

Growth Mechanism, Structural and Compositional Properties of $\text{Cu}_2\text{ZnSnS}_4$ (CZTS) Thin Films Deposited by Sputtering Method from a Compound Target

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Abstract : Kesterite-type $\text{Cu}_2\text{ZnSnS}_4$ (CZTS) thin films were deposited on corning glass from a single quaternary target. In this study, we investigated the growth mechanism and the influence of thin film thickness on the structural and compositional properties of CZTS films. All the four samples (as-deposited inclusive) show peaks corresponding to kesterite-type structure. The diffraction peaks of (112) are sharp and the small characteristics peaks of the kesterite structure such as (220)/ (204) and (312)/ (116) are also clearly observed in X-ray diffraction pattern. These results indicate that the quaternary CZTS would be a potential candidate for solar cell applications.

Keywords : RF sputtering, $\text{Cu}_2\text{ZnSnS}_4$ thin film, annealing, growth mechanism, annealing, growth mechanism, renewable energy

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