

Magnetic dichroism, photoemission and magnetometric studies on CeNi₄B

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The CeNi₄B compound is a mixed-valence system [1,2]. It is a paramagnet with $\mu_{\text{eff}} = 0.52\mu_{\text{B}}/\text{f.u.}$ and the paramagnetic Curie temperature $\theta = -10.7$ K. In the present research we complete our previous magnetic susceptibility and x-ray photoemission (XPS) measurements with new studies by the x-ray magnetic circular dichroism (XMCD) method. The observation of the Ce- $M_{4,5}$ edges carried out with XMCD confirms the mixed-valence state deduced previously from XPS, which revealed the f-states occupancy $n_f = 0.83$ and hybridization between the f-states and the conduction electrons $\Delta = 85$ meV. Moreover, we report on the measurements of the Ni- $L_{2,3}$ edges, which enable verification of the Ni contribution to the magnetism of this compound.

[1] T. Toliński, A. Kowalczyk, M. Pugaczowa-Michalska, G. Chełkowska, J. Phys.: Condens. Matter 15, 1397 (2003).

[2] C. Mazumdar, Z. Hu, G. Kaindl, Physica B 259-261, 89 (1999).

13.4 cm

Subject category :

1. Strongly Correlated Electrons and High Temperature Superconductivity

Presentation mode :

poster

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9.7 cm