

Magnetism and magnetoelectricity of hexaferrite systems

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Recent extensive studies on magnetoelectric multiferroics have revealed that ferroelectricity is induced by complex magnetic structures in some frustrated magnetic systems. The magnetoelectric frustrated magnetic systems often show giant magnetoelectric effects, i.e., magnetic-field-induced changes in ferroelectric polarization. However, their magnetoelectric effects usually occur at temperatures that are too low and at external fields that are too high to be practically useful. Thus, the quest for robust room-temperature magnetically-induced ferroelectrics is a major challenge in magnetoelectric research. Lately, some ferrites with hexagonal crystal structures, termed hexaferrites, have been found to show magnetoelectric effects at room temperature and low magnetic fields.^{1,2} In the presentation we will introduce structure, magnetism, and resulting magnetoelectricity of some hexaferrite systems which are promising candidates for magnetoelectric multiferroics operating at room temperature and low fields.

¹Y. Kitagawa *et al.*, Nature Mater. 9, 797 (2010).

²M. Soda *et al.*, Phys. Rev. Lett. 106, 087201 (2011).