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Resonance Raman scattering and excitonic spectra in $TlInS_2$ crystals

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Abstract

The excitons ground and excited states for E||*a* and E||*b* polarizations in absorption and reflection spectra of TlInS2 crystals were detected. The fundamental parameters of excitons and bands were determined at k=0. The resonance Raman spectra were investigated in the region of excitons transitions. The resonance Raman scattering spectra with participation of optical phonons that are active at the center of Brillouin zone were identified. The Raman scattering in Y(YX)Z and Y(ZX)Z geometries at 10K with excitation by He–Ne laser was researched. Energies of phonons with A_g and B_g symmetries were determined. It was shown that the number of modes at 10K was two times lower than expected according to theoretical calculations.