Title:	High spin polarization and the origin of unique ferromagnetic ground state in CuFeSb
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Keywords:	Chalcogenide Superconductors CuFeSb Isostructural
Issue Date:	2016
Publisher:	American Institute of Physics
Citation:	Applied Physics Letters, 108(24).
Abstract:	CuFeSb is isostructural to the ferro-pnictide and chalcogenide superconductors and it is one of the few materials in the family that are known to stabilize in a ferromagnetic ground state. Majority of the members of this family are either superconductors or antiferromagnets. Therefore, CuFeSb may be used as an ideal source of spin polarized current in spin-transport devices involving pnictide and the chalcogenide superconductors. However, for that the Fermi surface of CuFeSb needs to be sufficiently spin polarized. In this paper we report direct measurement of transport spin polarization in CuFeSb by spin-resolved Andreev reflection spectroscopy. From a number of measurements using multiple superconducting tips we found that the intrinsic transport spin polarization in CuFeSb is high (~47%). In order to understand the unique ground state of CuFeSb and the origin of large spin polarization at the Fermi level, we have evaluated the spin-polarized band structure of CuFeSb through first principles calculations. Apart from supporting the observed 47% transport spin polarization, such calculations also indicate that the Sb-Fe-Sb angles and the height of Sb from the Fe plane are strikingly different for CuFeSb than the equivalent parameters in other members of the same family thereby explaining the origin of the unique ground state of CuFeSb.
Description:	Only IISERM authors are available in the record.
URI:	https://aip.scitation.org/doi/10.1063/1.4954026 (https://aip.scitation.org/doi/10.1063/1.4954026) http://hdl.handle.net/123456789/2580 (http://hdl.handle.net/123456789/2580)
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