

Abstract Submitted
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Axial Magnetic Anisotropy from Two Systems Fe₂B and Co₂B with Planar Anisotropy VALENTIN TAUFOR, TEJ LAMICHHANE, SERGEY L. BUD'KO, ANTON JESCHE, ALAN I. GOLDMAN, KEVIN W. DENNIS, R. WILLIAM MCCALLUM, VLADIMIR ANTROPOV, PAUL C. CANFIELD, Ames Laboratory/ Iowa State University, Ames, IA 50011, USA — Growth of single crystals of (Fe_{1-x}Co_x)₂B ($0 \leq x \leq 1$) and detailed characterization of their magnetic properties will be presented. Despite the fact that both Fe₂B and Co₂B show a planar anisotropy at room temperature, we observe a uniaxial anisotropy at intermediate doping which makes (Fe,Co)₂B a promising system for permanent magnet applications in a system without rare-earth element. Comparison with recent band structure calculations will be presented. The temperature dependence of the anisotropy measured on single crystals from 2 K to 1000 K shows some unusual variations with an increase of the magnetic anisotropy with increasing temperature at some specific substitution.

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