

Abstract Submitted
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Properties of de-twinned iron-arsenide SrFe_2As_2 ERICK BLOMBERG, M.A. TANATAR, A. KREYSSIG, N. NI, A. THALER, R.W. HU, P.C. CANFIELD, S.L. BUD'KO, A.I. GOLDMAN, R. PROZOROV, Department of Physics & Astronomy and The Ames Laboratory, Iowa State University, Ames, IA 50011, USA — The iron-pnictides, AFe_2As_2 (A = alkali earth metal), undergo a tetragonal to orthorhombic structural transition below T_s , which is in the range between 130 K to 210 K depending on the compound. To release elastic deformation the orthorhombic phase is spontaneously divided into four degenerate, equally populated, structural domains. This makes any measurements of in-plane anisotropy extremely difficult. Unlike high- T_c Y-Ba-Cu-O which is orthorhombic already at room temperature, detwinning of pnictides is more difficult, because of lower T_s . We developed a technique of mechanical de-twinning of these materials that allows transport, x-ray and direct optical measurements [1]. Here we report polarized light microscopy, synchrotron X-ray analysis and AC transport measurements on SrFe_2As_2 , which represents a clean case of first-order magnetic/structural transition.

[1] M. A. Tanatar, et al. Phys. Rev. B **81** 184508 (2010).

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