

Abstract Submitted  
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**Magnetic Thermal Hysteresis in Dy nanolayers**<sup>1</sup> AJANI ROSS, ALI KOYMEN, University of Texas Arlington, ARTUR CARRICO, Federal University of Rio Grande do Norte, ANA DANTAS, ROBERT CAMLEY, University of Colorado at Colorado Springs — Magnetic thermal hysteresis is observed when the temperature dependent magnetic properties of a material are reliant on the starting point of the measurement. Samples of pure Dysprosium (Dy) were grown on substrates of glass and sapphire. We observed magnetic thermal hysteresis in these thin film Dy samples at low values of constant external magnetic field strengths. The temperature is swept from 20K to 300K at constant field, then back (300K to 20K) under the same field. In these temperature sweeps differences in magnetic moment were observed near the low end of the temperature range. Experiments are being done, currently, to confirm the existence of alternate helicity (AH-state) and helical (H-state) states in Dy films, which are believed to be the cause of the observed thermal hysteresis.

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