Supporting Information for
A feasibility study of “range-extended” EXAFS measurement at Pt L₃-edge of Pt/Al₂O₃ in the presence of Au₂O₃

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Pt L₃-edge XAS spectra of 0.5 wt% Pt/Al₂O₃ 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. 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 L₃-edge X-ray absorption near-edge structure (XANES) spectra of 0.5 wt% Pt/Al₂O₃ 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/Al₂O₃ samples, whose Pt content is lower than 0.5 wt%, are suitable for the XAS measurement in the fluorescence mode.

0.1 wt% Pt/Al₂O₃
TFY
HERFD

Fig. S2 Fourier transform of Pt L₃-edge EXAFS spectra of 0.1 wt% Pt/Al₂O₃ measured in the TFY and HERFD modes.
Fig. S3 Fourier transform of Pt L_{3}-edge EXAFS spectra of 0.1 wt% Pt/Al_{2}O_{3} measured in the HERFD mode and its curve fitting result.

Fig. S4 Fourier transform of Pt L_{3}-edge EXAFS spectra of 0.1 wt% Pt/Al_{2}O_{3} measured in the TFY mode and HERFD mode with Lorentzian broadening with \( \gamma = 5.0 \) eV.

References