

Supporting information

***In situ* time-resolved XAFS study on the structural transformation and phase separation of Pt₃Sn and PtSn alloy nanoparticles on carbon in the oxidation process**

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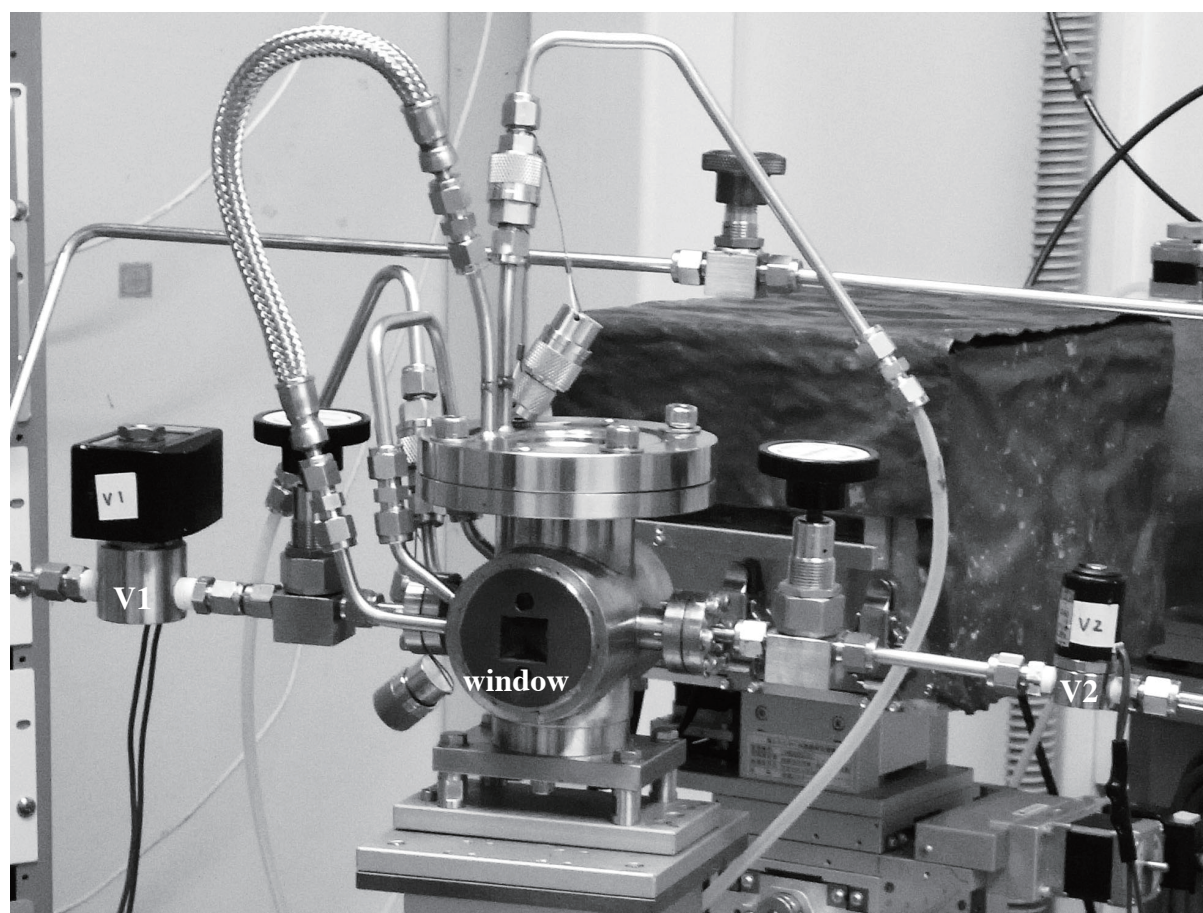


Figure S1. A batch-type cell for *in situ* XAFS measurements; Electromagnetic valves were equipped to the cell (V1 and V2 in the picture above). The inner volume of the cell is about 230 ml. X-ray windows are sealed with kapton films. A gas chamber, whose volume is 230 ml, was connected to the V2. Reaction gas was injected from the chamber by opening V2 while V1 was closed.

