



Experiment title:
Temperature and pressure dependence of the oxidation state of Ce in the intermediate valent compound $CeNi_{5-x}Cu_x$ ($x=0, 2, 2.5, 3, 4$ and 5)

Experiment number:
HE-256

Beamline:	Date of experiment: from: 5.11.97 to: 11.11.97	Date of report:
Shifts:	Local contact(s): Sakura Pascarelli	<i>Received at ESRF:</i> 20 OCT. 1998

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Report:

The idea of this experiment was to study the valence of Ce in the vicinity of the intermediate valence to Kondo transition in $CeCu_{5-x}Ni_x$ ($x=3$) as a function of pressure and/or temperature. Due to several technical difficulties, in particular with the pressure cell and the Be gaskets, we were not able to perform the pressure experiments and therefore we concentrated on the temperature dependence of the valence for different x as well as for the similar $CeNi$ compound for which interesting interactions between the Ce valence and lattice vibrations occur.

Fig. 1 shows as an example the L_3 -edge of Ce for Ce in $CeNi_4Cu$ for 10 and 295 K. Even though the data are quite noisy, which is due to inhomogeneities in the crystal size of the polycrystalline material, there is clear evidence that the second peak increases for decreasing temperature. This clearly indicates that the valence of Ce increases for decreasing temperatures due to the contraction of the lattice as it is expected.

At this point, we like to honor our friend and colleague Willy Bührer for his support in this project. He has unexpectedly left our ways on the way to the experiment due to a heart failure.

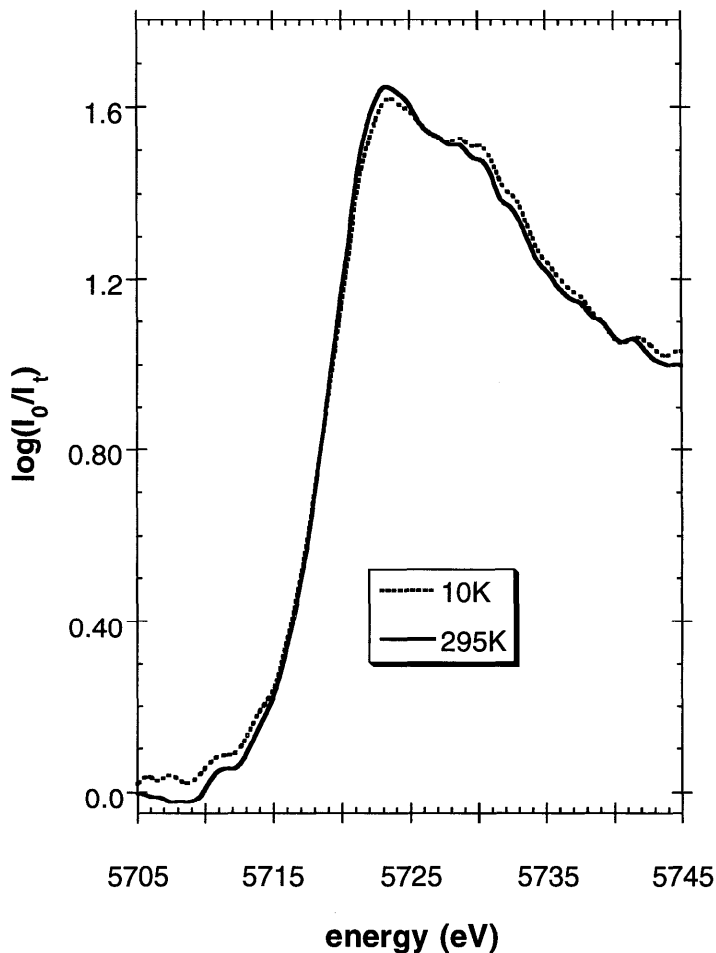


Fig. 1 L₃-edge XANES of Ce in CeNi₅Cu at different temperatures.