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The superposition of one- and two-phonon absorption and radiation in TeO_2 crystal

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Abstract

Raman scattering and IR reflectivity for actual configuration have been investigated. The contours of reflectivity spectra rave been calculated. Phonon parameters have been determined. The temperature dependence of Raman scatterung and IR reflectivity indicated absence of soft modes in optical oscillations. Two-phonon processes of light absorption and radiation have been investigated. In the one-phonon mode frequency range, a two-phonon radiation which is completely absorbed by the crystal itself has been observed.