The magnetocaloric effect in \([\text{Cu(bapa)}]_3[\text{Cr(CN)}_6]_2\)\(_n\)\(\cdot6n\text{H}_2\text{O}\) at low temperatures

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The crystals of \([\text{Cu(bapa)}]_3[\text{Cr(CN)}_6]_2\)\(_n\)\(\cdot6n\text{H}_2\text{O}\) (bapa = bis(3-aminopropyl)amine) are formed by infinite Cu(II)–Cr(III) antiparallel chains, which are connected into the third direction by additive [Cu(bapa)] moieties. The temperature dependence of susceptibility, field dependence of magnetization and EPR spectra of complex are influenced by the presence of strong ferromagnetic exchange interaction between Cu(II) and Cr(III) ions \((J/k_B = 63 \text{ K})\). The onset of long-range magnetic order at 3 K was observed by AC susceptibility. The study of the magnetocaloric effect from magnetization measurements in title complex is presented. At low temperature a large entropy change at 4 K was observed with peak value \(-\Delta S_M = 13.1 \text{ J.K}^{-1}.\text{mol}^{-1}\) \((-\Delta S_M = 11.8 \text{ J.kg}^{-1}.\text{K}^{-1})\) at field change from 0 T to 3 T.

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