

Abstract Submitted  
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**Magnetoelectric coupling in the strain-induced multiferroic BiMnO<sub>3</sub>** PATRICK MICKEL, HYOUNGJEEN JEEN, AMLAN BISWAS, ARTHUR HEBARD, University of Florida — BiMnO<sub>3</sub> is a rare single phase, multiferroic compound which displays both ferromagnetic and ferroelectric properties. We have grown thin films of BiMnO<sub>3</sub> on SrTiO<sub>3</sub> (100) substrates using pulsed laser deposition that display the presence of both order parameters. The ferroelectricity is found to be highly tunable, modulated by both magnetic fields (decreasing by more than 10%) and external strain (increasing by more than 50%). Time dependent ferroelectric measurements in addition to dielectric characterizations reveal BiMnO<sub>3</sub> is a relaxor ferroelectric. The polar-nano-regions (PNRs) responsible for relaxor ferroelectricity are shown to reside at the island edges where strain is inherently high. Understanding the PNR properties is shown to be essential for understanding the magnetoelectric and strain couplings.

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