

Abstract Submitted  
for the MAR15 Meeting of  
The American Physical Society

**Multiferroicity in Ni doped  $\text{MnWO}_4$** <sup>1</sup> N. POUDEL, B. LORENZ, B. LV, TcSUH and Department of Physics, University of Houston, F. YE, Neutron Scattering Science Division, Oak Ridge National Laboratory, Y.Q. WANG, Y.Y. SUN, TcSUH and Department of Physics, University of Houston, J.A. FERNANDEZ-BACA, Neutron Scattering Science Division, Oak Ridge National Laboratory and Dept. of Physics and Astronomy, Univ. of Tennessee, C.W. CHU, TcSUH and Department of Physics, University of Houston and Lawrence Berkeley National Laboratory — In this work, we studied the multiferroic properties of  $\text{Mn}_{1-x}\text{Ni}_x\text{WO}_4$  for  $x=0.05, 0.10, 0.15, 0.20$  and  $0.30$  with ferroelectric, magnetic and heat capacity measurements. For  $x=0.05$  and  $0.10$ , the maximum polarization is  $38 \mu\text{C}/\text{m}^2$  and ferroelectric transition temperature ( $T_c$ ) is  $13.2 \text{ K}$  which is  $0.5 \text{ K}$  higher than in parent compound. For other increasing values of  $x$ , the polarization decreases. For  $x=0.15$ , due to onset of AF4 collinear phase, the polarization becomes maximum and then decreases at lower temperature. A small polarization of  $2.3 \mu\text{C}/\text{m}^2$  is observed for  $x=0.20$  with  $T_c$  lowered at  $\sim 9.5 \text{ K}$  and the polarization is completely suppressed for  $x=0.30$ . Unlike in Co doped  $\text{MnWO}_4$ , neutron scattering reveals only two (AF2 and AF4) AF magnetic phases and the onset of the AF4 phase shifts to higher temperature with increasing value of  $x$ .

<sup>1</sup>supported by DOE, the AFOSR, the T.L.L. Temple Foundation, the J.J. and R. Moores Endowment and the State of Texas (TcSUH)

Narayan Poudel  
University of Houston

Date submitted: 14 Nov 2014

Electronic form version 1.4