

Effect of varying RF power and oxygen partial pressure on the structural and optical properties of CuO thin films

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Abstract:

Films of copper oxide were synthesized on Si and glass substrates by radio frequency (RF) sputtering at room temperature from a solid copper target in Ar+O₂ gas mixture with various O₂ partial pressures (10%, 20% and 30%) and various RF power (150,200 and 250 W).The effect of varying RF power and oxygen partial pressure on the structural and optical properties was investigated.

Structural and optical characterizations of these films have been carried out using: X-ray diffractometer; Fourier transform infrared spectrometer and UV-VIS-NIR spectrophotometer.

Structural analysis results demonstrate that the single phase CuO on Si substrate is of high a crystalline structure with a dominant (1 1 1) orientation. FT-IR results confirm the formation of pure CuO phase

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