

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Preparation and Magnetic Properties of Co₂Z Hexaferrite From Annealed Mixtures of BaM and Co₂Y Hexaferrite Precursor Powders
MARC DOYLE, Drexel University, BRIAN KELLY, THOMAS EKIERT, KARL UNRUH, University of Delaware — The transformation of fine mixtures of BaM and Co₂Y hexaferrite powders to Co₂Z hexaferrite has been studied by scanning electron microscopy (SEM), x-ray diffraction (XRD), and vibrating sample magnetometry (VSM) measurements. The precursor hexaferrites were prepared by a solution-phase auto-combustion method and subsequently mixed in a low energy rolling mill. The BaM/Co₂Y mixtures were annealed at temperatures between 800 and 1300 °C in air for 2 hours. Over this temperature range a rapid decrease in the measured coercivity from a value of about 4 kOe, characteristic of the hard BaM component of the mixture, to a value of about 50 Oe, characteristic of the magnetically soft Co₂Z phase, was observed. The coercivity reduction was accompanied by a modest increase in the saturation magnetization to a value of about 60 emu/g.

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Date submitted: 30 Nov 2010

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