

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Reversible helicity and higher harmonics in spin textures: stripes and skyrmions XIUZHEN YU, Japan Science and Technology Agency(JST), YUSUKE TOKUNAGA, YOSHIO KANEKO, JST, YOSHIO MATSUI, National Institute for Materials Science, YOSHINORI TOKURA, Tokyo Univ., JST and RIKEN — The magnetic bubbles viewed as skyrmions have long been attracting attention because of possible application to spintronics. The bubble configuration has been revealed by versatile microscopic techniques such as magnetic-force microscopy, scanning Hall microscopy, and Lorentz transmission electron microscopy (TEM). However, their topological properties, such as topological spin texture and helicity, have not been sufficiently unraveled in spite of possibly important implication in the novel magneto-transport phenomena. In this study, we have scrutinized the spin texture of the thin films of Sc-doped hexagonal barium ferrite with controlled magnetic anisotropy; we have demonstrated the generation of the bubble lattice under external magnetic fields which are applied perpendicular to the film plane. The magnetic component distributions in strips, bubbles and Bloch lines have been successfully achieved by means of high-resolution Lorentz TEM observations and quantitative analyses of the local magnetizations. The results indicate the reversible helicity and higher harmonics in spin textures of stripy and bubble domains.

Xiuzhen Yu
Japan Science and Technology Agency

Date submitted: 18 Nov 2010

Electronic form version 1.4