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**Lin et al.**

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4) **MICRO/NANOSTRUCTURE PN JUNCTION DIODE ARRAY THIN-FILM SOLAR CELL AND METHOD FOR FABRICATING THE SAME**

(56) **References Cited**

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(57) **ABSTRACT**

The present invention discloses a micro/nanostructure PN junction diode array thin-film solar cell and a method for fabricating the same, wherein a microstructure or sub-microstructure PN junction diode array, such as a nanowire array or a nanocolumns array, is transferred from a source-material wafer to two pieces of transparent substrates, which are respectively corresponding to two electric conduction types, to fabricate a thin-film solar cell. In the present invention, the micro/nanostructure PN junction diode array has advantages of a fine-quality crystalline semiconductor, and the semiconductor substrate can be reused to save a lot of semiconductor material. Besides, the present invention can make the best of sunlight energy via stacking up the solar cells made of different types of semiconductor materials to absorb different wavebands of the sunlight spectrum.

12 Claims, 8 Drawing Sheets

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5) **Prior Publication Data**

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2) Division of application No. 12/318,356, filed on Dec. 29, 2008, now Pat. No. 8,258,396.

5) **Foreign Application Priority Data**

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3) **Field of Classification Search**  
USPC ..... 438/57, 67, 74, 89; 136/255  
See application file for complete search history.

