

Hierarchical flower-like Cu_3BiS_3 thin films synthesis with chemical bath deposition method (Times New Roman, 14)

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Abstract: (Times New Roman, 12)

Now-a-days, the progress of thin film semiconductor devices such as CdTe, $\text{Cu}(\text{In,Ga})\text{Se}_2$ has remarkable development in the field of thin film photovoltaics. The toxicity of cadmium and limited availability of indium impose the search for alternative materials. At this juncture, Cu_3BiS_3 is one of the promising emerging materials with favorable properties like high absorption coefficient and direct bandgap. Furthermore, all the constituents required for Cu_3BiS_3 synthesis are cost effective, non-toxic and abundantly available in the earth's crust. In the present work, hierarchical flower-like Cu_3BiS_3 thin films were successfully synthesized on a glass substrate by non-vacuum chemical bath deposition technique. The XRD confirms the crystalline nature of Cu_3BiS_3 thin films. Raman spectrum ensured the pure phase of Cu_3BiS_3 by major vibrational peaks at 290 and 469 cm^{-1} . Moreover, SEM shows the formation of hierarchical flower-like nanostructure of Cu_3BiS_3 thin films. Wettability study of Cu_3BiS_3 thin films exhibited hydrophobic behavior. The absorption coefficient and optical bandgap of Cu_3BiS_3 thin films were found to be 10^5 cm^{-1} and 1.63 eV respectively. These Cu_3BiS_3 thin films may be useful as absorbing layer in the photovoltaic solar cell. (Times New Roman, 10) (Max. 200 words)

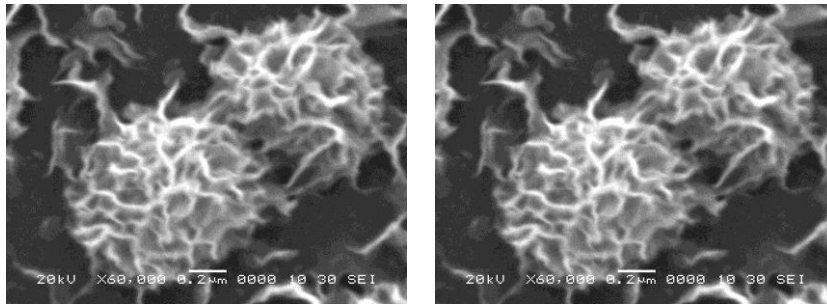


Fig.1. SEM image of hierarchical flower-like Cu_3BiS_3 thin film (Times New Roman, 10)

Note: Maximum 300 words allowed without Figure.

References: (Times New Roman, 12)

1. M. P. Brown, A. K. Patil, Nanotechnol. Environ. Eng. 4 (2018) 15-20. (Times New Roman, 10)
2. K. Austin, A. K. Patil, P. Q. Rave, J. Mater. Sci: Mater. Electron. 29 (2018) 11926-11933.

(Times New Roman, 10)

(Maximum 5 Ref.)