

CdTe aggregates in KBr crystalline matrix

Authors

A Bensouici, JL Plaza, E Diéguez, O Halimi, B Boudine, S Addala, L Guerbous, M Sebais

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Description

In this work, we report the experimental results on the fabrication and optical characterization of Czochralski (Cz) grown KBr single crystals doped with CdTe crystallites. The results of the optical absorption have shown two bands, the first one located at 250 nm demonstrates the incorporation of cadmium atoms in the KBr host followed by a partial chemical decomposition of CdTe, the second band located at 585 nm shows an optical response of CdTe aggregates. Photoluminescence spectra at room temperature before annealing showed a band located at 520 nm (2.38 eV), with a blue shift from the bulk gap of 0.82 eV ($E_g(\text{CdTe})=1.56$ eV). While the photoluminescence spectra after annealing at 600 °C showed a band situated at 640 nm (1.93 eV), these bands are due to band-to-band transitions of CdTe nanocrystals with a blue shift from the bulk gap at 0.38 eV. Blue shift in optical absorption and ...