



(11) **EP 2 259 670 A3**

(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:
06.04.2011 Bulletin 2011/14

(51) Int Cl.:
H05K 5/06^(2006.01) A61B 5/00^(2006.01)

(43) Date of publication A2:
08.12.2010 Bulletin 2010/49

(21) Application number: **10182071.0**

(22) Date of filing: **07.04.2005**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU MC NL PL PT RO SE SI SK TR

- **Lorenz, Carrie R.**
Woodbine, MD 21797 (US)
- **O'Connor, Casey J.**
Gaithersburg, MD 20877 (US)
- **Walters, Steven J.**
Ellicott City, MD 21042 (US)

(30) Priority: **16.04.2004 US 825648**

(62) Document number(s) of the earlier application(s) in accordance with Art. 76 EPC:
05731370.2 / 1 736 041

(74) Representative: **Charlton, Peter John**
Elkington and Fife LLP,
Prospect House
8 Pembroke Road
Sevenoaks,
Kent TN13 1XR (GB)

(71) Applicant: **Sensors for Medicine and Science, Inc.**
Germantown, MD 20874 (US)

(72) Inventors:
 • **Colvin, JR., Arthur E.**
Mt. Airy, MD 21771 (US)

(54) **A housing for a circuit that is to be implanted in-vivo and process of making the same**

(57) The present invention provides a biocompatible circuit assembly that includes a circuit encased within a

housing. In some embodiments, the housing is a PMMA housing and before the circuit is enclosed within the housing the circuit is encased within a brick of epoxy.

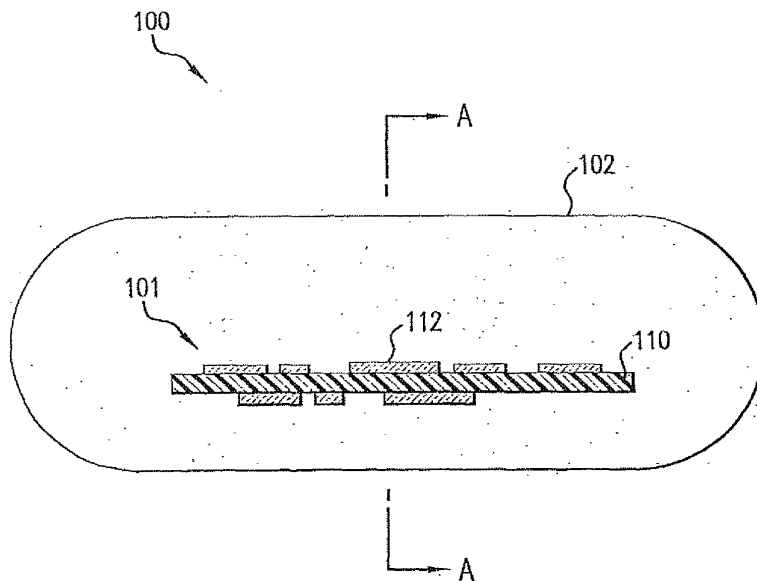


FIG. 1

EP 2 259 670 A3



EUROPEAN SEARCH REPORT

Application Number
EP 10 18 2071

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
Y	US 2003/181794 A1 (RINI CHRISTOPHER J ET AL) 25 September 2003 (2003-09-25) * paragraph [0006] * * paragraph [0069] - paragraph [0077]; figure 1 * * paragraph [0096] - paragraph [0098]; figures 19-21 *	1-12	INV. H05K5/06 A61B5/00
Y,D	US 6 304 766 B1 (COLVIN JR ARTHUR E [US]) 16 October 2001 (2001-10-16) * column 3, paragraph 66 - column 4, line 62; figure 1 * * column 9, line 8 - line 10 *	1-12	
A	LOVELY D F ET AL: "Epoxy moulding system for the encapsulation of microelectronic devices suitable for implantation" MEDICAL & BIOLOGICAL ENGINEERING & COMPUTING UK, vol. 24, no. 2, March 1986 (1986-03), pages 206-208, XP001206580 ISSN: 0140-0118 * page 208, column 1, paragraph 2 - column 2, paragraph 1 *	1-12	TECHNICAL FIELDS SEARCHED (IPC) H05K A61B

The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 2 November 2010	Examiner Dobbs, Harvey
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

2
EPO FORM 1503 03.82 (P04C01)



Application Number

EP 10 18 2071

CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing claims for which payment was due.

- Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due and for those claims for which claims fees have been paid, namely claim(s):
- No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

- All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.
- As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.
- Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:
- None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:
1-12
- The present supplementary European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims (Rule 164 (1) EPC).



**LACK OF UNITY OF INVENTION
SHEET B**

Application Number
EP 10 18 2071

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 1-12

A biocompatible, human implantable apparatus including an epoxy including light-blocking pigment or an optical epoxy, and a method for encasing a circuit.

2. claims: 13, 14

A biocompatible, human implantable apparatus including an epoxy comprised of a polymerised formulation of monomer and polymers, and a method for encasing a circuit.

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 10 18 2071

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

02-11-2010

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 2003181794	A1	25-09-2003	CA 2474359 A1	07-08-2003
			EP 1474038 A1	10-11-2004
			JP 2005515821 T	02-06-2005
			WO 03063700 A1	07-08-2003

US 6304766	B1	16-10-2001	CN 101209201 A	02-07-2008

专利名称(译)	用于体内植入的电路的壳体及其制造方法		
公开(公告)号	EP2259670A3	公开(公告)日	2011-04-06
申请号	EP2010182071	申请日	2005-04-07
[标]申请(专利权)人(译)	医药及科学传感器公司		
申请(专利权)人(译)	医学和科学传感器公司		
当前申请(专利权)人(译)	医学和科学传感器公司		
[标]发明人	COLVIN JR ARTHUR E LORENZ CARRIE R OCONNOR CASEY J WALTERS STEVEN J		
发明人	COLVIN, JR., ARTHUR E. LORENZ, CARRIE R. O'CONNOR, CASEY J. WALTERS, STEVEN J.		
IPC分类号	H05K5/06 A61B5/00 A61B5/07 H05K5/00		
CPC分类号	A61B5/0031 H05K5/065		
优先权	10/825648 2004-04-16 US		
其他公开文献	EP2259670A2		
外部链接	Espacenet		

摘要(译)

本发明提供了一种生物相容性电路组件，其包括封装在壳体内部的电路。在一些实施例中，壳体是PMMA壳体，并且在电路封闭在壳体内之前，电路被封装在环氧树脂砖内。

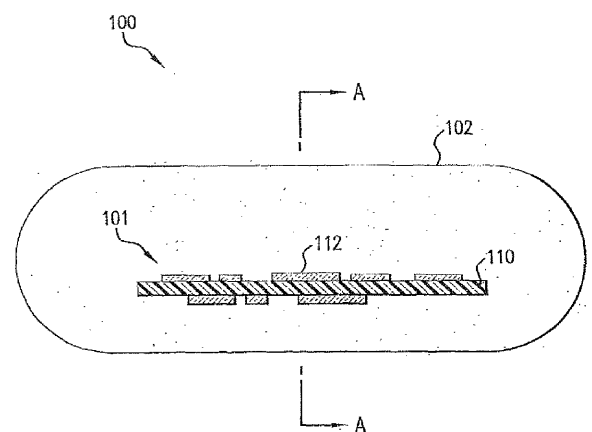


FIG. 1