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(54) Title: SEMICONDUCTOR HETEROJUNCTION PHOTOVOLTAIC SOLAR CELL WITH A CHARGE BLOCKING LAYER

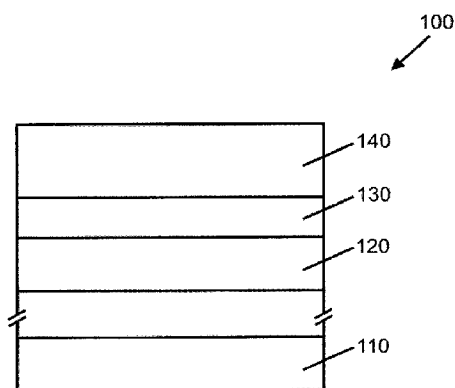


FIG. 1A

(57) Abstract: A heterojunction photovoltaic device comprises a chemically-doped n-type semiconductor layer, a charge-blocking layer that can have a compositionally graded configuration, and a chemically-doped p-type semiconductor layer. The charge-blocking layer can significantly reduce interfacial recombination of electrons and holes, increase open circuit voltage (Voc), and increase overall photovoltaic device efficiency.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2009/048727**A. CLASSIFICATION OF SUBJECT MATTER*****H01L 31/042(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)

H01L 31/042; G03G 5/08; H01L 21/203; H01L 31/0248; H01L 31/04; H01L 31/08

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 since 1975.

Japanese utility models and applications for utility models since 1975.

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

eKOMPASS(KIPO internal)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2008-0223445 A1 (MARKS TOBIN J. et al.) 18 September 2008	17,25
A	See claims 1 and 5, fig 1.	1-16,18-24
A	KR 10-2008-0038651 A (KOREA INSTITUTE OF SCIENCE AND TECHNOLOGY) 07 May 2008	1-25
A	See abstract and fig 1.	
A	JP 56-156833 A (TOSHIBA CORP) 03 December 1981	1-25
A	See claim 1 and fig 5.	
A	JP 09-055526 A (MATSUSHITA ELECTRIC IND CO LTD) 25 February 1997	1-25
A	See abstract and fig 1.	



Further documents are listed in the continuation of Box C.



See patent family annex.

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INTERNATIONAL SEARCH REPORT

Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2008-0223445 A1	18.09.2008	None	
KR 10-2008-0038651 A	07.05.2008	None	
JP 56-156833 A	03.12.1981	None	
JP 09-055526 A	25.02.1997	JP 3444700 B2	08.09.2003