

**PECULIARITIES OF MAGNETIC HYSTERESES
IN THE MAGNETOELECTRIC LiCoPO₄**

M. Kharchenko^a, Yu. Kharchenko^a

M. Baran^b, R. Szymczak^b

^aInstitute for Low Temp. Phys. & Eng., NASU, Pr. Lenina 47, 61103 Kharkiv,
Ukraine, *kharchenko@ilt.kharkov.ua*

^bInstitute of Physics, PAS, Al. Lotnikow 32/46, 02-668 Warsaw, Poland

Recently, it has been found an ultra-weak ferromagnetism in antiferromagnetic LiCoPO₄ single crystals. Origin of this effect remains unexplained until now. The features of hysteretic behavior of magnetic and magneto-optical properties of such crystal are presented here. Studies of the magnetic linear birefringence have shown the hysteretic behavior of a global character. Magnetization processes have revealed the shifted rectangular hysteresis loops. The shift direction depends on a thermo-magnetic history of the sample. According to our opinion this shift is not trivial. The observable behavior of the loops indicates on a non-uniform spin ordering in LiCoPO₄. Most likely, a magnetic structure of this antiferromagnet is the incommensurate modulated one and is represented by alternated stripes of antiferromagnetic and weak-ferromagnetic character. The shift of the magnetic hysteresis loop could be explained in this case by the exchange bias, the value of which is defined by: an exchange interaction between AFM and WFM layers, a stiffness of the spin wall formed between them, a value of spontaneous magnetization and by a or volume of WFM stripes. The expected parameters of or proposed modulated structures are discussed.

9.7 cm

13.4 cm

Subject category :

5. Phase Transitions and Critical Phenomena

Presentation mode :

poster

Corresponding author :

Yu. Kharchenko

Address for correspondence :

Put here

Your address

Inst. for Low Temp. Phys. & Eng., NASU,
Pr. Lenina 47, 61103 Kharkiv
Ukraine

Email address :

ykharchenko@ilt.kharkov.ua