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## Thermal and electrical transport properties of $\text{Sm}_3\text{Rh}_4\text{Ge}_{13}$ compound

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Polycrystalline samples of  $\text{Sm}_3\text{Rh}_4\text{Ge}_{13}$  compound was synthesized by arc melting the stoichiometric quantities of respective purity elements. The compounds crystallize in the usual cubic structure, space group  $\text{Pm}\bar{3}\text{n}$  (#223) [1-2]. Our magnetic susceptibility measurements show antiferromagnetic behaviour at low temperatures, at  $T_N = 5$  K, for  $\text{Sm}_3\text{Rh}_4\text{Ge}_{13}$ . The high temperature data of the inverse magnetic susceptibility deviates from Curie-Weiss behaviour, and rather obey modified Curie-Weiss law. This work will focus on thermoelectric properties of the system where, our electrical resistivity data depict a semiconducting nature by virtue of a systematic negative coefficient of temperature dependence and overall values of resistivity that are not within the normal-metal range. The measured thermal transport properties values of  $\text{Sm}_3\text{Rh}_4\text{Ge}_{13}$  exhibit low thermal conductivity and fairly high and positive thermopower suggesting that the fermi surface in these materials is hole dominated.

### Summary

Reference:

- [1] J. L. Hodeau, J. Chenavas, M. Marezio, J. P. Remeika, Solid State Commun. 36 (1980) 839–845.  
 [2] R. Gumeniuk et al. Dalton Trans. 41 (2012) 6299–6309.

**Apply to be considered for a student award (Yes / No)?**

Yes

**Level for award (Hons, MSc, PhD, N/A)?**

MSc

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**Would you like to submit a short paper for the Conference Proceedings (Yes / No)?**

Yes

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