Supporting Information

Reconstruction and dissolution of shape-controlled Pt nanoparticles in acidic electrolytes

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Fig. S1 CVs of Pt-NC (a), Pt-CO (b) and Pt-PC (c) nanoparticles in argon-saturated 0.1 M NaOH electrolyte recorded at a scan rate of 50 mV s⁻¹.
Fig. S2 Voltammograms of Pt-PC (a), Pt-NC (b) and Pt-CO (c) nanoparticles upto 0.8 V (25th cycle upto 200th cycle) in argon-saturated 0.5 M H₂SO₄ electrolyte recorded at a scan rate of 50 mV s⁻¹.
Fig. S3 $H_{\text{upd}}$ region of the voltammograms of Pt-NC (a), Pt-CO (b), and Pt-PC (c) nanoparticles in argon-saturated 0.5 M $H_2SO_4$ electrolyte (every 25th cycle upto 200 cycles). Inset shows the respective complete voltammograms on cycling upto 1.0 V recorded at a scan rate of 50 mV s$^{-1}$. 
**Fig. S4** Comparison of the CVs (initial and after 0.6 V cycling (200 cycles)) followed by the CVs recorded up to 0.8 V (2 cycles) and 1.2 V (25th cycle) of Pt-NC (a), Pt-CO (b), and Pt-PC (C) at scan rate of 50 mV s\(^{-1}\) in test electrolyte H\(_2\)SO\(_4\) prepared using Ultrapur water (Wasser Agua Eau Água Acqua) obtained from Merck.
Fig. S5 Comparison of CVs after 0.6 V cycling (200th cycle) and CVs after excursion to 0.8 V (2 cycles) with change in concentration of the test electrolyte H₂SO₄; left panel Pt-NC and right panel Pt-CO.
**Fig. S6** Comparison of the CVs (initial and after 0.6 V cycling (200 cycles)) followed by recording the CV upto 0.8 V (2 cycles) and 1.2 V (25th cycle) of Pt-NC in 0.1 M HClO₄ electrolyte recorded at a scan rate of 50 mV s⁻¹.
**Fig. S7** Comparison of the CVs of Pt-PC (initial and after 0.6 V cycling (200 cycles)) followed by recording the CV up to 1.2 V and 1.2 V 25th cycle in 0.5 M H₂SO₄ electrolyte recorded at a scan rate of 50 mV s⁻¹.
Fig. S8 Comparison of the CVs of Pt-NC (initial and after 1.2 V cycling (25 cycles)) followed by recording the CV up to 0.6 V (200 cycles) and 0.8 V (2 cycles) and 1.2 V in 0.5 M H₂SO₄ electrolyte recorded at a scan rate of 50 mV s⁻¹.
**Fig. S9** Comparison of the CVs (initial and after 0.6 V cycling (200 cycles)) followed by recording the CV up to 0.8 V (2 cycles) and 1.2 V (25th cycle) (dotted lines); repeating the sequential experiment on the same electrode (solid lines) for both (a) Pt-NC and (b) Pt-CO.
**Fig. S10** Comparison of the CVs of Pt-NC (initial and after cycling in the potential range of 0.95–1.2 V for 200 cycles) in argon-saturated 0.5 M H$_2$SO$_4$ electrolyte recorded at a scan rate of 50 mV s$^{-1}$. Inset shows the complete cycling between (0.95–1.2 V)(200 cycles).
Fig. S11 Initial cycling of Pt-NC (a) and Pt-CO (b) nanoparticles up to 1.2 V in argon-saturated 0.5 M H₂SO₄ electrolytes recorded at a scan rate of 50 mV s⁻¹.
**Fig. S12** Voltammograms of Pt-NC nanoparticles up to (a) 0.9 V and (b) 1.2 V (25th cycle up to 200th cycle) in argon-saturated 0.1 M NaOH electrolyte recorded at a scan rate of 50 mV s⁻¹.
Fig. S13 Voltammograms of Pt-CO nanoparticles up to (a) 0.9 V and (b) 1.2 V (25th cycle up to 200th cycle) in argon-saturated 0.1 M NaOH electrolyte recorded at a scan rate of 50 mV s⁻¹.