Thermodynamic and magnetic properties of triangular spin cluster system $Cu_3(C_{12}H_9N_2O)_3(OH)(NO_3)_2{\cdot}CH_3CN$

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The novel trinuclear spin-1/2 copper compound $Cu_3(C_{12}H_9N_2O)_3(OH)(NO_3)_2{\cdot}CH_3CN$ was synthesized and magnetization, specific heat and X-band ESR studies were performed. The effective magnetic moment of the compound shows a sharp decrease at low temperatures, suggesting the presence of the weak antiferromagnetic exchange coupling among the copper ions. The magnetization measured at 2 K reaches full saturation at magnetic field 5 T. With the aim to identify the magnetic ground state, the specific heat measurements were performed in the temperature range from 100 mK to 10 K. The temperature dependence of specific heat is characterized by the presence of a Schottky-like maximum at 0.31 K. No λ-like anomaly indicating the formation of long-range order in the system was observed down to 100 mK. The specific heat can be described by the model of general spin trimer with antiferromagnetic exchange couplings -0.8 K, -0.65 K, and -0.25 K. The entropy removed in the measurement range represents the full magnetic entropy for spin-1/2 magnetic system suggesting a low level of frustration in title compound.
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