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**Electronic states of a new antiferromagnetic superconductor $CePt_3Si$**

Y. Ōnuki[1,2], S. Hashimoto[1], H. Shishido[1], T. Yasuda[1], T. Kubo[1], T. Ueda[1], T. Yamamoto[1], K. Kindo[3], T. Takeuchi[4], R. Settai[1], K. Sugiyama[1], T.D. Matsuda[2] , Y. Haga[2], K. Kaneko[2] and N. Metoki[2]

1 - Graduate School of Science, Osaka University,
Toyonaka, Osaka 560-0043, Japan
2 - Advanced Science Research Center, Japan Atomic Energy Research Institute,
Tokai, Naka, Ibaraki 319-1195, Japan
3 - Research Center for Material Science at Extreme Conditions, Osaka University,
Toyonaka, Osaka 560-8531, Japan
4 - Low temperature Center of Osaka University,
Toyonaka, Osaka 560-0043, Japan

An antiferromagnet $CePt_3Si$ with $T_N$=2.3 K was reported to become superconductive below 0.7 K at ambient pressure[1]. Surprisingly this compound is tetragonal, space group $P4mm$(No.99), without inversion symmetry in the crystal structure. We confirmed superconductivity in $CePt_3Si$ and studied the fundamental properties.

Figure 1 shows the temperature dependence of the electrical resistivity in $CePt_3Si$ and a non-$4f$ reference compound $LaPt_3Si$. A faint resistivity peak is observed around 75 K in $CePt_3Si$. This might be based on a combined phenomenon of the crystalline electric field (CEF) and Kondo effects. If this temperature corresponds to $T_K^h$ in ref. [2], the Kondo temperature $T_K$ is estimated as $T_K = 130$ K from a relation of $T_K^{h3} = \Delta_1\Delta_2 T_K$, where $\Delta_1$= 12 K and $\Delta_2 = 280$ K, obtained by the neutron scattering experiment[3], are splitting energies form the ground state of the $4f$ levels to the first and second excited levels, respectively. The relation is not applied to the resistivity in $CePt_3Si$.

We confirmed the Néel temperature 2.3 K, together with superconductivity below 0.7 K. We note that $LaPt_3Si$ also becomes superconductive below 0.6 K.

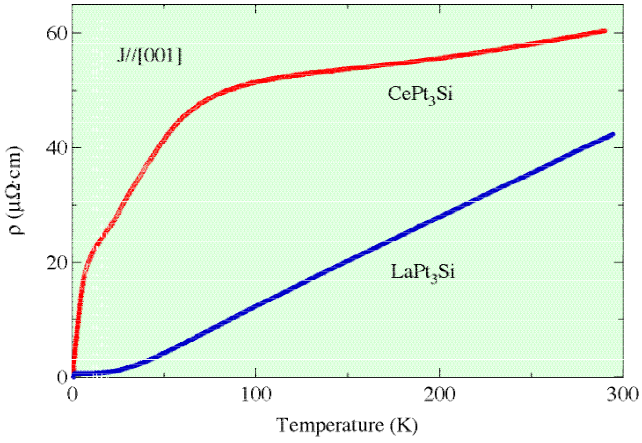


Figure 1: Temperature dependence of the electrical resistivity in $CePt_3Si$.

[1] E. Bauer *et al.*, Cond-mat/0308083.
[2] K. Yamada *et al.*, Prog. Theor. Phys. 71 (1984) 450.
[3] N. Metoki *et al.*, to be published.