Supporting Information

Ferroelectricity and Ferromagnetism Achieved via Adjusting Dimensionality in $BiFeO_3/BiMnO_3$ Superlattices

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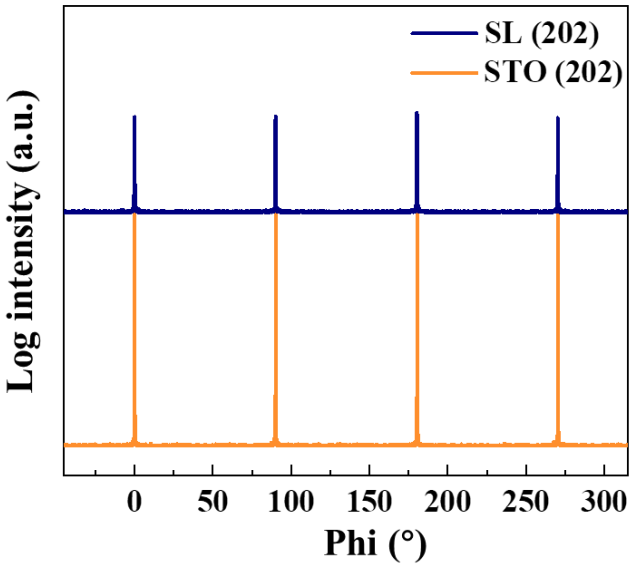

Figure S1. The φ scans of the BFO_5/BMO_{10} SLs (202) and STO (202) planes, showing good in-plane orientation with a fourfold rotational symmetry.

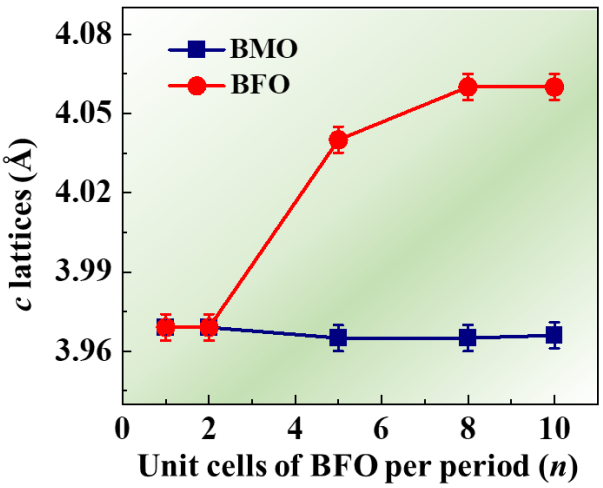

Figure S2. The dependence of calculated *c* lattices constants of BMO and BFO and *n*.

