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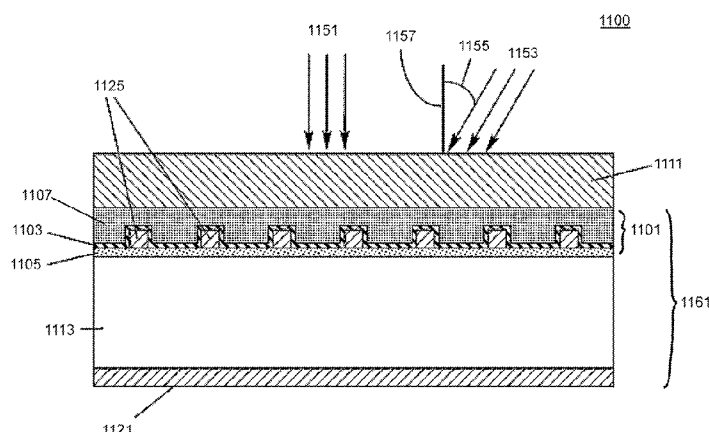


FIG. 11

(57) Abstract: An integrated energy conversion device includes a nanoarray layer having a plurality of nanofeatures disposed in a pattern. The nanoarray layer is configured to modify a selected one of a direction and a wavelength of photons of light incident on a surface of the nanoarray layer. The nanoarray layer has a surface. A first material is disposed adjacent to and optically coupled to one region of the surface of the nanoarray layer. A second material is disposed adjacent to and optically coupled to a second region of the surface of the nanoarray layer. At least a selected one of the first material and the second material includes a photo-voltaic layer which is configured to provide an integrated solar cell electrical output voltage and an integrated solar cell electrical output current between an integrated solar cell positive output terminal and an integrated solar cell negative output terminal.



WO 2010/132401 A3

**A. CLASSIFICATION OF SUBJECT MATTER*****H01L 31/042(2006.01)i, H01L 31/052(2006.01)i***

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)

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Documentation 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 models

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

eKOMPASS(KIPO internal) &amp; Keywords: nano, wavelength, photovoltaic

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	US 2008-0178924 A1 (KEMPA KRZYSZTOF et al.) 31 July 2008 See figures 1-3 and paragraphs [0013]-[0043].	1-16 17-22
A	KR 10-2008-0112250 A (CIBA HOLDING INC.) 24 December 2008 See claim 1 and figure 1.	1-22
A	US 2008-0163924 A1 (SPRUNG ELISHEVA) 10 July 2008 See abstract and figures 3-4.	1-22



Further documents are listed in the continuation of Box C.



See patent family annex.

\* Special categories of cited documents:

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