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High Pressure Effects on Structural and Transport of self-doped Manganite $La_{0.9}MnO_3$ ZHIQIANG CHEN, TREVOR TYSON, Department of Physics, New Jersey Institute of Technology, USA, 07102, ZHONG ZHONG, National Synchrotron Light Source, Brookhaven National Laboratory, USA, 11973, NATIONAL SYNCHROTRON LIGHT SOURCE, BROOKHAVEN NATIONAL LABORATORY, USA, 11973 COLLABORATION — The effects of hydrostatic pressure up to 6 GPa and 11 GPa, respectively on the electrical resistivity and structural properties are systematically investigated on the self-doped Maganite $La_{0.9}MnO_3$. We find a maximum shift of the peak resistivity with pressure occurs at ~ 3.4 GPa in the La deficient system similar to the chemically doped manganite systems previously studied by our group. The unusual pressure dependence of resistivity can be related with the competition between ferromagnetic Double Exchange interaction and antiferromagnetic superexchange mechanism. The x-ray diffraction reveals a single-phase crystallographic phase of monoclinic space group up to 11 GPa. Electronic structure simulations of the pressure dependence on the stability of the magnetic phases are being conducted. This work was supported by NSF DMR-0512196.

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