Investigation of magnetoelectric effect in novel multiferroic thin films for MEMS applications

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Abstract: In this paper, we report the room temperature magnetoelectric properties of Bi0.7Dy0.3FeO3 (BDFO) thin films deposited on conducting p-type (100) silicon substrates using pulsed laser deposition (PLD) technique. BDFO thin films on silicon demonstrated a saturated ferroelectric hysteresis and ferromagnetic hysteresis. More interestingly, we have observed a change in electric polarization with applied magnetic field which demonstrates the room temperature magnetoelectric (M-E) coupling in these films. The results suggest the potential application of multiferroic BDFO films in MEMS as sensors as well as actuators.

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