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Direct measurement of grain boundary resistance in granular-type magnetoresistance thin films

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Abstract

The effects of grain boundary on the low-field magnetoresistance (MR) were assessed by preparing a set of polycrystalline $\text{La}_{2/3}\text{Sr}_{1/3}\text{MnO}_3$ granular thin films with varying grain sizes and measuring their MR. The difference in the measured MR values was explained with interpretation of grain boundary resistance directly characterized by the complex impedance analysis. The resistance of grains was nearly independent of the grain size. On the other hand, resistance of the grain boundary increased with decreasing grain size.

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