

Abstract Submitted
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Torque Magnetometry and Thermomagnetic Capacity Studies on a 2-d Cr⁴⁺ Antiferromagnet¹ NARPINDER KAUR, Florida State University, SARITHA NELLUTLA, YOUN-JUNG JO, LUIS BALICAS, JOHAN VAN TOL, National High Magnetic Field Laboratory, NARESH DALAL, Florida State University and National High Magnetic Field Laboratory — We report torque magnetometry and magnetic heat capacity measurements on a rare complex, Cr^{IV}-Diethylenetriamine diperoxo. The motivation here was to search for a simple spin-gap system that could exhibit a Bose-Einstein type condensation (BEC) of magnons. Our earlier reported magnetization and specific heat (C_p) measurements had indicated that this compound is a 2-d antiferromagnet, with a T_N of 2.55 K in zero-field [1]. These magnetization and C_p data have now been augmented by use of additional magnetic fields, and the newly found B- T phase diagram is seen to be clearly parabolic. Torque magnetometry confirmed the C_p data and has enabled measurements close to the $T \rightarrow 0$ K, $B \sim 12.5$ T region. Measurements in the dilution fridge are planned to extract the critical exponent (α) from the relation $k_b T_c \sim (B_c - B)^\alpha$. We surmise that this system will constitute a simple new model for examining the BEC of magnons in detail. [1] C.M. Ramsey, B. Cage, P. Nguyen, K.A. Abboud, N.S. Dalal, Chem. Mater. **15**, 92 (2003).

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Saritha Nellutla
National High Magnetic Field Laboratory

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