

Abstract Submitted  
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**Study of Phase Transformations on Nanocrystalline (La,Sr)(Mn,Fe)O<sub>3</sub> System by High-Pressure Mossbauer Spectroscopy** USHA CHANDRA, PRERANA MUDGAL, MANOJ KUMAR, Dept. of Physics, University of Rajasthan, Jaipur 302004 —

We report here the pressure dependent <sup>57</sup>Fe Mossbauer studies on the nanocrystalline La<sub>0.8</sub>Sr<sub>0.2</sub>(Mn<sub>0.8</sub>Fe<sub>0.2</sub>)O<sub>3</sub> system up to 10 GPa using diamond anvil cell. At ambient pressure, iron is present as Fe<sup>3+</sup> and Fe<sup>4+</sup> in two different environments. Pressure seems to affect the higher symmetry site of Fe<sup>4+</sup> only, while the octahedral site containing Fe<sup>3+</sup> remains almost unaffected. Phase transformations are observed at pressures 0.52GPa and 3.7 GPa respectively. A sudden increase in the isomer shift at 0.52GPa is related to the reduction of Fe<sup>4+</sup> ions while at 3.7GPa, a structural transition is observed with a sudden drop in isomer shift indicating that the Fe<sup>3+</sup> ions are in identical environment. Quadrupole splitting increases continuously with pressure up to 10 GPa.

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