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(54) Title: TISSUE ACCESS DEVICE

(57) Abstract: A device for accessing tissue of a subject, and a corresponding method for manufacturing the device, includes a substrate having a top side and a bottom side. One or more projections extend from the bottom side, each projection including an exterior wall portion defining therein an interior shaft portion, the substrate and the multiple projections formed from a monolithic mass. The one or more projections are functionalized to enable transfer, between the subject tissue and the substrate, of at least one of an energy, a signal, a material, and a compound. Functionalization can include laser welding metal microwires or processing a fluid precursor in the interior shaft portion to form a functional electrode material. Embodiments can be manufactured more easily, with greater flexibility, and can provide for more reliable tissue access than existing devices.

INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER
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A61M37/00
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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)
A61B A61N A61M

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)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2008/009763 A1 (CHIOU JIN-CHERN [TW] ET AL) 10 January 2008 (2008-01-10) paragraphs [0002], [0011], [0024] - [0033], [0035] - [0038], [0044] - [0045]; figures 3,7	1-97
A	US 2012/186998 A1 (HERMANS ANDRE [US] ET AL) 26 July 2012 (2012-07-26) the whole document	2,11, 24-33, 35-38, 44,45
A	JP 2016 002194 A (TOPPAN PRINTING CO LTD) 12 January 2016 (2016-01-12) paragraph [0029]; figure 3 the whole document	20

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[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

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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	US 2002/198446 A1 (HILL NORMAN M [US] ET AL) 26 December 2002 (2002-12-26) paragraph [0015] the whole document -----	4,16

INTERNATIONAL SEARCH REPORT

Information on patent family members

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PCT/IB2020/050543

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2008009763 A1	10-01-2008	TW I328441 B	11-08-2010
		US 2008009763 A1	10-01-2008
US 2012186998 A1	26-07-2012	US 2012186998 A1	26-07-2012
		WO 2008039320 A1	03-04-2008
JP 2016002194 A	12-01-2016	NONE	
US 2002198446 A1	26-12-2002	US 6892438 B1	17-05-2005
		US 2002198446 A1	26-12-2002