عنوان مقاله:

Modeling Electrical Behaviour and Temperature Dependency of Amorphous Thin Film Solar Cells

محل انتشار:

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خلاصه مقاله:

Introducing Ge atoms to the Si lattice in Si-based solar cells are an effective approach in improving their characteristics. Especially, current density of the cell can be enhanced withoutdeteriorating its open circuit voltage. In this work a new modeling approach is developed and used for optimization andefficiency enhancement of single and double junction heterostructure solar cells based on the optimization of i-layer and player properties. Also the temperature dependency of theelectrical behaviour of the amorphous silicon thin film heterostructure solar cell such as I-V curve and Electron current density is investigated. After optimizing the parameters of i-layer and p-layer of solar cell, a double-junction solar cell with JSC=267A/m2, VOC=1.13V, FF=0.795, and efficiency of 23.5% has been achieved at T=300 K.

کلمات کلیدی:

Amorphous Silicon, Amorphous Silicon- Germanium, solar cell simulation, temperature dependency

لینک ثابت مقاله در پایگاه سیویلیکا:

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