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# Synthesis and photosensor study of as-grown CuZnO thin film by facile chemical bath deposition

Ghamdan M. M. Gubari; Ibrahim Mohammed S. M.; Nanasaheb P. Huse; Avinash S. Dive; Ramphal Sharma 



+ [Author & Article Information](#)

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We have successfully deposited CuZnO thin film on a glass substrate by facile chemical bath deposition method at 85 °C for 1 hr. Structural, topographical, Optical and Electrical properties of the prepared Thin Films were investigated by XRD, Raman spectrum, AFM, UV-Visible Spectrophotometer and I-V Measurement System respectively. The X-ray diffraction (XRD) pattern confirmed the formation of the CuZnO composition when compared with standard JCPDS card (JCPDF # 75-0576 & # 36-1451). The Raman analysis shows a major peak at 458 cm<sup>-1</sup> with E<sub>2</sub> (High) vibrational mode. AFM images revealed uniform deposition over an entire glass substrate with 66.2 nm average roughness of the film. From the optical absorption spectrum, clear band edge around ~407 nm was observed which results in a wide energy band gap of ~3.04 eV. The electrical properties were measured at room temperature in the voltage range ±5 V, showed a drastic enhancement in current under light illumination with the highest photosensitivity of ~99.9 % for 260 W.

Topics

[Band gap](#), [Electrical properties and parameters](#), [Photodetectors](#), [Glass](#), [Absorption spectroscopy](#), [Microscopy](#), [Raman spectroscopy](#), [Thin films](#), [X-ray diffraction](#)

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