Abstract Submitted
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the Characteristic Phase Transitions of Co-doped BaFe2As2 Synthesized via Flux Growth[1] C.H. SHEA, Ithaca College, Department of Physics and Astronomy, C. RONCAIOLI, C. ECKBERG, T. DRYE, Center for Nanophysics and Advanced Materials, Department of Physics, University of Maryland, M.C. SULLIAVAN, Ithaca College, Department of Physics and Astronomy, J. PAGLIONE, Center for Nanophysics and Advanced Materials, Department of Physics, University of Maryland — Since the discovery of a new family of type II superconductors in 2008, the iron pnictides, researches have had suspicions that they might bear similar electronic properties to the well-known (but not easily understood) oxide superconductors. For this reason studies on this family of compounds has been of great interest to the materials science community. Our efforts have been aimed at single crystal growth and measurement of a particular member of this family, BaFe2As2. While this material is not superconducting at standard pressure, the partial substitution of cobalt on the iron site has been shown to suppresses an anti-ferromagnetic phase transition occurring at lower temperatures allowing for the appearance of a superconducting phase. Transport and low field magnetization measurements taken on our samples show clean transitions, indicating Tc's of up to 24 K in optimally doped samples. We will discuss the growth methods and temperature dependent phase transitions of this material at different cobalt concentrations.

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