

Abstract Submitted
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Properties of SmFeAsO_{1-x}F_x Type Oxipnictide Bulks and Wires Made via Several Routes MIKE SUMPTION, MSE, The Ohio State University, MARIA KANUCHOVA, The Technical University of Kosice, Slovakia, MILAN MAJOROS, MIKE SUSNER, MSE, The Ohio State University, E.W. COLLINGS — SmFeAsO_{1-x}F_x Type Oxipnictide bulks and wires were made via several routes. Using a single step route, pellets as well as encased “wires” (with low amounts of total reduction) were made. Polycrystalline bulk samples and wires with nominal composition SmO_{1-x}F_xFeAs ($x=0.3, 0.35$ and 0.4) were synthesized by conventional solid state reaction using high-purity As (we used allotrope-grey arsenic), SmF₃, Sm, Fe and Fe₂O₃ powders as starting materials. The weighed powders were thoroughly grounded by hand with a mortar and pestle and pressed into pellets in an argon-filled glove box. The pressed pellets were sealed in an evacuated quartz ampoule and HT to 1100 °C. Similar compositions were used in swaged wires, constructed with monel outer casings and Nb inner barriers. A two step method was also used in a second set of samples, in this case based on FeAs and SmAs precursors prepared in our laboratory. Magnetic measurements were made using a Quantum Design PPMS system equipped with 14 Tesla superconducting magnet. Onset T_c was seen to be 55 K for samples from the first set, and 53 K for samples made with the FeAs precursors. B_{irr} and B_{c2} values were measured at higher fields, and magnetic properties were investigated. Transport measurements were also made and the results are reported.

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