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Exciton-phonon spectra of CuGa/sub x/In/sub 1-x/Se/sub 2/ crystals

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Abstract

In the present paper the excitonic reflectivity and the wavelength derivative reflection (WDR) study of CuGa/sub x/In/sub x-1/Se/sub 2/ solid solutions are presented. The states n=1, n=2 and n=3 of A, B, C exciton series are determined. The exciton binding energies and more exact values of the band gaps of all three intervals (/spl Gamma//sub 7//sup V1/-/spl Gamma//sub 6//sup C1/, /spl Gamma//sub 6//sup V2/-/spl Gamma//sub 6//sup C1/, are calculated hereby. The magnitudes of the splitting due to crystal-field and spin-orbit interaction are determined as well.