



Growth of Cu₂SnS₃ thin films by solid reaction under sulphur atmosphere

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Auteur	Bouaziz, M [1], Ouerfelli, J [2], Srivastave, S.-K. [3], Bernède, Jean Christian [4], Amlouk, M [5]
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Résumé en anglais	<p>Cu₂SnS₃ thin film have been synthesized by solid state reaction under vapour sulphur pressure at 530 °C, during 6 h, via a sequentially deposited copper and tin layers Cu/Sn/Cu...Sn/Cu/Sn. The structure and the composition were characterized by X-Ray Diffraction (XRD), Scanning Electron Microscopy (SEM) and Electron Probe Micro Analysis (EPMA). X-ray diffraction revealed that as the deposited film crystallizes in the cubic structure and the crystallites exhibit preferential 111 orientation of the grains. Moreover, EPMA analysis confirmed that the obtained film is stoichiometric. The SEM study shows the presence of spherical particles of ≈100–120 nm diameters. The optical absorption coefficient and band gap of the film were estimated by means of transmission and reflection optical measurements at room temperature. A relatively high absorption coefficient in the range of 104 cm⁻¹ was indeed obtained and the band gap value is of the order of 1.1 eV. On the other hand, the electrical conductivity of Cu₂SnS₃ film prepared in the present experiment is suitable for fabricating a thin film solar cell based on not cheaper and environmental friendly material.</p>
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Liens

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