

Supporting Information

Characterization of electrocatalytic proton reduction and surface adsorption of platinum nanoparticles supported by a polymeric stabilizer on an ITO electrode

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Contents.

Table S1. Summary of data in bulk electrolysis for proton reduction.

Figure S1. Distribution of particle size of citrate-Pt and PAA-Pt nanoparticles.

Figure S2. Time-courses of the adsorbed amount of citrate-Pt and PAA-Pt on the ITO electrode in QCM measurements.

Figure S3. XPS spectra of citrate-Pt and PAA-Pt on the ITO electrode.

Figure S4. CVs of citrate-Pt/ITO and PAA-Pt/ITO electrodes before and after chronoamperometry.

Table S1. Summary of data in bulk electrolysis for proton reduction in a 0.1 M KNO₃ solution (pH = 5.3) using citrate-Pt/ITO and PAA-Pt/ITO electrodes.

Electrodes	Applied potential / V vs. Ag/AgCl	Time / h	Charge / C	Amount of H ₂ / μmol	Faraday efficiency (%)
citrate-Pt/ITO	-1.0	1	4.73	18.3	75
PAA-Pt/ITO	-1.0	1	2.84	9.9	67

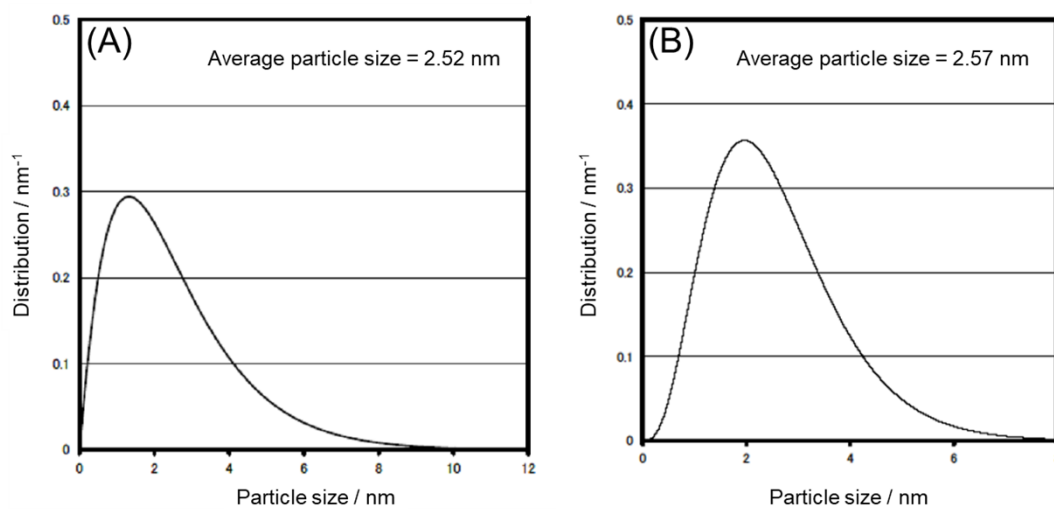


Figure S1. Distributions of particle sizes of (A) citrate-Pt and (B) PAA-Pt nanoparticles in the flesh solution as measured by a small-angle X-ray scattering (SAXS) technique.

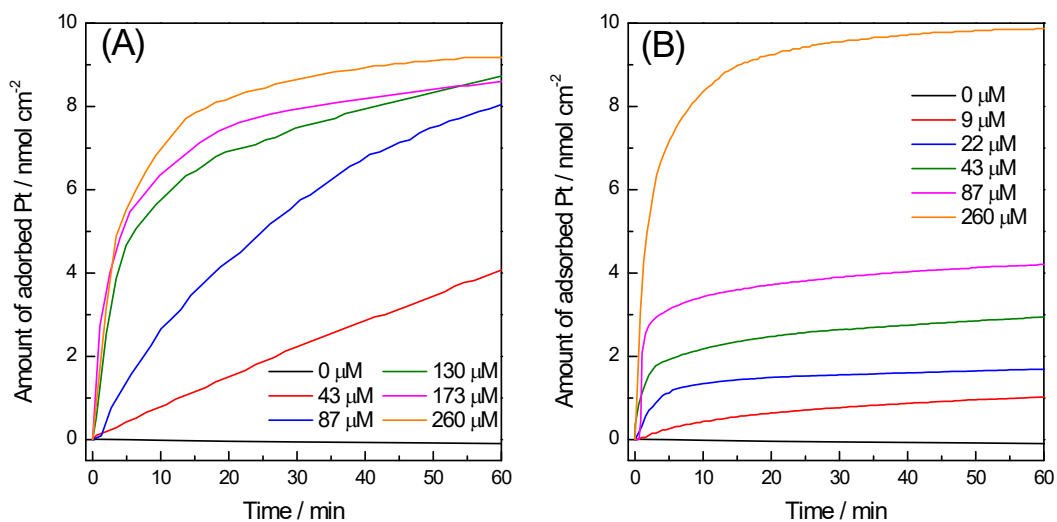


Figure S2. Time-courses of the adsorbed Pt amount of (A) citrate-Pt and (B) PAA-Pt on ITO electrode in QCM measurements. The Pt concentrations (c_{Pt}) in the reaction solutions are indicated by different colors in respective figures.

