9.7 cm

THE ULTRA WEAK REMANENT MAGNETIC MOMENT IN QUASI-2D MAGNETOELECTRIC CRYSTAL $LiNiPO_4$

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Magnetization of the single crystal of $LiNiPO_4$ as a function of a temperature and a magnetic field has been measured along the crystallographic axes using the SQUID-magnetometer. The ultra weak remanent magnetic moment in $LiNiPO_4$ has been revealed. The measured residual magnetization was greatest along the c axis. Its value is about 0.005 G at 5 K. Along the crystallographic a and b axes its magnitueds were less on order than along axis c. With increase of a temperature of the sample up to the Neel temperature a magnitude of the remanent magnetization was decreasing monotonously to zero. The nature of its occurrence is not clear. The group of magnetic symmetry $Pnm'a$ that was established for this crystal at neutron-diffraction studies forbids weak ferromagnetism. The temperature behaviour of observed remanent magnetization essentially differs from that which was observed in the lightly iron-doped crystals. It suggests that the observed effect is not caused by uncontrollable impurities. It is possible, that the occurrence of the residual moment is connected with weak modulation of a spin structure of the crystal. Let's note that the incommensurate structure in $LiNiPO_4$ was revealed recently in a narrow temperature range close to T_N at the neutron-diffraction studies. The presence of weak ferromagnetic moment in this crystal gives hope for explanations of abnormal behaviour of the magnetoelectric effect in a magnetic field observed in this crystal.

13.4 cm

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