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**Temperature-induced strain mediated magnetization changes in NiFe₂O₄/BaTiO₃
heterostructure**

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Abstract

Herein, we report the temperature-induced magnetization changes of NiFe₂O₄ thin film, which is coated over a ferroelectric BaTiO₃ ceramic substrate. The solid-state reaction method was adopted for the preparation of ferroelectric BaTiO₃ (BT) substrate, whereas NiFe₂O₄ (NFO) film was deposited by spin-coating method. Rietveld refinement revealed that BT substrate has a tetragonal (*P4mm*) crystal system along with a minor orthorhombic phase (*Amm2*) at room temperature. The GIXRD analysis confirms the phase purity of NFO/BT heterostructure. Polarization hysteresis with respect to electric field (P-E loop) and the temperature-dependent dielectric measurement of BT substrate demonstrate its typical ferroelectric and phase transition behavior, respectively. Magnetization hysteresis loops were recorded for the NFO/BT heterostructure at 150, 240 and 300 K. A significant increase in the remnant magnetization (*M_R*) and coercive field (*H_C*) of NFO film are noticed while cooling

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