

Irradiation of Cu(In,Ga)Se₂ Thin Films by 10 MeV Electrons at 77 K: Effect on Photoluminescence Spectra

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Received February 23, 2022

Revised March 25, 2022

Accepted for publication March 25, 2022

Thin films of Cu(In,Ga)Se₂ on Mo/glass were irradiated by 10 MeV electrons at 77 K and examined by photoluminescence at 77 K before and after irradiation without warming the samples as well as after warming to 300 K. The photoluminescence spectra revealed a broad band constituting 3 merged peaks (P1, P2, P3) assigned to: band-to-band recombination (P1) and recombination of free electrons with holes localised at acceptors influenced by the valence band tail (P2, P3). Irradiation reduced the intensity of the peaks due to deep traps generated by electrons and anomalously reduced the degree of compensation of the material.

Keywords: thin films, irradiation, photoluminescence, recombination, band-to-band.

DOI: 10.21883/FTP.2022.06.52617.9841a

Full text of the paper will appear in journal SEMICONDUCTORS.