Evaluation of Energy Resolution of BL01B1 Using XANES Spectra of Various Metal Ions

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Introduction

The beam time of 33 h was shared during the 10th cycle in November, 1997. Because the 10th cycle (1997) was assigned for the arrangement and check of the beam line operation, actual beam time for the experiment of this proposal was less than half of shared beam time. During the cycle, instability of the monochromator swaying prevented from the measurement of XAFS particularly at high energy side. Under the limited experimental condition, we could collect some data of Eu K-edge XANES firstly which indicates the high performance of the beam line.

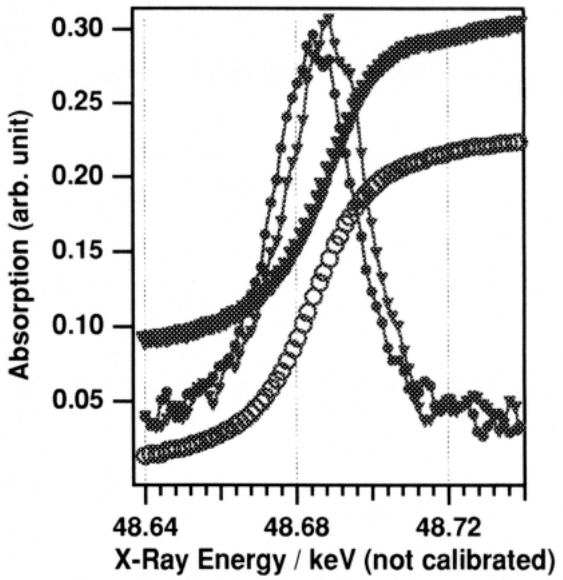

Fig.1 Eu K-edge XANES and the first derivative spectra of $EuNi_2(Si_{1-x}Ge_x)_2$ componds. Circle stands for the sample with $x = 0.7$ and triangle with $x = 0.5$.

Experimental and Results

The valence of europium ions in $EuNi_2(Si_{1-x}Ge_x)_2$ compound varies with the composition x having been confirmed by Mössbauer and L-edge absorption spectroscopy. Europium exists as a mixture of tri- and divalent state. To determine its valence, we have applied Eu K-edge absorption spectroscopy firstly. The K-edge absorption spectra were recorded at SPring-8, Hyogo. Japan with a Si(511) two-crystal monochromator using the ionization detectors filled with atmospheric Kr flow. The results are shown in Fig. I . We found the clear chemical shift lying in I O eV region of K-edge energy (48 keV) of europium with the above compounds although the natural width of Eu K core electron energy band is 40 eV. This is due to the symmetric distribution of band width and slit function.