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Growth Mechanism, Structural and Compositional Properties of Cu_2ZnSnS_4 (CZTS) Thin Films Deposited by Sputtering Method from a Compound Target

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Abstract : Kesterite-type Cu_2ZnSnS_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, Cu2ZnSnS4 thin film, annealing, growth mechanism, annealing, growth mechanism, renewable energy
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