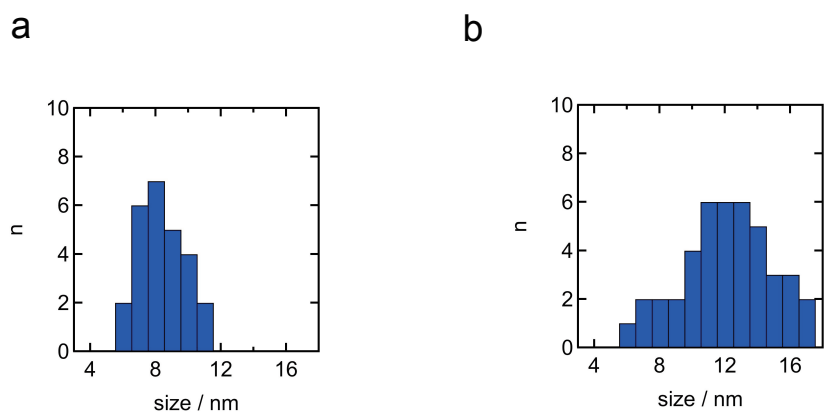
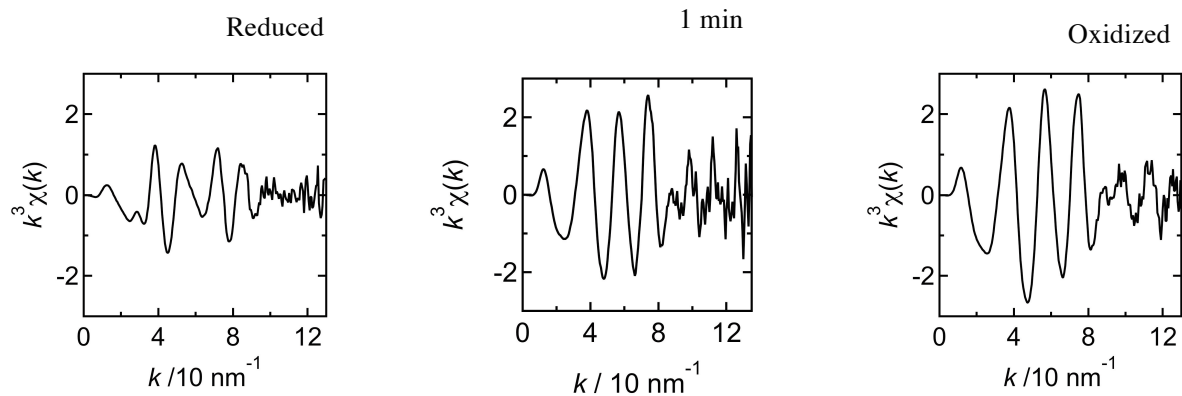
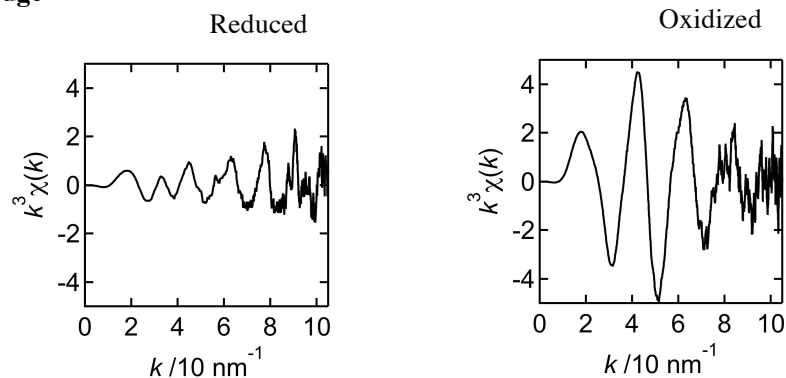


Figure S2. Distribution of particle sizes of the Pt₃Sn catalysts; (a) reduced Pt₃Sn/C, (b) oxidized Pt₃Sn/C.

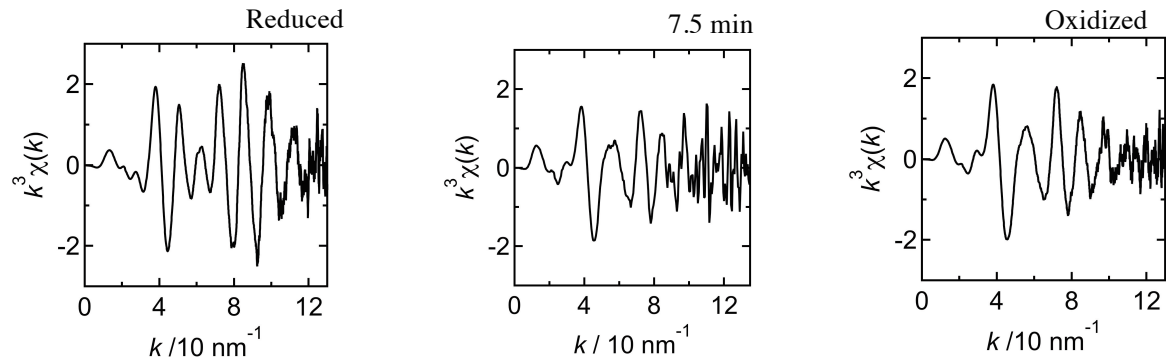
Pt₃Sn/C: Pt L_{III}-edge



Pt₃Sn/C: Sn K-edge



PtSn/C: Pt L_{III}-edge



PtSn/C: Sn K-edge

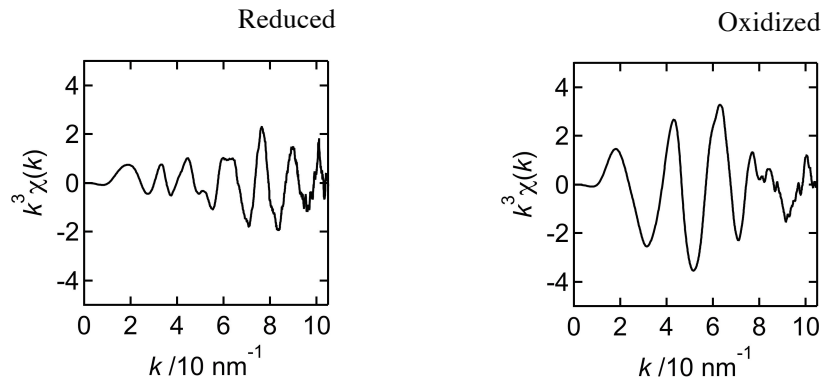


Figure S3. $k^3\chi(k)$ of Pt L_{III}-edge and Sn K-edge.