# Thermal conductivity of $Ce_2Ru_3Ga_9$ compound

M. Falkowski[1] and A.M. Strydom[1]

[1] *Physics Department, University of Johannesburg, PO Box 524, Auckland Park 2006, South Africa*

The Ce-based 2:3:9 series of compounds are known for strongly correlated electronic behaviour. The polycrystalline compound $Ce_2Ru_3Ga_9$ has been prepared by arc melting followed by annealing and checked by room temperature powder X-ray diffraction technique. The refinement method confirmed the single-phase nature of the synthesized sample which crystallizes in the orthorhombic $Y_2Co_3Ga_9$-structure with space group *Cmcm*. Here, we report for the first time a measurements of thermal conductivity $\kappa(T)$ in zero and 9T magnetic field for $Ce_2Ru_3Ga_9$ across the temperature range $2\text{K} \leqslant T \leqslant 300\text{K}$. The zero-field temperature dependence of $\kappa(T)$ exhibits a pronounced maximum, characteristic for metals with large electronic mean free path and with further increase of temperature $\kappa(T)$ starts behaves in manner usually attributed to the enhanced electron-phonon coupling. Based on Widemann-Franz law the electronic and lattice contributions to the thermal conductivity were estimated. In high temperature region a distinct step-like anomaly at $T^*=203\text{K}$ has been observed which signals a putative phase transition, probably of phononic or lattice origin. We furthermore discuss the effect of applied magnetic fields on the thermal transport in $Ce_2Ru_3Ga_9$.