Abstract Submitted to the
3rd Conference on Concepts in Electron Correlation
30 September - 5 October, 2005
Hvar, Croatia

Specific heat of the $Yb_{0.5}Y_{0.5}InCu_4$

I. Aviani[1], J. Hemberger[2], A. Loidl[2], D. Starešinić[1], M. Očko[1], J.L. Sarrao[3]

[1] *Institute of Physics, Zagreb, Croatia*

[2] *University of Augsburg, D-86135 Augsburg, Germany*

[3] *Los Alamos National Laboratory, Los Alamos, USA*

We report measurements and data analysis of the specific heat of $Yb_{0.5}Y_{0.5}InCu_4$. The measurements were performed in the temperature range between 2 K and 300 K and in magnetic field of 0 T and 5 T. The specific heat data of the high-temperature local-moment (LM) phase of $YbInCu_4$ and of $Yb_{0.5}Y_{0.5}InCu_4$ for which the valence transition disappears, reflect the same underlying physics. The Y-dilution removes the valence phase transition in $YbInCu_4$, but keeps the essential characteristics of LM phase unchanged. This makes possible a study of LM phase at low temperatures, where the crystal field and the Kondo effects are more pronounced. The magnetic contribution to the specific heat at low temperature is significant. We atribute it to the magnetic response of Yb^{3+} ion and compare it with the calculated one for the single Yb^{3+} ion in a crystal field. We assume the Γ_8 quartet ground state and the two close-lying excited doublets (Γ_7 and Γ_6). The upturn in magnetic specific heat, obtained at low temperatures, cannot be explained within this crystal field scheme. It can be attibuted to the apperiance of a week Kondo effect.

Keywords : Heavy fermions, Valence fluctuations, Crystalline electrical field