

Abstract Submitted
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Printable CIGS thin film solar cells XIAOJUAN FAN, Marshall University — Among the various thin film solar cells in the market, CuInGaSe thin film solar cells have been considered as the most promising alternatives to crystalline silicon solar cells because of their high photo-electricity conversion efficiency, reliability, and stability. However, many fabrication methods of CIGS thin film are based on vacuum processes such as evaporation and sputtering techniques which are not cost efficient. This work develops a solution method using paste or ink liquid spin-coated on glass that would be competitive to conventional ways in terms of cost effective, non-vacuum needed, and quick processing. A mixture precursor was prepared by dissolving appropriate amounts of composition chemicals. After the mixture solution was cooled, a viscous paste was prepared and ready for spin-coating process. A slight bluish CIG thin film on substrate was then put in a tube furnace with evaporation of metal Se followed by depositing CdS layer and ZnO nanoparticle thin film coating to complete a solar cell fabrication. Structure, absorption spectrum, and photo-electricity conversion efficiency for the as-grown CIGS thin film solar cell are under study.

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