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Quasi-one-dimensional antiferromagnetism and multiferroicity in $CuCrO_4$[1] REINHARD K. KREMER, J.M. LAW, P. REUVEKAMP, MPI for Solid State Research, Stuttgart, Germany, R. GLAUM, Institut fuer Anorganische Chemie, Universitaet Bonn, Bonn, Germany, C. LEE, J. KANG, M.-H. WHANGBO, Department of Chemistry, North Carolina State University, Raleigh, North Carolina 27695-8204, U.S.A — The bulk magnetic properties of the new quasi-one-dimensional Heisenberg antiferromagnet, $CuCrO_4$, were characterized by magnetic susceptibility, heat capacity, optical spectroscopy, EPR and dielectric capacitance measurements and density functional evaluations of the intra- and interchain spin exchange interactions. We found type-II multiferroicity below the Néel temperature of 8.2(5) K, arising from competing antiferromagnetic nearest-neighbor (J_{nn}) and next-nearest-neighbor (J_{nnn}) intra-chain spin exchange interactions. Experimental and theoretical results indicate that the ratio $J_{\mathrm{nn}}/J_{\mathrm{nnn}}$ is close to 2, putting $CuCrO_4$ in the vicinity of the Majumdar-Ghosh point. First low-temperature neutron powder diffraction data are consistent with a canted magnetic structure below $\sim$8 K.

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