Phase Polymorphism, Molecular Motions and Structural Changes in $[Cr(NH_3)_6](ClO_4)_3$

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A phase transition in $[Cr(NH_3)_6](ClO_4)_3$ at $T_c^h = 293.5$ K (on heating) and $T_c^c = 293.0$ K (on cooling) was determined by differential scanning calorimetry. The temperature dependences of the full width at half maximum of the bands connected with $\rho_r(NH_3)F_{1u}$ and $\delta_d(ClO)E$ modes suggest that the discovered phase transition is not connected with drastic changes in the speed of reorientational motions of the NH_3 ligands nor the ClO_4^- anions. Temperature dependence of the FT-FIR spectra and the diffraction patterns show that the discovered phase transition is caused by a change in the crystal structure.

Key words: Hexaamminechromium(III) chlorate(VII); Phase Transition; Structural Change; DSC; FT-IR.