

INVESTIGATION
OF THE SPONTANEOUS
SPIN-FLIP PHASE TRANSITION
IN TERBIUM-YTTRIUM IRON-GARNET
BY THE MAGNETOOPTIC METHOD

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S u m m a r y

The domain structure transformation and the technical magnetization of a $\text{Tb}_{0.26}\text{Y}_{2.74}\text{Fe}_5\text{O}_{12}$ single crystal have been studied by the magneto optic method in the temperature region of a spontaneous spin-flip phase transition (SFPT). It has been found that the SFPT occurs in a finite temperature interval, where the low- and high-temperature magnetic phase domains coexist. We have observed the anomalies of the temperature dependences of the coercive force and the magneto optic susceptibility of the crystal related to a transformation of its domain structure under the spin-flip. The experimental results obtained are interpreted within the framework of the SFPT theory for a cubic crystal. It has been demonstrated that the existing theory describes consistently the evolution of the $\text{Tb}_{0.26}\text{Y}_{2.74}\text{Fe}_5\text{O}_{12}$ garnet domain structure under the spontaneous reorientation of the easy magnetization axis.