

## Studies on the Structure of $\text{WO}_3$ Dispersed over $\text{ZrO}_2$ by XAFS

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It was reported that the tungsten oxide dispersed over zirconia showed strong acid properties and the acid amount was dependent on the loading of the tungsten oxide. However, the relationship between the structure of and the acid properties is not clear. The purpose of this experiment is to determine the structure of tungsten oxide dispersed over zirconia by the X-ray absorption fine structure (XAFS).

XAFS spectra were measured at room temperature in a transmission mode at the beam line BL01B1 of Spring-8.  $\text{WO}_3/\text{ZrO}_2$  were prepared by conventional impregnation method. The samples calcined at 673 K under  $\text{N}_2$  atmosphere were transferred to cells with two Kapton windows connected to a closed circulating system. For the measurement of W  $L_3$ -edge spectra two ion chambers filled with  $\text{N}_2$  and Ar were used as detectors of  $I_0$  and  $I$ , respectively.

Figure 1 shows Fourier transforms for the  $k^3$ -weighted W  $L_3$ -edge EXAFS of the  $\text{WO}_3/\text{ZrO}_2$ , where the loadings of  $\text{WO}_3$  correspond to the 1/3-, mono- and double-layer coverage. The peak due to the W-O bond was observed at 1.3-1.4 Å. It was observed that the peak intensity and the position of this W-O bond of 1/3-layer sample is profoundly different from those of mono- and double-layer samples. Detailed structural analysis is under progress.

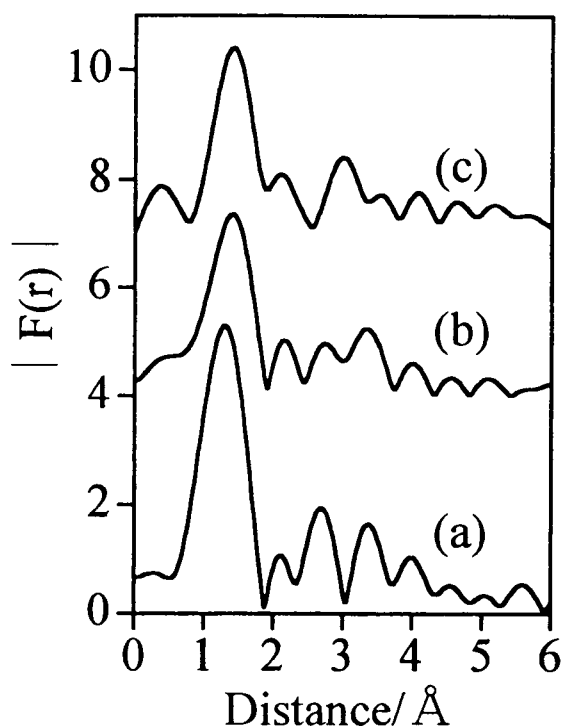


Figure 1. Fourier transforms for  $k^3$ -weighted W  $L_3$ -edge EXAFS of  $\text{WO}_3/\text{ZrO}_2$ ; (a) 1/3-layer, (b) mono-layer, (c) double-layer coverage of  $\text{WO}_3$ .