Amorphous and microcrystalline heterojunction cells

It shows how heterojunction cells are constructed by combining the architecture of an amorphous cell and a crystalline cell. The efficient amorphous surface passivation layers ...

A Pc1D numerical simulation for heterojunction (HJ) silicon solar cells is presented, improving the understanding of HJ solar cells to derive arguments for design optimization and new technique for characterization of n-type microcrystalline silicon. In this paper, we will present a Pc1D numerical simulation for heterojunction (HJ) silicon solar cells, ...

As predicted in Fig. 1 (c), c-Si heterojunction solar cells with passivating contacts will be the next generation high-efficiency PV production (>= 25%) after PERC. This article reviews the recent development of high-efficiency Si heterojunction solar cells based on

passivating layer and amorphous silicon doped layers), mostly originating from the p-type contact. We implement p-type microcrystalline doped layers in heterojunction cells and demonstrate with 2-side contacted devices that a low CO 2

Micro Raman Spectroscopy Analysis of Doped Amorphous and Microcrystalline Silicon Thin Film Layers and its Application in Heterojunction Silicon Wafer Solar Cells Zhi Peng Ling1,2,*, Jia Ge1,3, Stangl Rolf1, Armin Gerhard Aberle1,2, and Thomas Mueller1 1 ...

This paper reports on the development of phosphorous doped microcrystalline silicon oxide (µc-SiOx:H) films as an emitter window layer in flat p-type silicon heterojunction (SHJ) solar cells featuring intrinsic a-SiOx:H buffer layers. We investigated the material properties of n-type µc-SiOx:H films grown at various input gas ratios and correlated the results of SHJ ...

Like any other (semiconductor) solar cell, the amorphous silicon / crystalline silicon heterojunction solar cell consists of a combination of p-type and n-type material, that is, a diode structure. However, while in the usual case the n-type and the p-type semiconductors are identical and just differ in the doping, a heterojunction is built on two different materials, ...

Microstructure of Underdense Hydrogenated Amorphous Silicon and its Application to Silicon Heterojunction Solar Cells ... n-type amorphous and microcrystalline silicon oxides ((n)-SiOx:H and (n ...

The effects of windows layer thickness and front contact barrier on build-in potential and p-layer barrier height of microcrystalline silicon solar cell had been examined using AMPS-1D (Analysis ...

Investigation of n-p heterojunction solar cells obtained by depositing a n-type thin silicon films either amorphous or microcrystalline on p-type c-Si is carried out.

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Low-frequency inductively coupled plasma (ICP) has been widely used to deposit amorphous or microcrystalline Si thin films, but the intrinsic drawback namely ion ...

Optimization of Amorphous Silicon Oxide Buffer Layer for High-Efficiency p-Type Hydrogenated Microcrystalline Silicon Oxide/n-Type Crystalline Silicon Heterojunction Solar Cells Jaran Sritharathikhun, Hiroshi Yamamoto, Shinsuke Miyajima et al.

Heterojunction silicon wafer solar cells combine plasma-deposited amorphous silicon thin films and n-type crystalline silicon wafers to industrially viable high-efficiency solar cell devices.

In this book, the editors present an overview of the state-of-the-art in physics and technology of amorphous-crystalline heterostructure silicon solar cells. The heterojunction concept is introduced, processes and resulting properties of the materials used in the cell

The technology of heterojunction silicon solar cells, also known as HJT solar cells (heterojunction technology), combines the advantages of crystalline and amorphous ...

Japanese Journal of Applied Physics Heterojunction Amorphous Silicon Solar Cells with n-Type Microcrystalline Cubic Silicon Carbide as a Window Layer To cite this article: Shunsuke Ogawa et al 2007 Jpn. J. Appl. Phys. 46 518 View the article online for

Optimized amorphous silicon oxide buffer layers for silicon heterojunction solar cells with microcrystalline silicon oxide contact layers Kaining Ding,a) Urs Aeberhard, Friedhelm Finger, and Uwe Rau IEK5-Photovoltaik, Forschungszentrum JEURulich, Leo-Brandt

In amorphous/crystalline silicon heterojunction solar cells, optical losses can be mitigated by replacing the amorphous silicon films by wider bandgap amorphous silicon oxide layers. In this article, we use stacks of intrinsic amorphous silicon and amorphous silicon oxide as front intrinsic buffer layers and show that this increases the short-circuit current density by up ...

Hydrogenated Amorphous Silicon Oxide Solar Cells Fabricated near the Phase Transition between Amorphous and Microcrystalline Structures Sorapong Inthisang 11, Kobsak Sriprapha, Shinsuke Miyajima1, Akira Yamada;2, and Makoto Konagai 1Department of Physical Electronics, Tokyo Institute of Technology, 2-12-1-S9-9, O-okayama, Meguro, Tokyo 152-8552, Japan

Silicon heterojunction (SHJ) solar cells have reached high power conversion efficiency owing to their effective passivating contact structures. Improvements in the optoelectronic properties...

In this book, the editors present an overview of the state-of-the-art in physics and technology of

amorphous-crystalline heterostructure silicon solar cells. The heterojunction concept is introduced, processes and resulting properties of the ...

Amorphous Silicon/Crystalline Silicon Solar Cells deals with some typical properties of heterojunction solar cells, such as their history, the properties and the challenges of the cells, ...

A silicon heterojunction (SHJ) solar cell is formed by a crystalline silicon (c-Si) wafer sandwiched between two wide bandgap layers, which serve as carrier-selective contacts. For c-Si SHJ solar cells, ...

Heterojunction (HJ) silicon solar cells use crystalline silicon wafers for both carrier transport and absorption, and amorphous and/or microcrystalline thin silicon layers for passivation and ...

It shows how heterojunction cells are constructed by combining the architecture of an amorphous cell and a crystalline cell. The efficient amorphous surface passivation layers p-i and i-n are used to passivate the crystalline silicon bulk. Amorphous cells are very ...

Indium tin oxide (ITO) compound is widely used as the front contact of silicon solar cells. Its work function FITO is one of the most important factors related to the performance of solar cells. In this paper, we use the AMPS-1D (Analysis of Microelectronic and Photonic Structures) program developed by Pennsylvania State University to analyze the dependence of physical ...