Magnetic Properties of Porous Metal-Organic Frameworks: \( \text{Ni}_2(\text{BODC})_2(\text{TED}) \) and \( \text{Ni}_2(\text{BDC})_2(\text{TED}) \) YOUCEF HAMIDA, DUSAN DANILOVIC, CHYAN LIN, TAN YUEN, Temple University, KUNHAO LI, MOOTHTETTY PADMANABHAN, JING LI, Rutgers University, TEMPLE UNIVERSITY PHYSICS DEPARTMENT TEAM, RUTGERS UNIVERSITY DEPT. OF CHEMISTRY & CHEMICAL BIOLOGY TEAM — Results of \( \chi(T) \), \( M(H) \), and heat capacity \( C(T) \) measurements on two Ni dimer based porous materials \( \text{Ni}_2(\text{BODC})_2(\text{TED}) \) and \( \text{Ni}_2(\text{BDC})_2(\text{TED}) \) are reported. These materials form a tetragonal crystal structure of space group P4/ncc with \( a = b = 14.9 \) Å and \( c = 19.4 \) Å and Ni-Ni separation of 2.61Å within the dimer. Magnetic data of \( \text{Ni}_2(\text{BODC})_2(\text{TED}) \) revealed a ferromagnetic-like transition at about 17 K with \( \theta = 8 \) K, and a coercivity field of 1700 G was observed in the hysteresis curve. Though isostructural to \( \text{Ni}_2(\text{BODC})_2(\text{TED}) \), \( \chi(T) \) and \( M(H) \) results of \( \text{Ni}_2(\text{BDC})_2(\text{TED}) \) showed an antiferromagnetic transition at 10 K with \( \theta = -132 \) K, and no hysteresis was observed. Although specific heat data \( C(T) \) showed no clear transition in both compounds, nonlinear behavior is clearly seen in \( C/T \) vs. \( T \) plots, and a fit to the electron and phonon contributions to \( C(T) \) gives a large heavy-fermion-like \( \gamma \) in both cases. A model for the magnetic interactions is proposed and a comparison to the Cu and Co analogues is also made.

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