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Synthesis and magnetic properties of perovskite manganite $La_{0.8}Ca_{0.15}Na_{0.05}Mn_{0.8}Fe_{0.2}O_3$

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The current study describes the synthesis of the perovskite manganite $La_{0.8}Ca_{0.15}Na_{0.05}Mn_{0.8}Fe_{0.2}O_3$ using Pechini method. The Rietveld analysis of the powder X-ray diffraction data verified the presence of a single phase exhibiting orthorhombic symmetry with the *Pnma* space group. The phase undergoes a shift from paramagnetism to ferromagnetism when the temperature reaches the Curie temperature of 111 K. A positive Weiss constant (Θ) and a greater effective magnetic moment than the anticipated value suggests the presence of dominating ferromagnetic interactions in the phase.

Keywords: Pechini method, Rietveld refinements, Magnetic properties