ELECTRO-AND MAGNETO INDUCED OPTICAL ACTIVITY IN LEAD GERMANATE TYPE CRYSTALS

Adamenko D., Klymiv I., Vlokh R.

Institute of Physical Optics, Lviv, Ukraine
E-mail: vlokh@ifo.lviv.ua

This work is devoted to the revealing and studying of the optical activity effects, caused by the electric and magnetic fields in ferroelectric crystals of lead germinate family with different doping elements.

It was experimentally established that in $Pb_5Ge_3O_{11}:Cr^{3+}$ crystals the magnitude of electrogyration coefficient in the vicinity of phase transition temperature essentially exceed the values of electrogyration coefficients of known lead germanate family crystals.

On the basis of study of the temperature dependencies of natural optical activity and electrogyration effect the character of phase transition in pure lead germinate and $Pb_5Ge_3O_{11}:Cr^{3+}$ crystals is established.

The magneto-electrooptic rotation of polarization plane induced by the combined action of external magnetic field and spontaneous polarization in $Pb_5Ge_3O_{11}$ and $Pb_5Ge_3O_{11}:Cr^{3+}$ crystals have been revealed.