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Magnetic-field-induced Crystallographic Texture Enhancement in Cold-deformed FePt/Fe3Pt Nanocomposites B. Z. CUI, National High Magnetic Field Laboratory, Florida State University, D. S. LI, Georgia Institute of Technology, K. HAN, National High Magnetic Field Laboratory, Florida State University, H. J. SCHNEIDER-MUNTAU , National High Magnetic Field Laboratory, Florida State University, J.P. LIU, University of Texas at Arlington, H. GARMESTANI, Georgia Institute of Technology, N.M. DEMPSEY, Laboratoire Louis Nel, Grenoble, France — We introduce a unique approach to obtaining anisotropic FePt/Fe3Pt nanocomposites with crystallographic texture of the hard phase: roll-bonding and magnetic annealing. Magnetic-field- induced crystallographic texture and magnetic property enhancement in cold-deformed Fe62Pt38 nanostructured magnets have been studied. Compared with the samples annealed without a magnetic field, the annealing in the presence of both out-of- plane and in-plane 19 T fields enhances texture of the hard FePt phase by about 50 field improves iHc, Br, and (BH)max. Especially, (BH)max was increased by 21 - 25 behavior and better squareness of the demagnetization curves were observed in the magnetically annealed samples. It is suggested that cold-rolling-induced textures in both Fe and Pt phases and magnetic-field-assisted phase transformation should be responsible for the notice improvement of the crystallographic texture and magnetic properties in the magnetically annealed samples.

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