

Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Magnetic bubble domains in the spin reorientation transition region of Fe/Ni/Cu(001) J. CHOI, J. WU, T. OWENS, Z. Q. QIU, Dept. of Phys., UC-Berkeley, Berkeley, CA 94720, C. WON, MSD, Argonne Nat. Lab., Argonne, IL 60439, Y. Z. WU, Dept. of Phys. Fudan Univ., Shanghai, P. R. China, A. SCHOLL, A. DORAN, Advanced Light Source, LBNL, Berkeley, CA 94720 — Spin reorientation transition (SRT) in Fe/Ni/Cu(001) system was investigated using photoemission electron microscopy (PEEM). In addition to the previously found stripe domains, we also observed bubble domains within a narrow thickness region of the SRT after applying an in-plane magnetic field. Because of the up-down asymmetry of the bubble domains, a small off-normal component of the in-plane magnetic field is necessary to generate the bubble domains. By applying the magnetic field along different directions related to the sample surface, we found that the bubble domains disappear if the field direction is more than ~ 10 degrees off the sample surface. A temperature dependent study shows that the bubble domains are unstable against annealing and will be converted back to the stripe phase, indicating that the bubble domain phase is a meta-stable phase.

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Date submitted: 29 Nov 2005

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