

Photoacoustic characterization of CuSe metal chalcogenide semiconductor using phase signal analysis

ABSTRACT

Open photoacoustic cell analysis has been done on CuSe metal chalcogenide semiconductor to obtain thermal and carrier transport properties. The thermal diffusivity, carrier diffusion coefficient, surface recombination velocity and recombination lifetime of the CuSe were determined from the photoacoustic phase signal-frequency analysis. The experimental results show that the surface recombination velocity decreases with the increasing of CuSe sample thickness. The results indicate an increasing trend of band-to-band recombination lifetime in conjunction with the increasing of sample thickness.

Keyword: Photoacoustic; CuSe metal chalcogenide semiconductor; Phase signal analysis