Abstract Submitted
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Effect of Grain size on the Giant Intrinsic Coercivity of High-Energy Milled Sm(Co,Cu,Fe)5 Alloys[1] DILARA SULTANA, ALEXANDAR GABAY, GEORGE HADJIPANAYIS, University of Delaware, MAGNETICS LAB,UNIVERSITY OF DELAWARE TEAM — The giant intrinsic magnetic hardness of Sm(Co,Cu)5 alloys have been known for a long time [1]. Previous studies suggested that this behavior is due to the crystal site disorder [2]. Our previous work has explained that the room-temperature intrinsic coercivity of 37 kOe after low-temperature aging is rather due to the intrinsic change in the Co atomic site occupation [3]. In this study, we investigated the effect of grain refinement through the high energy milling on the intrinsic coercivity of the Sm(Co,Cu,Fe)5 alloys. We have found that grain refinement does not affect the high coercivity of homogenized alloys, but strongly influences the onset of the giant coercivity during low-temperature aging. The microstructures of the samples are examined with TEM. [1] E.A. Nesbitt, R.H. Willens, R.C. Sherwood, E. Buehler, J.H. Wernick 1968 Appl.. Phys. Lett. 12, 361. [2] H. Oesterrier , F.T. Parker, M. Misroach 1979 J. Appl. Phys. 50, 4273. [3] A.M. Gabay, P. Larson, I.I. Manzin, G.C. Hadjipanayis 2005, J. Phys. D: Appl. Phys. 38, 1.

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Dilara Sultana
University of Delaware

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