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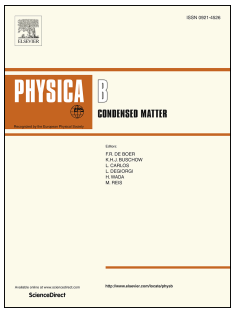

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Mahieddine Lahoubi

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Magnetic study of the low temperature anomalies in the magnetodielectric terbium iron garnet

Mahieddine Lahoubi*

Badji Mokhtar-Annaba University, Faculty of Sciences,
Department of Physics, Laboratory L.P.S., PO-Box 12, 23000 Annaba, Algeria

Abstract

Measurements of the anomalous magnetic properties at low temperatures of TbIG single crystals using neutron powder diffraction (NPD) data, high field magnetizations, magnetostriction and specific heat are analyzed and summarized. Reliable information at both microscopic and macroscopic levels is provided about the significant change of the double umbrella structure observed in the NPD results near 54 K. The positions of the observed maxima at 55-65 K in the paraprocess magnetic susceptibility along the three mean directions and paraprocess of the forced magnetostriction along the easy axis of magnetization <111> agree with the manifestations of the "low-temperature point" T_B predicted by Belov at 58 K. However, the pronounced maximum at 57 K in the excess of specific heat in zero magnetic fields reveals that the Schottky effect causes anomaly at temperature close the T_B point. The results are discussed and compared with previous magnetic and magnetodielectric reports.

***Key words**:* TbIG; Low temperature point of Belov; High field magnetization; Paraprocess susceptibility; Paraprocess magnetostriction; Schottky anomaly

*Corresponding author.

E-mail adresses: mlahoubi@hotmail.fr (M. Lahoubi) & mlahoubi@gmail.com