Thermoelectric properties of the $URu_{1-x}Pd_xGe$ system

D. Gralak,[1] T. Toliński,[2] and V.H. Tran[1]

[1] *Institute of Low Temperature and Structure Research, Polish Academy of Sciences, ul. Okólna 2, 50-422 Wrocław, Poland*

[2] *Institute of Molecular Physics, Polish Academy of Sciences, ul. Smoluchowskiego 17, 60-179 Poznań, Poland*

The substitution of Pd for Ru in $URu_{1-x}Pd_xGe$ causes a dramatic change in their magnetic ground properties; from non-magnetic ($x < 0.3$), non-Fermi liquid (x $\sim$ 0.3), through antiferromagnetic ($x = 0.35$ - 0.8) to complex magnetic state with two successive magnetic phase transitions in $x = 0.9$ and 1. In this contribution, we report thermoelectric power (S) and thermal conductivity (κ) measured in the temperature range 1.9 - 300 K. It is found that S of compositions $0.1 \leq x \leq 0.7$ is negative over the whole temperature range studied and shows negative minimum around 200 K. We interpret the anomaly at high temperatures as due to the Kondo effect. The low-temperature data of the non-Fermi liquid $x = 0.3$ alloy can be well described by a power law -$0.17T^{0.62}$. In contrast to nonmagnetic and antiferromagnetic alloys, the $x = 0.8$ - 0.9 exhibit positive $S(T)$ dependencies. For these compositions, we found also broad maximum nearby their magnetic phase transitions, presumably associated with the magnon drag. κ(T) of the studied solid solutions increases almost linearly with increasing temperature, expecting for dominated electronic contribution.