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Multiferroic M-type hexaferrites with room-temperature conical spin structure Y. TAGUCHI, Y. TOKUNAGA, CMRG and CERG, RIKEN ASI, Japan, Y. KANEKO, ERATO MF, JST, Japan, D. OKUYAMA, CMRG and CERG, RIKEN ASI, Japan, S. ISHIWATA, Dept. of Appl. Phys., Univ. of Tokyo, Japan, T. ARIMA, Dept. of Adv. Mat. Sci., Univ. of Tokyo, Japan, S. WAKIMOTO, K. KAKURAI, Japan Atomic Energy Agency, Japan, Y. TOKURA, CMRG and CERG, RIKEN ASI, ERATO MF, JST, Univ. of Tokyo, Japan — Magnetic and magnetoelectric properties have been investigated for single crystals of Sc-doped M-type hexaferrites [1]. Magnetization and neutron diffraction studies have indicated that a longitudinal conical state is stabilized up to room temperature by tuning the Sc concentration. Magnetoelectric measurements have shown that electric polarization can be induced by applying a transverse magnetic field at lower temperatures, and that the spin helicity is nonvolatile and endurable up to near the transition temperature from conical to collinear state. In addition, the behavior of the polarization vector upon the reversal of magnetization varies with temperature, thereby allowing us to control the relation between spin helicity and magnetization vectors with magnetic field and temperature. This work was in part supported by FIRST program on "Quantum Science on Strong Correlation" from JSPS.

[1] Y. Tokunaga, Y. Kaneko, D. Okuyama, S. Ishiwata, T. Arima, S. Wakimoto, K. Kakurai, Y. Taguchi, and Y. Tokura, Phys. Rev. Lett. 105, 257201 (2010)

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