

Abstract Submitted  
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**Insights into magnetically doped semiconductors from soft x-rays**<sup>1</sup> D.J. KEAVNEY, Argonne National Laboratory, D.B. BUCHHOLZ, Northwestern University, Q. MA, Northwestern University Synchrotron Research Center, R. CHANG, Northwestern University, T.C. DROUBAY, T.C. KASPAR, S. CHAMBERS, Pacific Northwest National Laboratory — Soft x-ray absorption and dichroism provide a crucial test of the intrinsic nature of magnetism in doped oxide semiconductors. Experiments on Mn, Co, and Cu-doped ZnO reveal that the magnetic dopants have primarily paramagnetic field and temperature dependence regardless of whether the bulk behavior is ferromagnetic. In PLD-grown ferromagnetic Cu:ZnO, no zero-field dichroism is detected at the Cu L, O K, or Zn L edges. In MOVCD-grown Co:ZnO, we find a small remanent signal that is consistent with bulk magnetization measurements of  $\sim 0.04\mu_B/\text{Co}$  ion, however the signal is insufficient to rule out metallic Co as its origin. These results suggest that the origins of ferromagnetism in doped oxides may be unrelated to the presence of magnetic dopants.

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