

Abstract Submitted
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Remarkably **ro-**
bust ferroelectric state in multiferroic $\text{Mn}_{1-x}\text{Zn}_x\text{WO}_4$ B. LORENZ, R.P. CHAUDHURY, Y.Q. WANG, Y.Y. SUN, C.W. CHU¹, Dept. of Physics and TC-SUH, Univ. of Houston, Houston, TX 77204-5002, F. YE, H.A. MOOK, Neutron Scattering Science Division, ORNL, Oak Ridge, TN 37831, J.A. FERNANDEZ-BACA, Dept. of Physics and Astronomy, Univ. of Tennessee, Knoxville, TN 37996 — Zinc doping in $\text{Mn}_{1-x}\text{Zn}_x\text{WO}_4$ is equivalent to the removal of Mn spins and a dilution of the magnetic system. The multiferroic (ferroelectric) phase of MnWO_4 is stabilized through Zn substitution and the low-temperature commensurate phase (up-up-down-down phase) is completely suppressed at a Zn concentration of more than 5%. The magnetic and ferroelectric phases as well as the multiferroic properties are studied through magnetic, heat capacity, polarization, and neutron scattering experiments. The multiferroic phase is remarkably stable and it still exists for Zn substitution levels up to and above 50%. At low doping (2%) the incommensurate helical and the commensurate low-T phases coexist. External magnetic fields do lift the phase degeneracy and stabilize either one of the two ground states, depending on the direction of the field.

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