

# **Growth and characterization of oxygen deficient EuO magnetic thin films**

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We have studied how the Curie temperature, coercivity and magnetic moment of oxygen deficient EuO sputtered thin films vary with the oxygen vacancy concentration and the film thickness. By characterizing the films with XRD, SQUID, XRR and PNR we find that the magnetic moment is linearly enhanced by the excess electron concentration in the spin polarized conduction band, in agreement with our DFT calculations. We take an exceptive view on the critical exponents universality theory and bring an alternative theoretical argument to model the thickness dependence of the Curie temperature of  $\text{EuO}_{1-x}$  and other materials.