

Field-Induced Magnetic Order in Spin Liquid Phase of TbBaCo₄O₇ single crystals

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The recently discovered family of compounds RBaCo₄O₇ (R-rare earth or Y) realizes a new class of two-dimensional geometrically frustrated magnets. Magnetic properties of these compounds are determined by their unique structure, which consists of 1:1 ordered stacking of triangular and kagome layers of CoO₄ tetrahedra. In this paper we present results of dc magnetic susceptibility measurements in TbBaCo₄O₇ single crystals performed at temperatures in the range 2–300 K and in magnetic fields up to 55 kOe. The results obtained strongly suggest that the ground state of TbBaCo₄O₇ is a spin liquid phase which is transformed into a weak ferromagnetic phase by application of a high magnetic field along *c* axis. We discuss various mechanisms responsible for the lack of ordering of TbBaCo₄O₇.

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