

## Supporting Information for A feasibility study of “range-extended” EXAFS measurement at Pt L<sub>3</sub>-edge of Pt/Al<sub>2</sub>O<sub>3</sub> in the presence of Au<sub>2</sub>O<sub>3</sub>

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### Pt L<sub>3</sub>-edge XAS spectra of 0.5 wt% Pt/Al<sub>2</sub>O<sub>3</sub> in the transmission and TFY modes

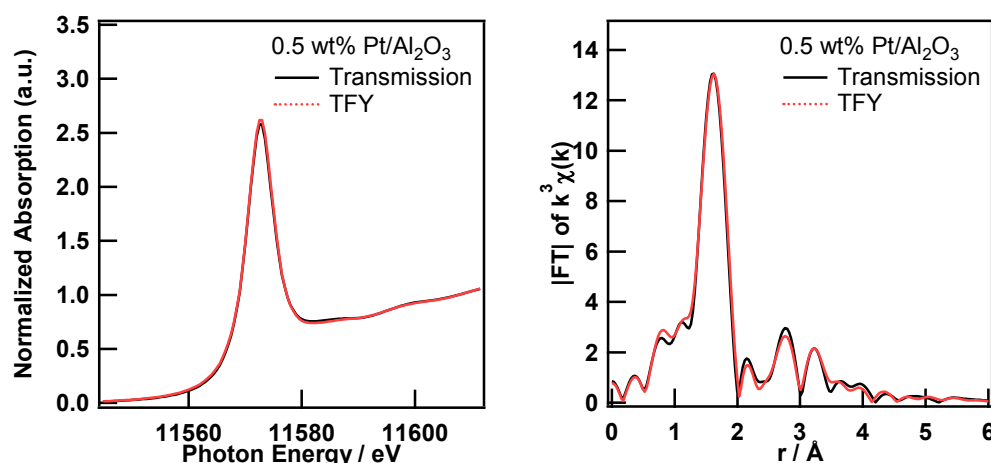


Fig. S1 Pt L<sub>3</sub>-edge XANES (left) and Fourier transform of EXAFS (right) spectra of 0.5 wt% Pt/Al<sub>2</sub>O<sub>3</sub> measured in the transmission and TFY modes.

In general, XAS spectra measured in the fluorescence mode are believed to be valid when they are measured in the “thick and dilute” condition or “thin (and concentrated)” condition<sup>1</sup>. However, for the samples in the real world environment, to satisfy a suitable condition in the fluorescence mode is not so obvious. Therefore, we first evaluate the validity of the XAS spectrum measured in the TFY mode simply by comparing it with the XAS spectrum of the same sample measured in the transmission mode. The Pt L<sub>3</sub>-edge X-ray absorption near-edge structure (XANES) spectra of 0.5 wt% Pt/Al<sub>2</sub>O<sub>3</sub> measured in the transmission mode and TFY mode with a Pilatus detector is shown in Figure S1 (left). The XANES spectrum measured in the TFY mode was almost identical to that in the transmission mode. This is also verified in the EXAFS region (Figure S1 (right)). These results indicate that the present Pt/Al<sub>2</sub>O<sub>3</sub> samples, whose Pt content is lower than 0.5 wt%, are suitable for the XAS measurement in the fluorescence mode.

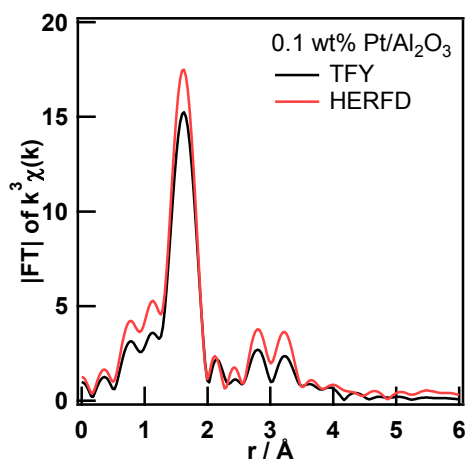


Fig. S2 Fourier transform of Pt L<sub>3</sub>-edge EXAFS spectra of 0.1 wt% Pt/Al<sub>2</sub>O<sub>3</sub> measured in the TFY and HERFD modes.

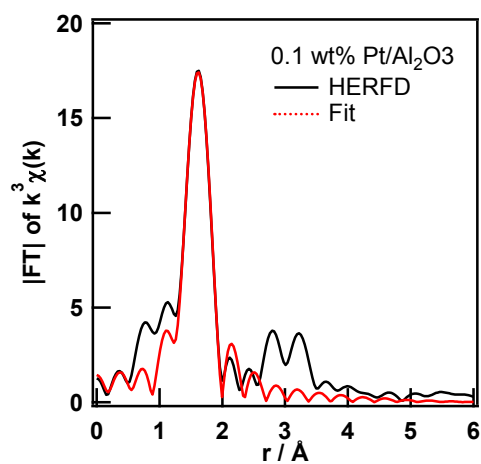


Fig. S3 Fourier transform of Pt L<sub>3</sub>-edge EXAFS spectra of 0.1 wt% Pt/Al<sub>2</sub>O<sub>3</sub> measured in the HERFD mode and its curve fitting result.

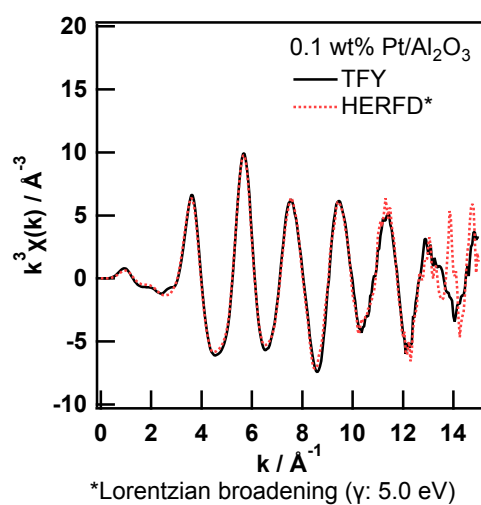


Fig. S4 Fourier transform of Pt L<sub>3</sub>-edge EXAFS spectra of 0.1 wt% Pt/Al<sub>2</sub>O<sub>3</sub> measured in the TFY mode and HERFD mode with Lorentzian broadening with  $\gamma = 5.0$  eV.

## References

1. J. Jaklevic, J. A. Kirby, M. P. Klein, A. S. Robertson, G. S. Brown and P. Eisenberger, *Solid State Commun.*, 1977, **23**, 679-682.