

Abstract Submitted
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Nano-structured SmFeAs(O,F) single crystals: Nearly isotropic transport up to 65 T¹ PHILIP MOLL, Laboratory for Solid State Physics, ETH Zurich, Switzerland, ROMAN PUZNIAK, Institute of Physics, Polish Academy of Sciences Warsaw, Poland, FEDOR BALAKIREV, Los Alamos National Laboratory LANL, Los Alamos, USA, JANUSZ KARPINSKI, NIKOLAI ZHIGADLO, BERTRAM BATLOGG, Laboratory for Solid State Physics, ETH Zurich, Switzerland — Electric 4-probe transport measurements were performed on Focused Ion Beam (FIB) cut single crystals with sub- μm^2 cross-section, with current along and perpendicular to the crystallographic *c*-axis. The 4-probe geometry was defined accurately, resulting in large signals and excellent signal-to-noise ratio. Our study of the transport properties of SmFeAs (O,F) ($T_c \approx 52$ K) single crystals reveals a promising combination of high ($> 2 \cdot 10^6$ A/cm²) and nearly isotropic critical current densities, which agree well with magnetization measurements. We find the onset of resistivity in pulsed fields up to 65T for currents along the *c*-axis (j_{IIc}) very close to those for currents in the *ab*-plane. This favorable intragrain current transport in SmFeAs(O,F) is a crucial requirement for possible applications.

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