

## Effect of annealing temperature on structural and optical properties of $\text{Cd}_{1-x}\text{Zn}_x\text{Te}$ thin films grown by RF-sputtering

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### Abstract

$\text{Cd}_{1-x}\text{Zn}_x\text{Te}$  thin films were prepared by cathodic radio frequency sputtering from CdTe and ZnTe targets. The films deposited on glass substrates were annealed in a vacuum at different temperatures (250 °C – 400 °C). The effects of annealing temperature on structural and optical properties of  $\text{Cd}_{1-x}\text{Zn}_x\text{Te}$  were studied using X-ray diffraction (XRD), scanning electron microscopy (SEM) and UV-VIS-IR measurements. It was found that all annealed films were polycrystalline with a preferential (111) orientation (Figure 1), the grain size increases as the annealing temperature increases. The optical transmission data show that annealed films exhibit high transmission (Figure 2), the direct band gap and the refractive index varied with annealing temperature.

Keywords:  $\text{Cd}_{1-x}\text{Zn}_x\text{Te}$  thin films; RF-sputtering; annealing temperature.

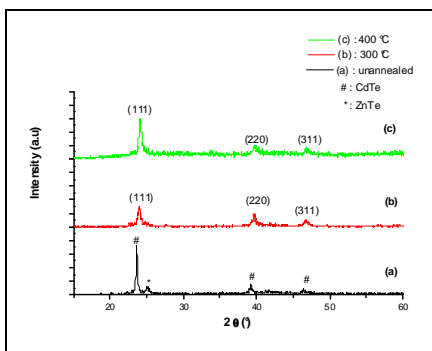


Fig. 1. XRD patterns of annealed sample at different temperatures.

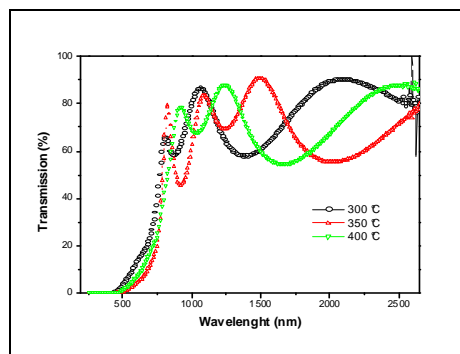


Fig. 2. Normalized transmittance spectrum of sample annealed at different temperatures