

Supporting Information

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

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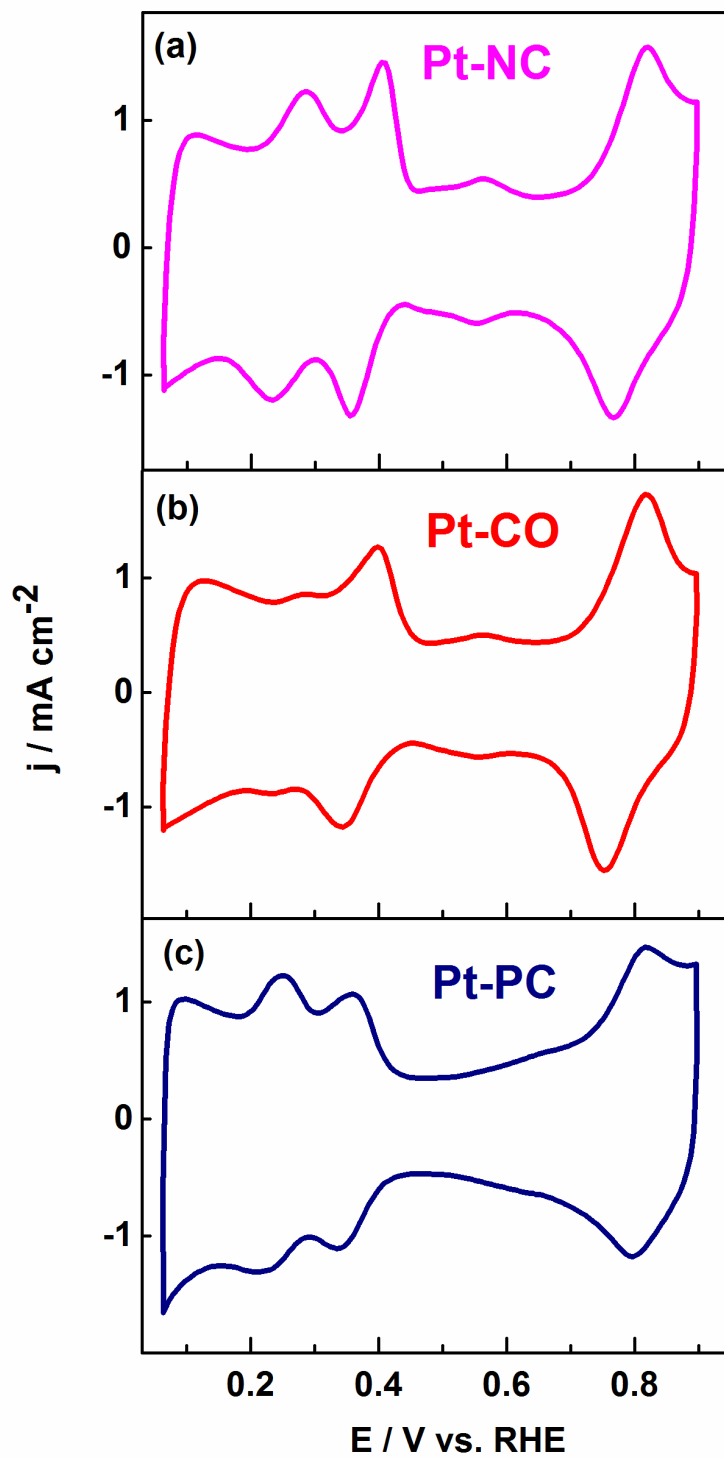


Fig. S1 CVs of Pt-NC (a), Pt-CO (b) and Pt-PC (c) nanoparticles in argon-saturated 0.1 M NaOH electrolyte recorded at a scan rate of 50 mV s^{-1} .

