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Structural and Magnetic Properties Control of $\text{Pr}_{0.7}\text{Ba}_{0.3}\text{MnO}_3$ with Sr-Doping

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Structural and magnetic properties of Sr-doped $\text{Pr}_{0.7}\text{Ba}_{0.3}\text{MnO}_3$ polycrystallines prepared by solid state reaction are presented. Samples were in monoclinic structure $P2_1/n$ without structural phase transition when Ba was gradually replaced by Sr. Parameters a , b , and c of a unit cell monotonously decrease with increasing Sr content, while β angle has increased from 89.981° to 90.007° . The X-ray absorption spectra show the co-existence of Mn^{3+} and Mn^{4+} ions in materials and the number of Mn^{4+} ions increases in the presence of Sr. The thermal magnetization data indicate that the Curie temperature shifts toward room temperature from 190, 210, 232 to 267 K with increasing Sr content x from 0 to 0.3.

Keywords: structure, magnetic property, phase transition, valence, magnetic interaction.