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Effect of complexing agent: Comparative study of copper based ternary thin films by chemical bath deposition technique

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Thin films of $FeCuS_2$ and $ZnCuS_2$ at varying complexing agents were deposited by chemical bath deposition method. Ultrathin ternary films were grown on glass plate and the structural, morphological and optical characteristics were analyzed using X-ray diffraction (XRD), Scanning Electron Microscopy (SEM) and UV-Visible spectroscopy techniques. X-Ray diffraction (XRD) pattern of $FeCuS_2$ and $ZnCuS_2$ thin film explains the polycrystalline nature, and also it showed the deposition of cubic phases at room temperature. The SEM images show that the prepared films show clear morphology influenced by the complexing agent Leishman stain. The effect of complexing agents on the material absorbance and band gap energy of the deposited thin films were analysed using UV-Vis spectrometry. From these results, it is indicated that the prepared films are suitable candidate for solar cell applications.

Keywords: EDTA, copper iron sulphide, copper zinc sulphide, chemical bath deposition, absorbance, band gap.