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The magnetic property of BiFeO3 thin films caused by substrates

Bismuth ferrite (BiFeO3) is a perovskite-based multiferroic material. We have fabricated layered multiferroic nanomaterials with a magnetron sputtering coater with a commercial BiFeO3 target as a source material and investigated the interface effects by using several kinds of substrates. The surface morphology was observed with a scanning electron microscope (SEM). Since there are several possible stoichiometries of bismuth ferrite compounds fabricated from the sputtering target of BiFeO3, we have analyzed the crystal structures of the bismuth ferrite compounds by the x-ray diffraction (XRD) and SEM with the energy dispersive X-ray spectroscopy (EDS). The magnetic polarization property caused by electric polarization was investigated by using several substrates such as indium tin oxide films, thin metallic films, and piezoelectric polymeric thin films (PVDF, polyvinylidene fluoride).

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Topical Area

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