International Semiconductor Conference
CAS Proceedings 23rd Edition.
10-14 October 2000, Sinaia, Romania
(Cat. No. 00TH8486)

Spatial dispersion effects in the exciton-polariton reflectivity spectra of CuGaS/sub 2/ crystals

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https://doi.org/10.1109/SMICND.2000.890196

Abstract

The analysis of the exciton reflectivity contour in CuGaS/sub 2/ crystals at 8 K was carried out. Absorption and luminescence spectroscopy was employed for additional characterization. The value of the exciton Ridberg constant /spl Rfr/=0.03247 eV, the energy of the continuum E/sub g//sup n+/spl infin//=2.50305 eV and the thickness of the exciton-free layer L=22 /spl Aring/ were deduced from this analysis. The excited n=2 (2.53323 eV) and n=3 (2.53774 eV) states of the excitons were determined. The upper polariton branch was drawn from the angular dependence of the reflectivity.

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