



Optical properties of Tl_3SbS_3 acousto-optic crystals

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Abstract

Optical properties of acousto-optical material Tl_3SbS_3 were investigated at the fundamental absorption edge. The basic ($n=1$) and excited ($n=2, 3$) exciton states were obtained from the λ -modulated reflection spectra for polarizations $E \perp c$ at 10K. Taking into account the spatial dispersion we determined the parameters of excitons by calculating the spectra shapes of λ -modulated reflection of line $n=1$ and estimated values of the zone-translation masse and the reduced effective masse of excitons, the effective masse of electrons ($m_{c1}^*=0.12m_0$), heavy ($m_{v1}^*=0.88m_0$) and light ($m_{v2}^*=0.196m_0$) holes.