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Electrical resistivity in $SmTIn_5$ under high pressure

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$CeCoIn_5$ shows interesting properties such as unconventional superconductivity[1]. Recently, the heavy-fermion superconductivity with very high superconducting transition temperature T_c = 18.5 K was discovered in $PuCoGa_5$ that have the same $HoCoGa_5$-type tetragonal structure as $CeCoIn_5$[2]. It is difficult that we perform experiment for plutonium intermetallic compounds. Thus we investigated $SmCoIn_5$ that have the same crystal structure as $PuCoGa_5$ because we expected that Sm has a similar ground state to Pu compounds.

Inada et al. succeeded in growing single crystals of $SmCoIn_5$ and reported that it shows an antiferromagnetic ordering at 11.9 K and didn't observe superconductivity at ambient pressure[3]. We expected that pressure-induced superconductivity emerges after antiferromagnetic ordering suppress and disappear with applied pressure. Therefore, the electrical resistivity of $SmCoIn_5$ has been measured under high pressure up to 8 GPa in the temperature range from 2 K to 300 K using cubic anvil press. At P = 2 GPa, the value of T_N in $SmCoIn_5$ increased at 13.2 K. Above 2 GPa, the value of T_N decreased monotonously with increaseing pressure and it was 12.6 K at 8 GPa. We will report the pressure effect on $SmRhIn_5$ and $SmIrIn_5$

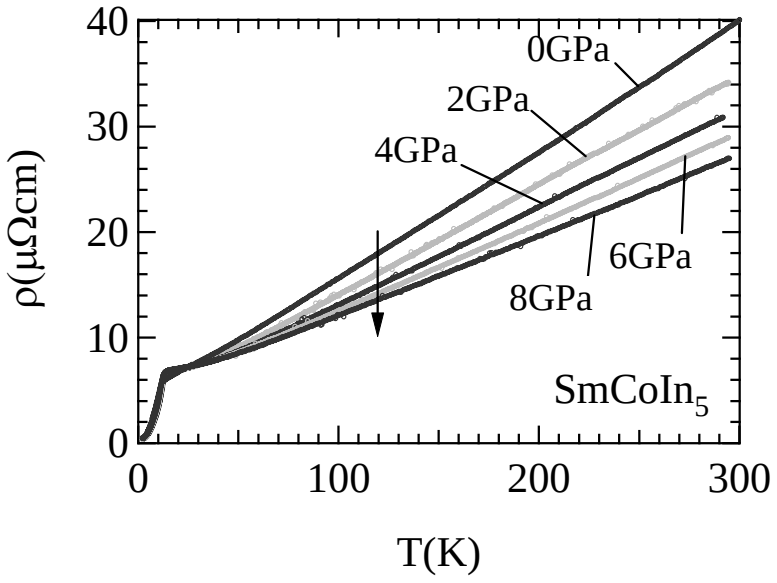

Figure 1: Temperature dependence of the electrical resistivity of $SmCoIn_5$ for different pressures

[1] C. Petrovic et al., J. Phys.: Condens. Matter 13 (2001) L337.
[2] J. L. Sarrao et al., Nature 420 (2002) 297.
[3] Y. Inada et al., Physica B, in press.