

Pressure-induced superconductivity of $\text{Ce}_2\text{Ni}_3\text{Ge}_5$

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$\text{Ce}_2\text{Ni}_3\text{Ge}_5$ is reported as an antiferromagnetic Kondo compound, which has two magnetic transitions at 4.5 and 5.1 K [1]. We have measured the electrical resistivity of $\text{Ce}_2\text{Ni}_3\text{Ge}_5$ under pressure by the cubic anvil cell [2] and indenter cell. The polycrystal sample of $\text{Ce}_2\text{Ni}_3\text{Ge}_5$ was prepared by arc-melting the stoichiometric amounts of the elements. At ambient pressure, there are two kinks at 4.5 and 5.0 K, corresponding to the antiferromagnetic phase transitions [1]. Under high pressure, we find only one kink in the resistivity above 1.6 GPa, as shown in Fig. 1. With increasing pressure, T_N is decreased, and becomes zero at a critical pressure $P_c \simeq 3.4$ GPa. The A and ρ_0 values of the resistivity $\rho = \rho_0 + AT^2$ in the Fermi liquid relation become maximum around P_c . This behavior is similar to that in CeNiGe_3 , where superconductivity is found below 0.48 K in a wide pressure region from 4 to 10 GPa [3]. We have also found superconductivity in $\text{Ce}_2\text{Ni}_3\text{Ge}_5$ below 0.18 K at 3.5 GPa.

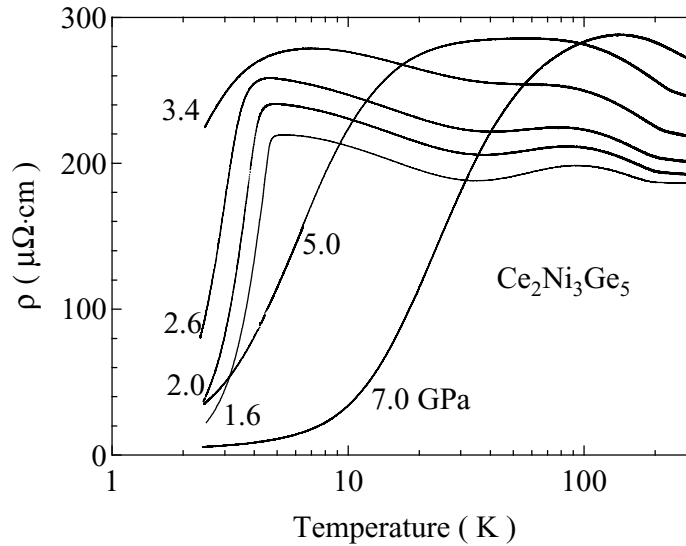


Figure 1: Logarithmic scale of temperature dependence of the electrical resistivity under pressures in $\text{Ce}_2\text{Ni}_3\text{Ge}_5$.

[1] Z. Hossain *et al.*, Phys. Rev. B 62 (2000) 8950.

[2] N. Mori *et al.*, High Pressure Research 24 (2004) 225.

[3] M. Nakashima *et al.*, J. Phys. Condens. Matter 16 (2004) L255.