ANISOTROPY AND QUASI–2D BEHAVIOR OF MAGNETOELECTRIC $LiCoPO_4$ COMPOUND

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9.7 cm

The $LiCoPO_4$ olivine exhibits a unique set of physical properties, e.g., strong linear magnetoelectric effect, large uniaxial magnetic anisotropy, quasi–2D magnetic structure, and a large Li-ionic conductivity, which makes it attractive for basic and applied studies. Specific heat, magnetic torque, and magnetization of $LiCoPO_4$ olivine were measured. It was shown that near the Néel temperature, $T_N = 21.6$ K, magnetic contribution to the specific heat can be described satisfactorily by logarithmic divergence, as expected for a quasi–2D antiferromagnetic Ising system. An effect of influence of magnetic field on the magnetocrystalline anisotropy was discovered. It manifests itself as a first-order transition induced by magnetic field of 8 T at $\sim$ 9 K. Physical nature of this transition was explained and a model describing experimental dependences satisfactorily was proposed.

13.4 cm

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