Contribution ID: **250** Type: **Poster Presentation**

Thermal transport in the cage-compounds RFe2Al10 (R=Y, Yb)

Wednesday, 13 July 2011 17:00 (2 hours)

<p>Since the first report of the anomalous magnetic and electronic phenomena in CeRu₂Al₁₀ this intermetallic class of compounds, incorporating also members with elements Os and Fe in the place of Ru, have attracted considerable interest. N spite of large interatomic distances antiferromagnetic order sets in at TN =27 K in the ru and Os derivatives, with simultaneous energy gap formation in the electronic energy levels. In this work we studied the electronic and thermal transport in two novel members of the 1:2:10 series, YFe₂Al₁₀ and YbFe₂Al₁₀. These two compounds were synthesized with the purpose of studying the effects of a unit cell volume that is compressed well beyond that of CeRu₂Al₁₀ in order to expose the role of Fe-based magnetism in the observed electronic correlations. Here we discuss our results of thermal and electronic transport in the pair of compounds YFe₂Al₁₀ and YbFe₂Al₁₀. Both exhibit anomalous thermopower behavior and a peak that develops at low temperatures. This is attributed to an enhanced density of states that is achieved through hybridization between conduction electrons and magnetic moments with a localized nature. The thermal conductivity of both compounds shows a weak temperature dependence and especially in the case of YFe₂Al₁₀ is the observed behavior amenable to a description in terms of glass-like behavior that most likely results from optical phonon modes which effectively scatter heat-carrying quasiparticles. The electrical resistivity suggests low-lying magnetic cooperative behavior.

Level (Hons, MSc,
   PhD, other)?

other

Consider for a student
   award (Yes / No)?

No

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

Yes

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