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Structural and Transport Study of $\text{La}_{0.9}\text{MnO}_3$ Under Pressure.

ZHIQIANG CHEN, TREVOR TYSON, Department of Physics, New Jersey Institute of Technology, Newark, New Jersey 07102, ZHONG ZHONG, National Synchrotron Light Source, Brookhaven National Laboratory — The detailed transport and structural properties of the self-doped system $\text{La}_{0.9}\text{MnO}_3$ have been studied under hydrostatic pressures extending to 6GPa and 11GPa, respectively. Like the doped manganite systems previously studied by our group, in the La deficiency ($x=0.9$) system a maximum shift of the peak resistivity is obtained at around 3.4GPa. A crossover from metallic to insulating behavior is observed above this optimum pressure. The x-ray diffraction study results show that the self-doped system is compatible with a single phase of monoclinic space group up to 11 GPa. The detailed changes in the lattice parameters, volume, bond distances and bond angles have been obtained. Comparisons with pressure dependent measurements on the doped manganites will be made. This work was supported by NSF DMR-0209243 and DMR-0512196.

Zhiqiang Chen
Department of Physics, New Jersey Institute of Technology

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