

Abstract Submitted
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Anisotropy in the magnetodielectric constant in orthorhombic HoMnO₃ thin film SUNG HO LEE, BONG YEOL LEE, MIN HWA JUNG, YOON HEE JEONG, Pohang university of Science and Technology, Pohang, Korea — Epitaxial HoMnO₃ thin films in the metastable orthorhombic structure were successfully synthesized on SrTiO₃ substrates by pulsed laser deposition. The crystal structure, surface roughness, and surface morphology of the films were characterized by various tools such as X-ray diffraction, atomic force microscopy, scanning electron microscopy etc.. Macroscopic physical properties were measured with a Quantum Design PPMS. It is found that an significant increase of the dielectric constant accompanies the onset of magnetic order at 45 K in the films. This then proves that there exists a magnetodielectric coupling in orthorhombic HoMnO₃. Anisotropy in the magnetodielectric constant was observed according to the direction for an external magnetic field. These behaviors will be compared to the cases of YMnO₃ and BiMnO₃. Measurements of the reverse effect, that is, the variation of the magnetic susceptibility with an electric field, are being attempted.

Sung Ho Lee
Pohang university of Science and Technology, Pohang, Korea

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