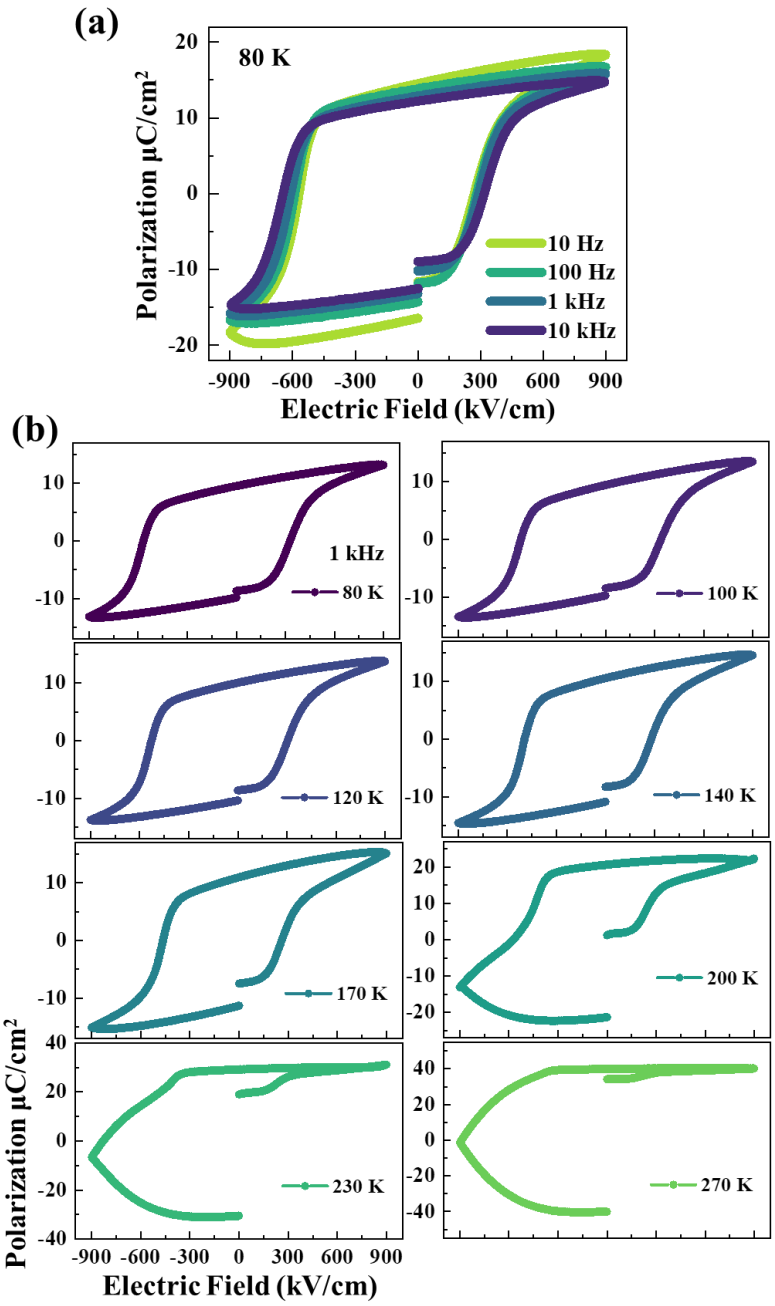

Figure S3. (a) Macroscopic electrical *P-E* hysteresis loops of $(BFO_5/BMO_{10})_{25}$ SLs measured at 80 K with different frequencies. (b) *P-E* hysteresis loops measured with 1 kHz frequency at 80 K, 100 K, 120 K, 140 K, 170 K, 200 K, 230 K and 270 K, respectively.

