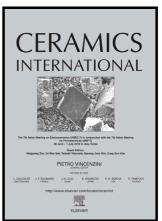
### Author's Accepted Manuscript

Temperature-induced strain mediated magnetization changes in NiFe<sub>2</sub>O<sub>4</sub>/BaTiO<sub>3</sub> heterostructure

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### **ACCEPTED MANUSCRIPT**

# $\label{eq:continuous} Temperature-induced strain mediated magnetization changes in NiFe_2O_4/BaTiO_3$ heterostructure

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#### **Abstract**

Herein, we report the temperature-induced magnetization changes of NiFe<sub>2</sub>O<sub>4</sub> thin film, which is coated over a ferroelectric BaTiO<sub>3</sub> ceramic substrate. The solid-state reaction method was adopted for the preparation of ferroelectric BaTiO<sub>3</sub> (BT) substrate, whereas NiFe<sub>2</sub>O<sub>4</sub> (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<sub>R</sub>) and coercive field (H<sub>C</sub>) of NFO film are noticed while cooling

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