

عنوان مقاله:

An evaluation for CIGS based thin-film solar cells development

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خلاصه مقاله:

This review summarizes the current status of chalcopyrite CIGS thin film solar cell technology with a focus on recent advancements and emerging concepts intended for higher efficiency and novel applications. The recent developments and trends of research in labs and industrial achievements communicated within the last years are reviewed and the major developments linked to alkali post deposition treatment and composition grading in CIGS, surface passivation, buffer and transparent contact layers are emphasized. In recent years, a lot of efforts have been initiated to develop low-cost thin-film solar cells, which are alternatives to high-cost silicon (Si) solar cells. Copper Indium Gallium Selenide (CIGS) based solar cells have become one of the most promising candidates among the thin film technologies for solar power generation. The current record efficiency of CIGS has reached ۲۲.۶%, which exceeds the current multi crystalline Si record efficiency (۲۱.۹%). However, material properties and efficiency on small area devices are crucial aspects to be considered before manufacturing into large scale. Chalcopyrite-based solar cells were first developed using CuInSe_2 absorber material, but it was quickly become dependent on the $[\text{Ga}/((\text{In}+\text{Ga}))]$ ratio

کلمات کلیدی:

Solar cell, cis, CIGS, Thin film, photovoltaic

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