

EPR and Optical Absorption Studies of VO^{2+} Doped KH_2PO_4 and $\text{KH}_3\text{C}_4\text{O}_8 \cdot 2\text{H}_2\text{O}$ Single Crystals

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VO^{2+} doped potassium dihydrogen phosphate (KH_2PO_4) and potassium tetraoxalate ($\text{KH}_3\text{C}_4\text{O}_8 \cdot 2\text{H}_2\text{O}$) single crystals and powders are examined by electron paramagnetic resonance and optical absorption spectroscopy. Angular variations of KH_2PO_4 and $\text{KH}_3\text{C}_4\text{O}_8 \cdot 2\text{H}_2\text{O}$ single crystals show four and two different VO^{2+} sites, respectively. The local symmetry of VO^{2+} complexes is nearly axial for both host crystals. The optical absorption spectra show three bands. Spin Hamiltonian parameters are measured and molecular orbital coefficients are calculated by correlating EPR and optical absorption data for the central vanadyl ion.

Key words: EPR; Potassium Dihydrogen Phosphate; Potassium Tetraoxalate; Absorption Spectrum; Vanadyl Ion.