

Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Magnetic Phase Transitions in Intercalated Dichalcogenide Nanostructures¹ CORBYN MELLINGER, COREY COOLING, KAYLA BOYLE, PAUL SHAND, TIM KIDD, LAURA STRAUSS, University of Northern Iowa — Nanostructured Mn-intercalated TaS₂ was prepared with a nominal Mn concentration of 23.5%. Powder x-ray diffraction confirms incorporation of Mn in the Van der Waals gaps between TaS₂ layers. AC susceptibility measurements in a DC bias field indicate the sample displays paramagnetic behavior down to its Curie-Weiss temperature of 75 K. An Arrott plot confirms the transition to the ferromagnetic state, with critical exponent β larger than expected for the Heisenberg 3D model. Further analysis of the AC susceptibility indicates a transition to cluster-glass state around 40 K, indicated by Vogel-Fulcher analysis near the transition temperature. We believe the difference from expected critical exponent values to be due to the proximity of the ferromagnetic and cluster-glass transitions.

¹Supported by NSF Grant No. DMR-1206530

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Date submitted: 15 Nov 2013

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