Abstract Submitted
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Superconductivity and Unusual Magnetism in the Solid Solution $NdFe_{1-x}Co_xAsO$[1] MICHAEL MCGUIRE, DELPHINE GOUT, VASILE GARLEA, ATHENA SEFAT, BRIAN SALES, DAVID MANDRUS, Oak Ridge National Laboratory — NdFeAsO is a low carrier concentration semimetal which undergoes a spin density wave transition, and is a parent phase of iron pnictide superconductors. Doping with fluorine is known to produce superconductivity with Tc up to 52 K. Through a study of the solid solution $NdFe_{1-x}Co_xAsO$, we demonstrate that replacement of iron with cobalt also induces superconductivity, as has been reported for several other iron pnictide systems. Of particular interest in this system is the end-member NdCoAsO, which shows unusual magnetic behavior. This material undergoes three magnetic phase transitions at low temperatures. We report a detailed study of NdCoAsO including results from transport, magnetization, and heat capacity measurements, as well as neutron diffraction.

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