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# Correlation between Multiferroic Properties and Processing Parameters in $\text{NdFeO}_3\text{-PbTiO}_3$ Solid Solutions

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## Abstract

Processing parameters play an important role in tailoring the physical and chemical properties of materials. Effect of sintering temperature on the multiferroic properties of  $(\text{Nd}_{0.2}\text{Pb}_{0.8})(\text{Fe}_{0.2}\text{Ti}_{0.8})\text{O}_3$  solid solutions synthesized using conventional solid state reaction route has been reported. XRD investigations show that the solid solutions possess tetragonal structure ( $P4mm$ ). The samples exhibit both ferroelectric and magnetic hysteresis loops at room temperature. The remnant polarization ( $P_r$ ) and saturation polarization ( $P_s$ ) increases with increasing sintering temperature. The remanent magnetization ( $M_r$ ) as well as coercive field ( $H_c$ ) both varies with sintering temperature. The magnetic studies reveal that samples exhibit a ferromagnetic order due to  $\text{Fe}^{3+}$  ions and Nd moments does not order down to lowest

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