998-09-11) page 17, line 15 - line 22 page 19, line 19 - line 22 page 21, line 30 -page 22, line 14 --- -/--	1-7,10, 11,13, 15-27



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

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- *O* document referring to an oral disclosure, use, exhibition or other means
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- * & * document member of the same patent family

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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.
A	<p>SCHNAKENBERG U ET AL: "Novel potentiometric silicon sensor for medical devices" SENSORS AND ACTUATORS B, ELSEVIER SEQUOIA S.A., LAUSANNE, CH, vol. 34, no. 1-3, 1 August 1996 (1996-08-01), pages 476-480, XP004078027 ISSN: 0925-4005 section "Fabrication process" abstract</p> <p style="text-align: center;">---</p>	<p>1,8,9, 11,12, 14,16-21</p>
A	<p>US 5 874 047 A (FROHNHOFF STEPHAN ET AL) 23 February 1999 (1999-02-23)</p> <p>column 3, line 26 - line 31 column 6, line 43 - line 47 column 7, line 60 -column 8, line 18</p> <p style="text-align: center;">---</p>	<p>1,8,9, 11,12, 14,16-21</p>
A	<p>US 5 773 270 A (SOGIN DAVID ET AL) 30 June 1998 (1998-06-30) column 14, line 51 - line 67</p> <p style="text-align: center;">---</p>	<p>1,11, 16-19</p>
A	<p>HANSFORD DEREK JAMES: "Microfabrication Materials for Biomedical Microdevices" DISSERTATION SUBMITTED TO THE UNIVERSITY OF CALIFORNIA, BERKELEY, SPRING 1999, page 10-14,54,56-58,63,68,94,95,107,108 XP002176863 cited in the application the whole document</p> <p style="text-align: center;">-----</p>	

INTERNATIONAL SEARCH REPORT

Information on patent family members

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Patent document cited in search report		Publication date	Patent family member(s)	Publication date
EP 0284518	A	28-09-1988	JP 1223336 A	06-09-1989
			JP 1223337 A	06-09-1989
			JP 1876254 C	07-10-1994
			JP 5084860 B	03-12-1993
			JP 63238549 A	04-10-1988
			JP 1881343 C	21-10-1994
			JP 6001254 B	05-01-1994
			JP 63238548 A	04-10-1988
			JP 2091041 C	18-09-1996
			JP 8012171 B	07-02-1996
			JP 63311158 A	19-12-1988
			DE 3875149 A1	12-11-1992
			DE 3875149 T2	11-02-1993
			EP 0284518 A2	28-09-1988
			US 4975175 A	04-12-1990
WO 9838906	A	11-09-1998	US 6001067 A	14-12-1999
			AU 6680098 A	22-09-1998
			EP 1011425 A1	28-06-2000
			WO 9838906 A1	11-09-1998
US 5874047	A	23-02-1999	DE 4427921 A1	15-02-1996
			CA 2196895 A1	22-02-1996
			WO 9605512 A1	22-02-1996
			EP 0775314 A1	28-05-1997
			JP 10504388 T	28-04-1998
US 5773270	A	30-06-1998	NONE	