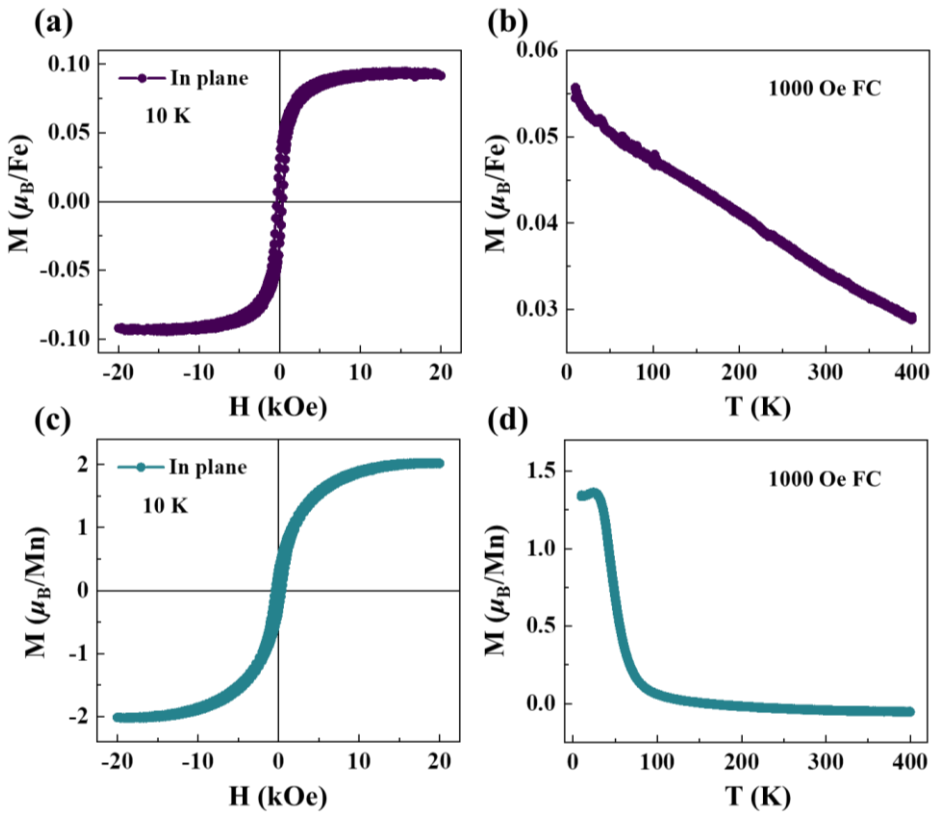

Figure S4. (a) In-plane *M-H* hysteresis loops, and (b) *M-T* curves of single-phase BFO films on STO substrates. (c) In-plane *M-H* hysteresis loops, and (d) *M-T* curves of single-phase BMO films on STO substrates. The *M-H* loops were recorded at 10 K, and the *M-T* curves were measured after field-cooling at 1000 Oe.

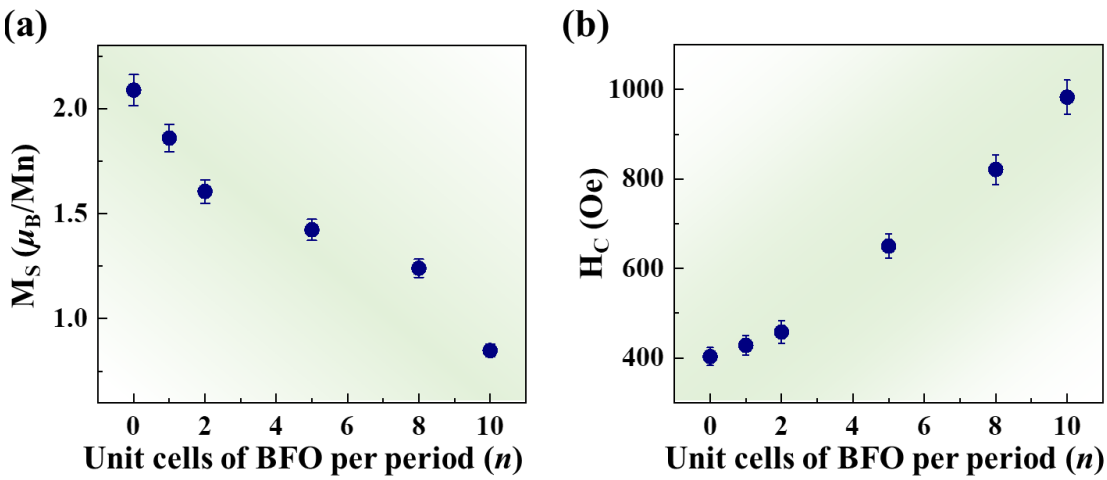

Figure S5. (a) The dependence of the saturated magnetization M_S and the dimensionality of BFO layers per period. (b) The dependence of the coercive field H_C and the dimensionality of BFO layers per period.

Table S1. The calculated results of two magnetic coupling models of BFO/BMO SLs.

