Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

Superconductivity in electron-doped LnOBiS$_2$ Compounds[1]
DUYGU YAZICI, KEVIN HUANG, BEN WHITE, SOOYOUNG JANG, ALAN CHANG, AARON FRIEDMAN, BRIAN MAPLE, University of California, San Diego — We present observations of superconductivity in electron-doped LnOBiS$_2$ compounds (Ln = La, Ce, Pr, Nd, Yb). Polycrystalline samples were synthesized by a two step solid-state reaction and characterized by x-ray diffraction. The parent compounds, LnOBiS$_2$, exhibit a non-metallic ground state. Superconductivity with T_c in the range 1.9 K - 5.4 K was induced by electron doping these compounds via the substitution of F for O. Prior to the onset of superconductivity, the electrical resistivity of the electron-doped LnOBiS$_2$ compounds exhibit semiconductor like behavior, similar to the behavior observed in the parent compounds.

[1]Sample synthesis was funded by the US AFOSR-MURI Initiative Grant FA9550-09-1-0603 and sample characterization and physical properties measurements were supported by the US DOE Grant DE-FG02-04-ER46105.

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Date submitted: 05 Nov 2012 Electronic form version 1.4