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Noncontact technique for measuring the electrical resistivity and magnetic susceptibility of electrostatically levitated melts[1] G.E. RUSTAN, N.S. SPYRISON, A. KREYSSIG, R. PROZOROV, A.I. GOLDMAN, Iowa State University — Over the last two decades the popularity of levitation methods for studying equilibrium and supercooled melts has increased steadily. Measurements of density, viscosity, surface tension, and atomic structure have become well established. In contrast, measurements of electrical resistivity and magnetic susceptibility of levitated melts have been very limited. To fill this void, we have combined the tunnel diode oscillator (TDO) technique with electrostatic levitation (ESL) to perform inductively coupled measurements on levitated melts. A description of the basic operating principles of the TDO and ESL will be given, as well as a description of the implementation and performance characteristics of this technique. Preliminary measurements of electrical resistivity in the solid and liquid state will be presented for samples of Zr, Si, and Ge, as well as the measurements of ferromagnetic transitions in Fe and Co based alloys.

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