

Asymmetry of Magnetic Disorder Observed in Exchange-biased System

Hun-Sung Lee^{1*}, Kwang-Su Ryu², Kun-Rok Jeon¹ and Sung-Chul Shin¹

¹Department of Physics and Center for Nanospinics of Spintronic Materials, Korea Advanced Institute of Science and Technology (KAIST), Daejeon 305-701, Korea

²IBM Research Division, Almaden Research Center, San Jose, California 95120, USA

We report an asymmetry of magnetic disorder in exchange-biased IrMn/CoFe film by means of Kerr microscope, capable of direct domain observation. The domain reversal patterns of the film reveal asymmetric behavior between both branches of a hysteresis loop. Interestingly, we have found that degree of disorder in the forward branch reversal is much less than the disorder in the backward branch reversal, where the field is applied parallel to the exchange-bias field direction. We believe that the asymmetric disorder originates from the local inhomogeneities of coercive and exchange-bias field in the film.