Abstract Submitted for the SES19 Meeting of The American Physical Society

Influence of Oxygen Pressure during the Deposition on the Properties of Amorphous Fe:Dy Oxide Films¹ OLIVIA DENTON, SARA BEY, TATIANA ALLEN, WILLIAM ROES, University of Tennessee at Chattanooga, KRISHNA KOIRALA, RAMKI KALYANARAMAN, University of Tennessee — A new material composed of FeDy oxide has shown an interesting combination of properties such as high electrical conductivity, Hall mobility, and optical transparency and room temperature ferromagnetism which presents a promise for applications across many fields of electronics. Here we report results of initial characterization of a large group of FeDyO thin films prepared by the e-beam evaporation. The technological parameters varied during the deposition were relative amounts of Fe and Dy in the films, and the oxygen partial pressure in the chamber. Films were deposited on two kinds of substrates: SiO_2/Si and Quartz. Fe to Dy ratio in the films was measured by the EDS. Data on optical transmission, electrical conductivity Hall effect, and magnetoresistivity of as-deposited films were collected at room temperature to see how the deposition parameters, especially the oxygen partial pressure, influence the properties of as-deposited films.

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