

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference OPP18-002PCT	FOR FURTHER ACTION see Form PCT/ISA/220 as well as, where applicable, item 5 below.	
International application No. PCT/KR2018/001323	International filing date (<i>day/month/year</i>) 31 January 2018 (31.01.2018)	(Earliest) Priority Date (<i>day/month/year</i>) 01 September 2017 (01.09.2017)
Applicant HANWHA CORPORATION		

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 3 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. 3
 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.

A. CLASSIFICATION OF SUBJECT MATTER**H01L 21/673(2006.01)i, H01L 31/18(2006.01)i**

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHEDMinimum documentation searched (classification system followed by classification symbols)
H01L 21/673; H01L 21/3065; H01L 21/683; C23C 16/458; H01L 31/18Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Korean utility models and applications for utility models
Japanese utility models and applications for utility modelsElectronic data base consulted during the international search (name of data base and, where practicable, search terms used)
eKOMPASS(KIPO internal) & Keywords:wafer boat, plate, pin, triangle and zigzag**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	TW 201704563 A (CENTROTHERM PHOTOVOLTAICS AG) 01 February 2017 See paragraphs [0004]-[0024], [0051]-[0077] and figures 1, 4, 12.	1-4,6
Y		5,7-9
Y	KR 10-2014-0100221 A (AP SYSTEMS INC.) 14 August 2014 See paragraph [0045] and figure 4.	5,7-9
A	JP 2016-154180 A (SHIMADZU CORP.) 25 August 2016 See paragraphs [0013]-[0034] and figures 1-6.	1-9
A	US 2017-0092530 A1 (SCREEN HOLDINGS CO., LTD.) 30 March 2017 See paragraphs [0008]-[0046] and figures 2-3, 7-9F.	1-9
A	JP 2008-311298 A (TOKYO ELECTRON LTD.) 25 December 2008 See paragraphs [0016]-[0042] and figures 1-3, 5-9, 11.	1-9

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

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"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

"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

"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

"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

30 May 2018 (30.05.2018)

Date of mailing of the international search report

30 May 2018 (30.05.2018)

Name and mailing address of the ISA/KR

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/KR2018/001323

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
TW 201704563 A	01/02/2017	DE 10-2015-004419 A1 EP 3278358 A1 IN 201717034993 KR 10-2017-0135903 A US 2018-0066354 A1 WO 2016-156607 A1	06/10/2016 07/02/2018 17/11/2017 08/12/2017 08/03/2018 06/10/2016
KR 10-2014-0100221 A	14/08/2014	KR 10-1432157 B1 TW 201442141 A TW 1515822 B WO 2014-123310 A1	20/08/2014 01/11/2014 01/01/2016 14/08/2014
JP 2016-154180 A	25/08/2016	None	
US 2017-0092530 A1	30/03/2017	CN 106952858 A JP 2017-069532 A KR 10-2017-0038157 A TW I605534 B US 9892955 B2	14/07/2017 06/04/2017 06/04/2017 11/11/2017 13/02/2018
JP 2008-311298 A	25/12/2008	CN 101325169 A CN 101325169 B JP 4782733 B2 KR 10-1019880 B1 KR 10-2008-0109646 A TW 200919622 A	17/12/2008 22/09/2010 28/09/2011 04/03/2011 17/12/2008 01/05/2009