

State-of-Art Research on CZTS Thin-Film Solar Cell- A Review

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Abstract

CZTS material is seen as a very potential replacement for toxic CIGS, and CIS material as a thin-film solar cell absorber layer. Because of its extraordinary light absorption capacity and generation of electron-hole pairs, CZTS has been implemented as a thin-film solar cell. Research is going on over the last decade on increasing the efficiency of the CZTS solar cell. Different structural and material properties have been experimentally altered to achieve higher efficiency. But even after several attempts the single junction CZTS solar cell has not achieved an efficiency of more than 13%. In this article, a detailed review is done of the developments that have taken place and the future scope of the CZTS thin-film solar cell (TFSC). From its evolution, materials preparation, fabrication process, TFSC design, and defects in CZTS to its implementation as a solar cell are discussed in this manuscript.

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