	FM model	AFM model
M (μ_B/Mn)	3.41	0.17
Energy (meV/Å^3)	-2143	-2146

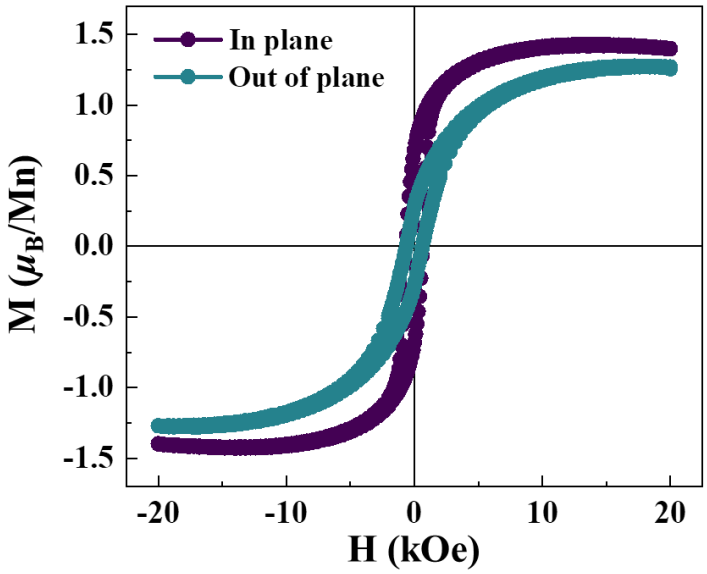

Figure S6. In-plane and out-of-plane *M-H* hysteresis loops of BFO_5/BMO_{10} SLs measured at 10 K.

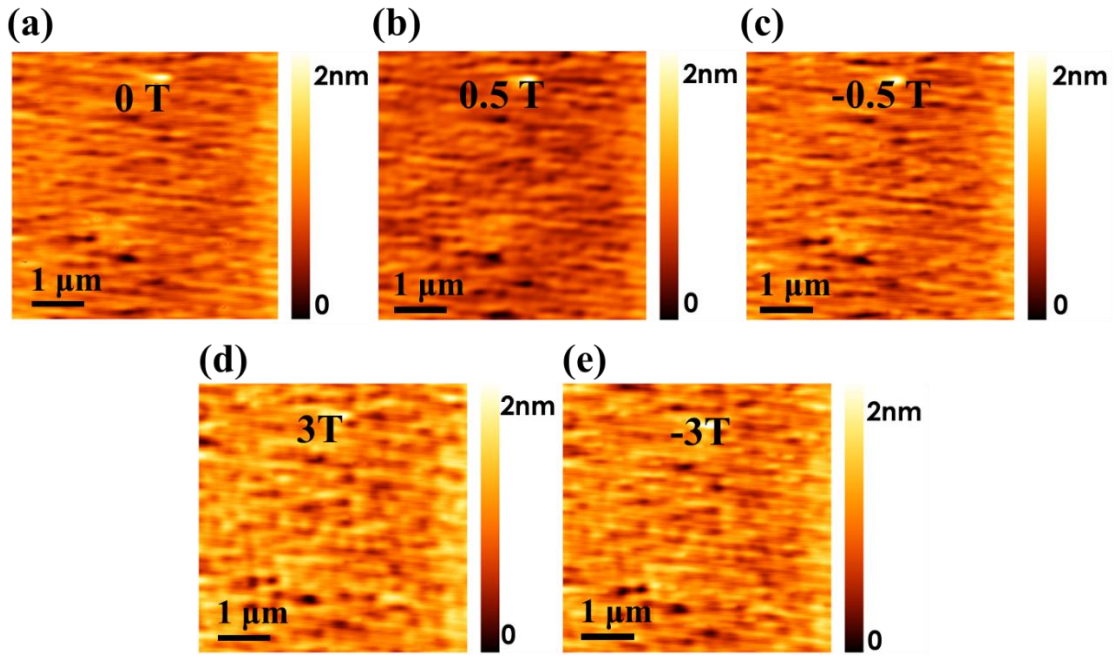

Figure S7. Topography of BFO_5/BMO_{10} SLs under the external magnetic fields of (a) 0 T, (b) 0.5 T, (c) -0.5 T, (d) 3 T, and (e) -3 T.