

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Superconductivity and Competing Ordered Phase in RuPn (Pn = As, P) DAIGOROU HIRAI, TOMOHIRO TAKAYAMA, Dept. of Advanced Materials, Univ. of Tokyo, DAISUKE HASHIZUME, AYAKO YAMAMOTO, Riken, HIDENORI TAKAGI, Dept. of Advanced Materials, Univ. of Tokyo — Unconventional superconductivity likely manifests itself when some competing electronic phases are suppressed down to zero temperature such as cuprates and iron-pnictide superconductors. Therefore, the correlated metallic state neighboring a competing electronic ordering can be a promising playground for unconventional superconductivity. Here we report superconductivity emerging adjacent to electronically ordered phases of RuPn (Pn = As, P). We found that RuAs(P) exhibits phase transitions at 240 (265) K, which is discerned as a drop of magnetic susceptibility or a resistivity upturn. Such anomalies can be suppressed by substituting Rh to the Ru site. Accompanied by the disappearance of the electronic order, superconductivity was found to emerge below 1.8 K and 3.8 K for RuAs and RuP, respectively. The superconductivity in Rh substituted RuPn, which neighbors a competing electronic order, might exhibit an exotic pairing state as seen in the unconventional superconductors known to date.

Daigorou Hirai
Dept. of Advanced Materials, Univ. of Tokyo

Date submitted: 18 Nov 2010

Electronic form version 1.4