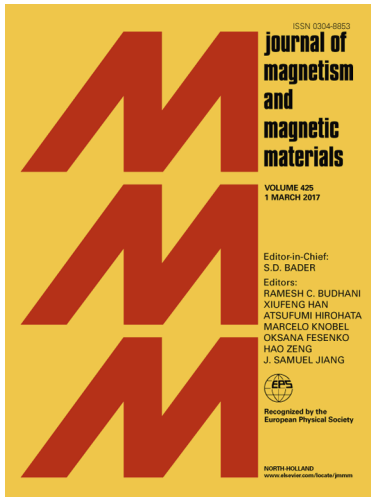

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KEYWORDS (Rare earth Borate, Flux crystal growth, Geometric Magnetic Frustration)

ABSTRACT

Crystals of the KBaR(BO_3)$_2$ (R = Y, Gd, Tb, Dy, Ho, Tm, Yb and Lu) rare earth borates were grown by spontaneous nucleation from a KF-B_2O_3 flux. The crystals obtained were typically well-developed hexagonal plates about 1 mm in large dimension. The crystals were used to study the anisotropic temperature and field dependent magnetization of the materials, which are based on ideal triangular planes of magnetic rare earths. All structures were refined in space group R$\bar{3}$ m by single-crystal X-ray diffraction, and in addition to the equilateral triangular rare earth plane lattice, displayed K/Ba site occupancy disorder. All magnetic compounds reveal dominantly antiferromagnetic spin interactions with no magnetic ordering above 1.8 K. With the exception of KBaGd(BO_3)$_2$, magnetic anisotropy was observed for other five magnetic members of the