

# EPR and Optical Absorption Studies of $\text{VO}^{2+}$ Doped *Trisodium Citrate Dihydrate* Single Crystals

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Z. Naturforsch. **60a**, 95 – 100 (2005); received July 20, 2004

The electron paramagnetic resonance of  $\text{VO}^{2+}$  doped *trisodium citrate dihydrate* ( $\text{Na}_3\text{C}_6\text{H}_5\text{O}_7 \cdot 2\text{H}_2\text{O}$ ) single crystals and powder has been examined at room temperature. The angular variation of the EPR spectra has shown that two different  $\text{VO}^{2+}$  complexes are located in different chemical environments, each environment containing two magnetically inequivalent  $\text{VO}^{2+}$  sites in distinct orientations occupying substitutional positions in the lattice and showing a very large angular dependence. The crystalline field around the  $\text{VO}^{2+}$  ion is nearly axial. The optical absorption spectrum shows three bands, centered at 24631, 16892, and 12195  $\text{cm}^{-1}$ . The spin Hamiltonian parameters and the molecular orbital coefficients are calculated from the EPR and optical data, and result are discussed.

*Key words:* EPR; *Trisodium Citrate*; Absorption the Spectrum; Vanadyl Ion.