

Abstract Submitted
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Magnetic and transport properties of EuO films fabricated by oxidation of Eu metal films¹ S. SCHLOTTER, T. BRENNER, C. CARTER, B. COLWELL, A. KINSEY, B. SCHUSTER, M. EBLEN-ZAYAS, Carleton College — EuO holds potential for spintronics applications, but is also of interest due to the similarities between its magnetic and transport properties and those of the manganites. EuO is most commonly grown by reactive deposition of Eu in an oxygen partial pressure, but we have grown polycrystalline EuO films by deposition of metallic Eu films followed by oxidation. Although Eu inclusions are often present in films grown by this method, the samples exhibit the insulator-metal transition associated with the onset of ferromagnetism and the colossal magnetoresistance response seen in samples grown by reactive evaporation. We will report on how the transport and magnetization responses of EuO films grown by oxidation of metallic Eu films depend on several growth parameters. We have found that variations in substrate heating during the growth process can produce films with Curie temperatures ranging from 69 K to 200K, with a corresponding variation in the resistivity response of the films.

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