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Magnetic and multiferroic phases of single-crystalline $\text{Mn}_{1-x}\text{Co}_x\text{WO}_4$ K.-C. LIANG, R.P. CHAUDHURY, Y.-Q. WANG, Y.Y. SUN, B. LORENZ, TCSUH and Department of Physics, University of Houston, Houston, Texas 77024-5002, USA, F. YE, J.A. FERNANDEZ-BACA, H.A. MOOK, Neutron Scattering Science Division, Oak Ridge National Laboratory, Oak Ridge, TN 37831-6393, USA, C.W. CHU, TCSUH and Department of Physics, University of Houston, Houston, Texas 77024-5002, USA — The recent interest of MnWO_4 system is due to the strong correlation between the long-wavelength magnetic structure and the ferroelectric polarization. To understand the effects of Co substitutions on magnetic and multiferroic phases of MnWO_4 , we studied the magnetic and dielectric properties of the single-crystalline $\text{Mn}_{1-x}\text{Co}_x\text{WO}_4$ compounds. At lower Co substitution, the commensurate (CM) AF1 phase was found suppressed but could be restored in external magnetic fields along b axis. We also observed the ferroelectric polarization along b axis suppressed by a b-axis magnetic field. On the other hand, the higher Co substitution such as 15% showed more complex magnetic phases, which warrants future investigation. With Neutron scattering data, more detailed magnetic orders of the various phases would be revealed, and the relationship between magnetic phases and ferroelectric polarization will be discussed.

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