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Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))

[Continued on next page]

(54) Title: SPATIALLY SELECTIVE LASER ANNEALING APPLICATIONS IN HIGH-EFFICIENCY SOLAR CELLS

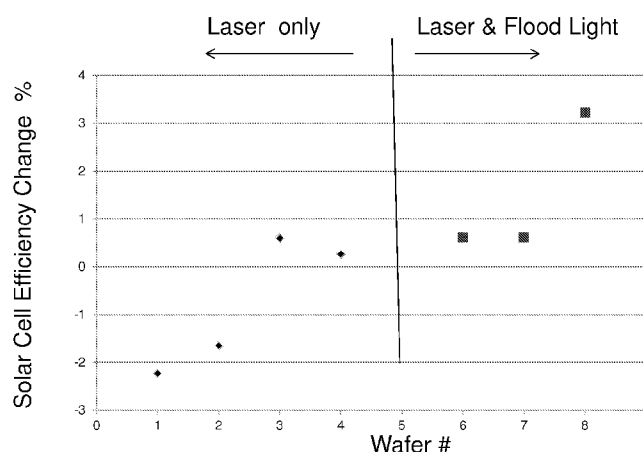


Fig. 46

(57) Abstract: Various laser processing schemes are disclosed for producing various types of hetero-junction emitter and homo-junction emitter solar cells. The methods include base and emitter contact opening, selective doping, metal ablation, annealing to improve passivation, and selective emitter doping via laser heating of aluminum. Also, laser processing schemes are disclosed that are suitable for selective amorphous silicon ablation and selective doping for hetero-junction solar cells. Laser ablation techniques are disclosed that leave the underlying silicon substantially undamaged. These laser processing techniques may be applied to semiconductor substrates, including crystalline silicon substrates, and further including crystalline silicon substrates which are manufactured either through wire saw wafering methods or via epitaxial deposition processes, or other cleavage techniques such as ion implantation and heating, that are either planar or textured/three-dimensional. These techniques are highly suited to thin crystalline semiconductor, including thin crystalline silicon films.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2012/038907**A. CLASSIFICATION OF SUBJECT MATTER*****H01L 31/042(2006.01)i, H01L 31/18(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; C30B 28/12; H01L 21/268; C30B 25/00; H01L 31/00

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) & Keywords: laser, anneal, light

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 7857907 B2 (CHO AN-THUNG et al.) 28 December 2010 See abstract and figure 2-3.	1-20
A	US 2010-0224229 A1 (PRALLE MARTIN U. et al.) 09 September 2010 See abstract, claims 1-16 and figure 3.	1-20
A	WO 2010-091466 A1 (NEWSOUTH INNOVATIONS PTY LIMITED et al.) 19 August 2010 See abstract, claim 15 and figure 11.	1-20

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

* Special categories of cited documents:

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"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

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"&" document member of the same patent family

Date of the actual completion of the international search

10 JANUARY 2013 (10.01.2013)

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

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