

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference P2836PC00		FOR FURTHER ACTION see Form PCT/ISA/220 as well as, where applicable, item 5 below.
International application No. PCT/FI2019/050849	International filing date (<i>day/month/year</i>) 28 November 2019 (28.11.2019)	(Earliest) Priority date (<i>day/month/year</i>) 30 November 2018 (30.11.2018)
Applicant EMBERION OY		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 5 sheets.

It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**

a. With regard to the **language**, the international search was carried out on the basis of:

the international application in the language in which it was filed.

a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

b. This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43.6bis(a)).

c. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. **Certain claims were found unsearchable** (See Box No. II).

3. **Unity of invention is lacking** (See Box No. III).

4. With regard to the **title**,

the text is approved as submitted by the applicant.

the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

the text is approved as submitted by the applicant.

the text has been established, according to Rule 38.2, by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the **drawings**,

a. the figure of the **drawings** to be published with the abstract is Figure No. 1

as suggested by the applicant.

as selected by this Authority, because the applicant failed to suggest a figure.

as selected by this Authority, because this figure better characterizes the invention.

b. none of the figures is to be published with the abstract.

Box No. IV Text of the abstract (Continuation of item 5 of the first sheet)

A photodetector which comprises a measurement layer (15) and at least a first photoactive layer (11) which covers the measurement layer (15). The measurement layer (15) may be a transistor channel or a charge accumulation electrode. The conductivity type of the measurement layer is n-type, p-type or ambipolar and the first photoactive layer (11) exhibits intrinsic semiconductivity.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/FI2019/050849

A. CLASSIFICATION OF SUBJECT MATTER

See extra sheet

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: H01L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

FI, SE, NO, DK

Electronic data base consulted during the international search (name of data base, and, where practicable, search terms used)

EPODOC, EPO-Internal full-text databases, Full-text translation databases from Asian languages, WPIAP, XP3GPP, XPAIP, XPESP, XPETSI, XPI3E, XPIEE, XPIETF, XPIOP, XPIPCOM, XPJPEG, XPMISC, XPOAC, XPRD, XPTK, BIOSIS, COMPDX, EMBASE, INSPEC, MEDLINE, TDB, NPL

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2013032782 A1 (GERASIMOS KONSTANTATOS [US] et al.) 07 February 2013 (07.02.2013) paragraphs [0004], [0011]-[0013], [0017]-[0018]; Figs. 1, 3	1-8
Y	EP 3136445 A1 (EMBERION OY [FI]) 01 March 2017 (01.03.2017) paragraphs [0004], [0015], [0121]-[0145]; Figs. 8-9	1
Y	US 2014077210 A1 (HEKMATSHOARTABARI BAHMAN [US] et al.) 20 March 2014 (20.03.2014)	1
A	paragraphs [0005], [0026]-[0027], [0037]-[0039]; Figs. 3, 7A-7B	2
A	US 2007057144 A1 (ASANO HIDEKI [JP]) 15 March 2007 (15.03.2007) paragraphs [0016]-[0018], [0030], [0052]-[0065]; Figs. 3A-3B	1-8
Y	US 5567971 A (JACKSON WARREN B [US] et al.) 22 October 1996 (22.10.1996)	1
A	abstract; column 3, line 50 – column 4, line 62; Fig. 2	8

 Further documents are listed in the continuation of Box C.
 See patent family annex.

* Special categories of cited documents:	"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
"A" document defining the general state of the art which is not considered to be of particular relevance	"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
"D" document cited by the applicant in the international application	"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
"E" earlier application or patent but published on or after the international filing date	"&" document member of the same patent family
"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	

Date of the actual completion of the international search 04 February 2020 (04.02.2020)	Date of mailing of the international search report 10 February 2020 (10.02.2020)
Name and mailing address of the ISA/FI Finnish Patent and Registration Office FI-00091 PRH, FINLAND Facsimile No. +358 29 509 5328	Authorized officer Teppo Häyrynen Telephone No. +358 29 509 5000

INTERNATIONAL SEARCH REPORT
Information on Patent Family Members

International application No.
PCT/FI2019/050849

US 2013032782 A1	07/02/2013	US 9233845 B2	12/01/2016
		CN 104024146 A	03/09/2014
		CN 104024146 B	15/02/2017
		EP 2739563 A1	11/06/2014
		ES 2369953 A1	09/12/2011
		ES 2369953 B1	09/10/2012
		JP 2014522117 A	28/08/2014
		JP 6021913 B2	09/11/2016
		KR 20140046006 A	17/04/2014
		KR 101919005 B1	08/02/2019
		WO 2013017605 A1	07/02/2013

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		JP 2018526825 A	13/09/2018
		JP 6518007 B2	22/05/2019
		KR 20180043345 A	27/04/2018
		KR 102038853 B1	31/10/2019
		US 2018248019 A1	30/08/2018
		US 10396180 B2	27/08/2019
		WO 2017032850 A1	02/03/2017

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US 2007057144 A1	15/03/2007	US 7531778 B2	12/05/2009
		JP 2007081185 A	29/03/2007

US 5567971 A	22/10/1996	DE 69633363 D1	21/10/2004
		DE 69633363 T2	17/02/2005
		EP 0747973 A2	11/12/1996
		EP 0747973 B1	15/09/2004
		JP H08334566 A	17/12/1996
		JP 4065338 B2	26/03/2008

CLASSIFICATION OF SUBJECT MATTER

IPC

H01L 31/105 (2006.01)**H01L 31/0224** (2006.01)**H01L 31/112** (2006.01)**H01L 51/42** (2006.01)**H01L 51/44** (2006.01)**H01L 27/144** (2006.01)