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Magnetic Properties of Three Metal-organic Coordination Networks $M(N_3)_2$(4,4'-bpy), M = Ni, Co, and Cu DUSAN DANILOVIC, YOUCEF HAMIDA, TAN YUEN, Temple University, KUNHAO LI, JING LI, Rutgers University — All three newly synthesized metal-organic coordination networks $M(N_3)_2$(4,4'-bpy) (M = Ni, Co, and Cu) crystallize in orthorhombic crystal system of the space group *Cmmm* (No. 65). The M ions sites have octahedral geometries with slight distortions. Results of M(H) and χ(T) for $Ni(N_3)_2$(4,4'-bpy) and $Co(N_3)_2$(4,4'-bpy) showed antiferromagnetic behavior, characterized by a cusp at T_N = 3.5 K for Ni and T_N = 4.0 K for Co in the χ(T) data curves. Curie-Weiss fittings yielded μ_{eff} = 2.73 μ_B for Ni and μ_{eff} = 5.55 μ_B for Co. Hysteresis was detected in the M(H) data of Ni and Co. Results of M(H) and χ(T) for Cu did not show any ordering or hysteresis. No sizable anomaly was observed in C(T) data for all compounds. Fisher classical spin linear chain model fit to the χ(T) data yielded $\frac{|J|}{k_B}$ = 2.49 for Ni, and $\frac{|J|}{k_B}$ = 5.23 for Co. Both Quantum Statistical with spin $1/2$ and High Spin Fisher Semiclassical Fit applied to spin $1/2$ were performed to fit the χ(T) data of Cu, and the latter had a better statistical results.

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