

Abstract Submitted
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Uniaxial pressure effect of Metal-Insulator Transition (T_{MI}) in oriented $\text{Sm}_{0.55}(\text{Sr}_{0.5}\text{Ca}_{0.5})_{0.45}\text{MnO}_3$ ¹ SONACHALAM ARUMUGAM, D. MOHAN RADHEEP, Centre for High Pressure Research, Bharathidasan University, P. SARKAR, P. MANDAL, Saha Institute of Nuclear Physics, Kolkata, ARUMUGAM TEAM, PRABHAT MANDAL COLLABORATION — Perovskite type manganites $R_{1-x}A_x\text{MnO}_3$ (R : rare earth ions, A : alkaline earth ions) exhibit various fundamental phenomena like colossal magnetoresistance (CMR), phase separation, and first-order ferromagnetic (FM) to paramagnetic (PM) phase transition etc. Similar to CMR, piezoresistance (PR), the change in electrical resistance in response to external pressure, can also be important parameter for various technological applications. Several studies shows that the order of phase transition can be changed either by applying external perturbations like magnetic field, pressure (P), etc. or internally like doping etc. *SSCMO* single crystal was grown using floating zone technique and the quality was carefully checked and aligned along the c axis as well as ab -plane. We have investigated the effect of uniaxial pressure (P) on electrical resistivity along the ab -plane and c -axis in a single crystal of *SSCMO*. A huge $PR \sim 10^7\%$ at $P = 90$ MPa and a remarkable increase (~ 79 K/GPa) of T_{MI} have been observed with the application of $P \parallel c$ -axis, while T_{MI} decreases at the rate of ~ 77 K/GPa for $P \perp c$ axis. These values of PR and dT_{MI}/dP are much larger than those observed in other perovskite and bilayer manganites. Hence, these materials may be used for various technological applications.

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