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Anisotropic hyperfine field fluctuation in $\text{La}_{0.67}\text{Pb}_{0.33}\text{Mn}_{1-x}\text{Fe}_x\text{O}_3$

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Abstract

X-ray and neutron diffraction, Mössbauer spectroscopy, and vibrating sample magnetometer have been used in order to study the structural and magnetic properties of the $\text{La}_{0.67}\text{Pb}_{0.33}\text{Mn}_{1-x}\text{Fe}_x\text{O}_3$ perovskite compounds. Samples were fabricated using the sol–gel method. As the temperature increases toward T_C , Mössbauer spectra of $\text{La}_{0.67}\text{Pb}_{0.33}\text{Mn}_{0.99}\text{Fe}_{0.01}\text{O}_3$ show line broadening and the difference between 1, 6 and 3, 4 linewidths because of anisotropic hyperfine field fluctuation. Temperature dependence of anisotropy is calculated from the relaxation rate.

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