

RAMAN SCATTERING STUDY
OF A TWO-DIMENSIONAL $S = 1$
QUANTUM SPIN SYSTEM $\text{Ni}_5(\text{TeO}_3)_4\text{Cl}_2$

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S u m m a r y

The transition metal tellurium oxychloride, $\text{Ni}_5(\text{TeO}_3)_4\text{Cl}_2$, has been investigated by the Raman scattering method at temperatures of 15–300 K. Sixty two phonon modes (of the total 69 Raman-active phonon modes allowed for the monoclinic C_{2h}^6 structure) are identified in the spectra, and their behavior is analyzed. Several distinct features are observed in Raman spectra at low temperatures: (i) three low-frequency bands (22.3, 29.4, and 49.0 cm^{-1} at $T = 15$ K) with a temperature behavior characteristic of the one-magnon scattering and (ii) a band at 56.3 cm^{-1} with a pronounced temperature dependence. The origin of the low-temperature bands is discussed.