

## Supporting Information

In-Situ observation of Pt oxides on the low index planes of Pt by nanoparticle surface enhanced Raman spectroscopy

Fumiya Sugimura<sup>a</sup>, Nanami Sakai<sup>a</sup>, Tetsuya Nakamura<sup>a</sup>, Masashi Nakamura<sup>a</sup>, Katsuyoshi Ikeda<sup>b</sup>, Toshio Sakai<sup>c</sup>, Nagahiro Hoshi<sup>\*a</sup>

<sup>a</sup> Department of Applied Chemistry and Biotechnology, Graduate School of Engineering, Chiba University, 1-33, Yayoi-cho, Inage-ku, Chiba 263-8522, Japan

<sup>b</sup> Department of Physical Science and Engineering, Nagoya Institute of Technology, Gokiso, Showa, Nagoya 466-8555, Japan

<sup>c</sup> Department of Materials Chemistry, Faculty of Engineering, Shinshu University, 4-17-1 Wakasato, Nagano 380-8553, Japan

\*Corresponding author. Tel.: +81 43 290 3384; fax: +81 43 290 3384 *E-mail address*: hoshi@faculty.chiba-u.jp (N. Hoshi)

We measured NPSERS band of an impurity on Au nanoparticles around  $1550\text{ cm}^{-1}$  as a measure of the amount of Au nanoparticles. The band intensity before CO adsorption at  $0.1\text{ V(RHE)}$  is identical with that after CO adsorption and oxidation as shown in Fig. S1. This fact shows that the amount of Au nanoparticles does not change before and after CO adsorption.

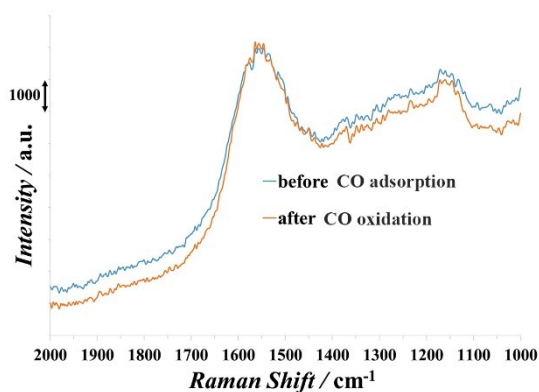


Fig. S1 NPSERS band of an impurity of Au nanoparticles around  $1550\text{ cm}^{-1}$  at  $0.1\text{ V(RHE)}$  in  $0.1\text{ M HClO}_4$ . Blue line: before CO adsorption. Orange line: after CO adsorption at  $0.1\text{ V(RHE)}$  and CO oxidation at  $0.8\text{ V(RHE)}$ .

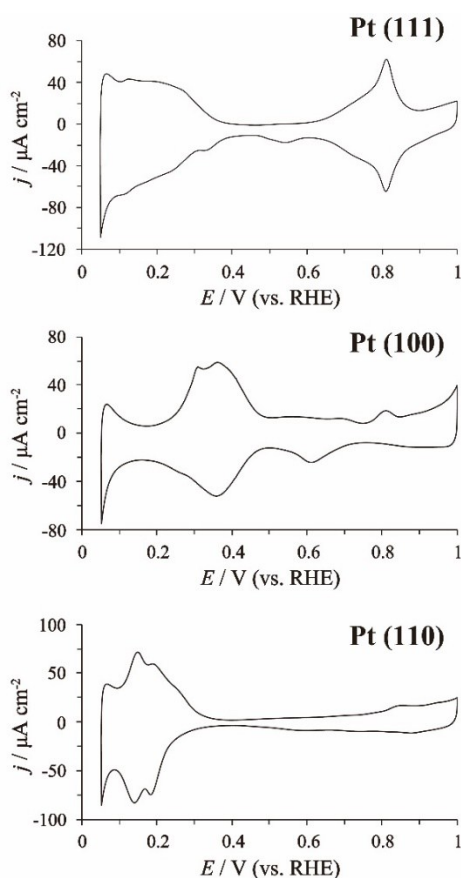


Fig. S2 Voltammograms of the low index planes of Pt in  $0.1\text{ M HClO}_4 / \text{D}_2\text{O}$  saturated with Ar.