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Electrical Resistivity in Aluminum Thin Films

Abstract:

Resistivity is a bulk property of a material and is a constant. If a dimension of a material is smaller than the mean free path of the charged carriers, then the resistivity will not have a constant value. This research is focused on how the resistivity of aluminum thin film increases as its thickness becomes smaller than the mean free path of electrons in aluminum. Research is conducted experimentally by making thin films out of aluminum. Resistivity is found by sending an electrical current through the thin film. Voltage and current on the thin film is measured by using the four probe method. Each thickness of aluminum thin film's resistivity was plotted on a resistivity vs. thickness graph.