Abstract Submitted
for the SES08 Meeting of
The American Physical Society

Magnetic Properties of Dihydrate and Monohydrate Forms of Nickel Dibromide
G.C. DEFOTIS, C.L. DESANTO, C.M. DAVIS, J.M. POTTHEN, A.S. HAMPTON, College of William and Mary — As with transition metal bromides generally, especially hydrates, the title materials are either little studied previously or not at all (monohydrate). Curie-Weiss analysis of paramagnetic region susceptibilities yields Weiss theta values of 8.0 and 27.3 K for dihydrate and monohydrate respectively, indicating predominant ferromagnetic interactions but less so in the dihydrate. Peculiar behavior appears in the susceptibility of the monohydrate in the 40-100 K range. A large zero field splitting of the triplet ground state emerges from fits to dihydrate data especially. Susceptibility maxima occur just below and, unexpectedly, just above 6.0 K for dihydrate and monohydrate respectively. Fits to the data suggest more lower dimensional magnetic character in the monohydrate. While magnetization isotherms in the two systems are without hysteresis, a remarkable contrast in their temperature evolution distinguishes the two materials.

Acknowledgment is made to the Donors of the American Chemical Society Petroleum Research Fund for support of this research.

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Date submitted: 14 Aug 2008