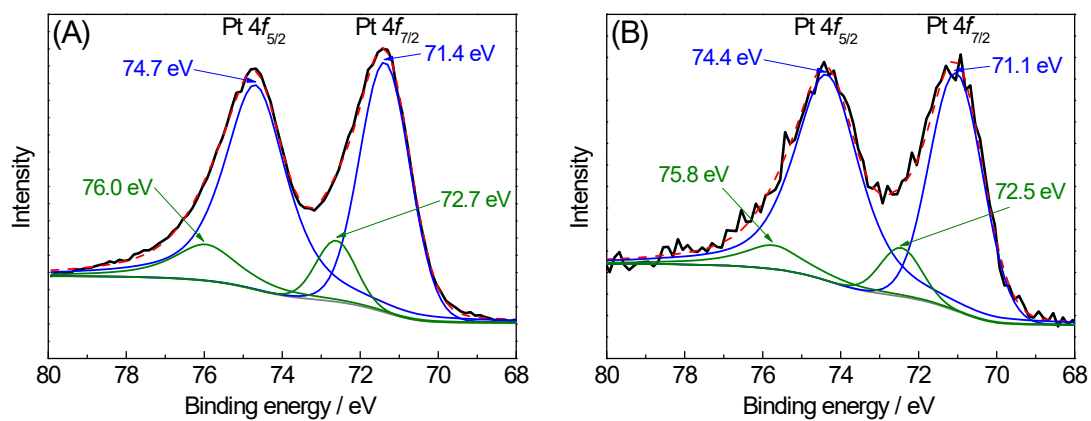


Figure S3. XPS spectra of (A) citrate-Pt and (B) PAA-Pt on ITO in a Pt 4f region. The solid black and dotted red lines represent the experimental and simulated spectra, respectively. The deconvoluted bands are shown by the blue (Pt⁰ state) and green (Pt^{II} state) solid lines.

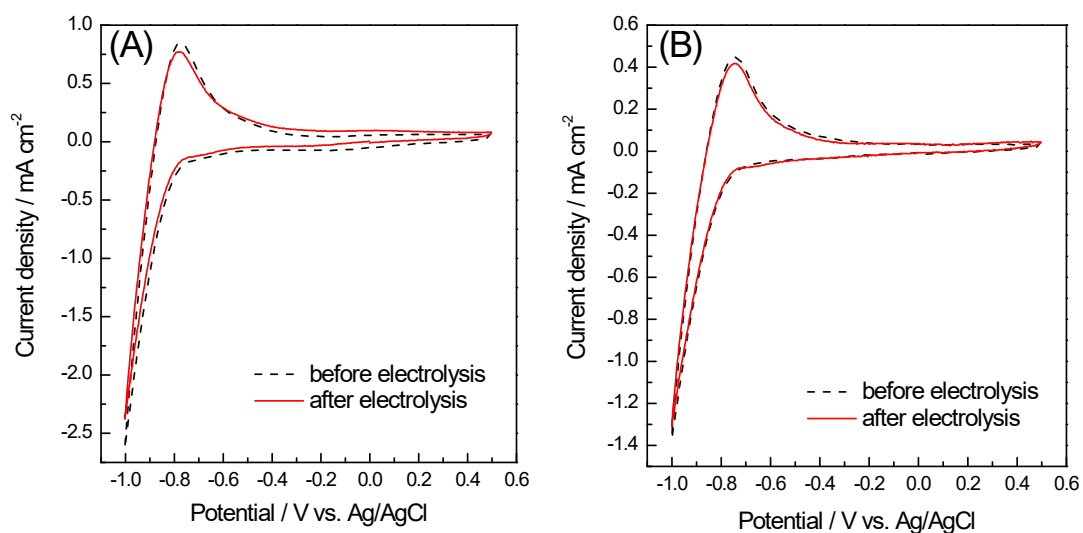


Figure S4. CVs of (A) citrate-Pt/ITO and (B) PAA-Pt/ITO electrodes in a 0.1 M KNO₃ solution (pH = 5.3) before (black dashed lines) and after (red solid lines) chronoamperometry at -1.0 V vs. Ag/AgCl.