The magnetocaloric effect in $\{[Cu(bapa)]_3[Cr(CN)_6]_2\}_n.6nH_2O$ at low temperatures

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The crystals of $\{[Cu(bapa)]_3[Cr(CN)_6]_2\}_n.6nH_2O$ (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 ($J/k_B = 63$ 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 $-\Delta S_M = 13.1$ J.K^{-1}.mol^{-1} (-$\Delta S_M = 11.8$ J.kg^{-1}.K^{-1}) at field change from 0 T to 3 T.

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