

## Transport properties of $Y_{1-x}Nd_xCo_2$ compounds

K. Uchima<sup>a</sup>, M. Takeda<sup>b</sup>, C. Zukeran<sup>b</sup>, A. Nakamura<sup>b</sup>, N. Arakaki<sup>b</sup>, S. Komesu<sup>b</sup>, Y. Takaesu<sup>a</sup>, M. Hedo<sup>b</sup>, T. Nakama<sup>b</sup>, K. Yagasaki<sup>b</sup>, Y. Uwatoko<sup>c</sup>, and A.T. Burkov<sup>d</sup>

<sup>a</sup>General Education, Okinawa Christian Junior College, Nishihara, Okinawa 903-0207, Japan

<sup>b</sup>Faculty of Science, University of the Ryukyus, Nishihara, Okinawa 903-0213, Japan

<sup>c</sup>Institute for Solid State Physics, University of Tokyo, Kashiwa, Chiba 277-8581, Japan

<sup>d</sup>A. F. Ioffe Physico-Technical Institute, Russian Academy of Sciences, Sankt-Petersburg 194021, Russia

The electrical resistivity  $\rho$  and thermopower  $S$  of the light rare-earth pseudo-binary  $Y_{1-x}Nd_xCo_2$  compounds have been measured at temperatures from 2 K to 300 K under pressures up to 3 GPa. For the compounds of  $x > 0.3$ , the anomalies in  $\rho(T)$  and  $S(T)$  curves, correspond to the magnetic phase transition at  $T_C$ , have been observed. The Curie temperature  $T_C$ , determined as the temperature where the temperature derivative of  $\rho$  has a maximum, decreases with decreasing Nd concentration  $x$  and apparently vanishes around  $x_c=0.3$ . The residual resistivity  $\rho_0$  increases rapidly with decreasing  $x$ , having a maximum at  $x = x_c$ , and decreases with decreasing  $x$ . On the other hand, the temperature coefficient of thermopower  $S/T$  at low temperature limit shows a complex  $x$  dependence:  $S/T$  changes its sign from negative to plus at  $x \approx 0.2$ , having a maximum at  $x = x_c$ , and shows an almost constant value at  $x > 0.5$ . The pressure dependences of  $T_C$  and  $\rho_0$  of  $Y_{0.6}Nd_{0.4}Co_2$  show almost the same behavior as that of the  $Y_{1-x}R_xCo_2$  (R=heavy rare-earthes) system, which imply that the magnetic state of the Co-3d electron subsystem is responsible for the transport properties at low temperatures in the  $Y_{1-x}Nd_xCo_2$  system.