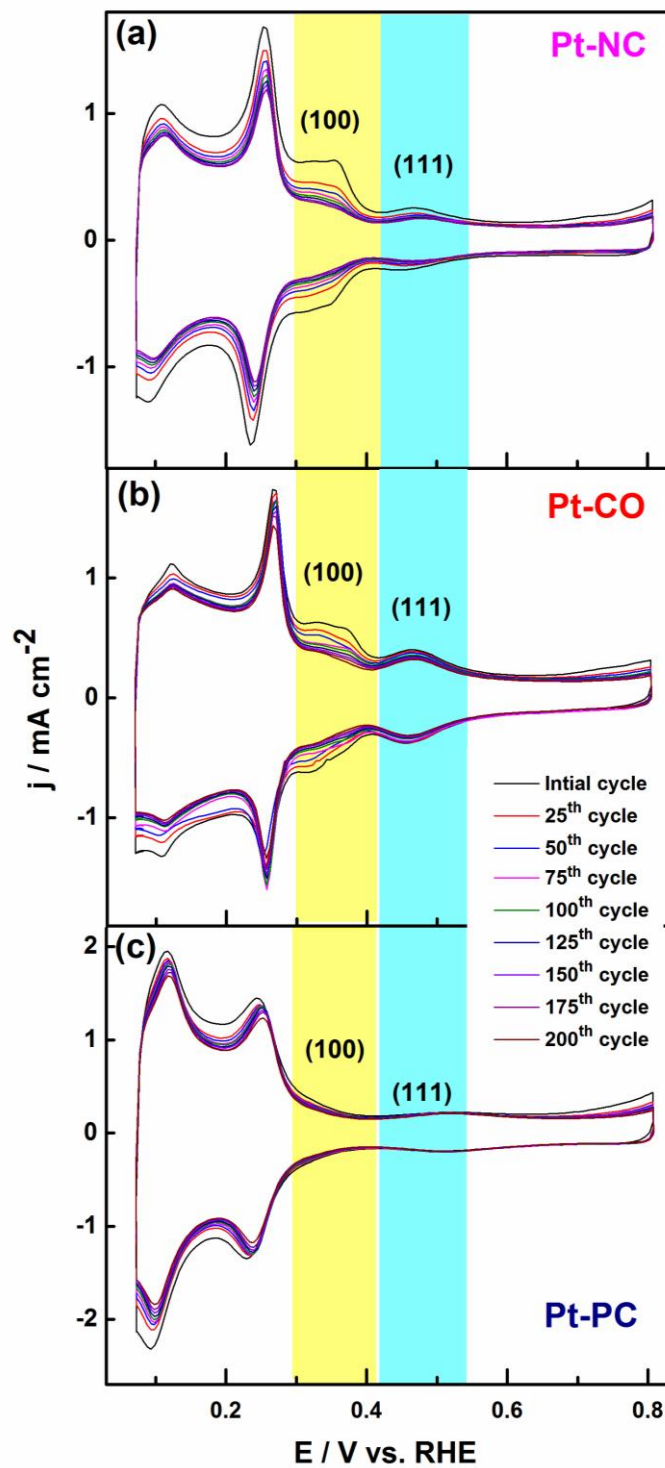


Fig. S2 Voltammograms of Pt-PC (a), Pt-NC (b) and Pt-CO (c) nanoparticles upto 0.8 V (25th cycle upto 200th cycle) in argon-saturated 0.5 M H_2SO_4 electrolyte recorded at a scan rate of 50 mV s^{-1} .

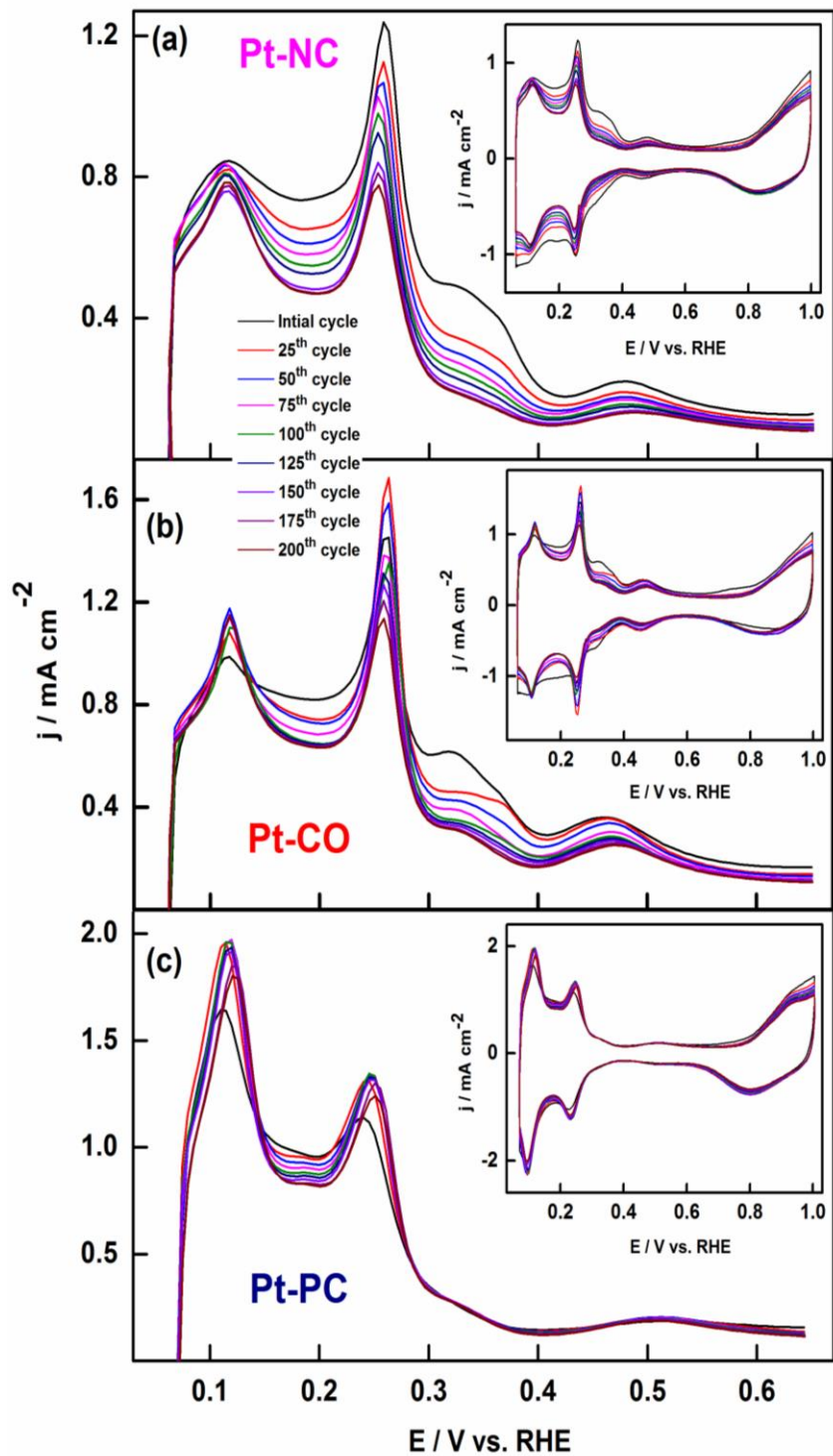


Fig. S3 H_{upd} region of the voltammograms of Pt-NC (a), Pt-CO (b), and Pt-PC (c) nanoparticles in argon-saturated 0.5 M H_2SO_4 electrolyte (every 25th cycle up to 200 cycles). Inset shows the respective complete voltammograms on cycling up to 1.0 V recorded at a scan rate of 50 mV s^{-1} .

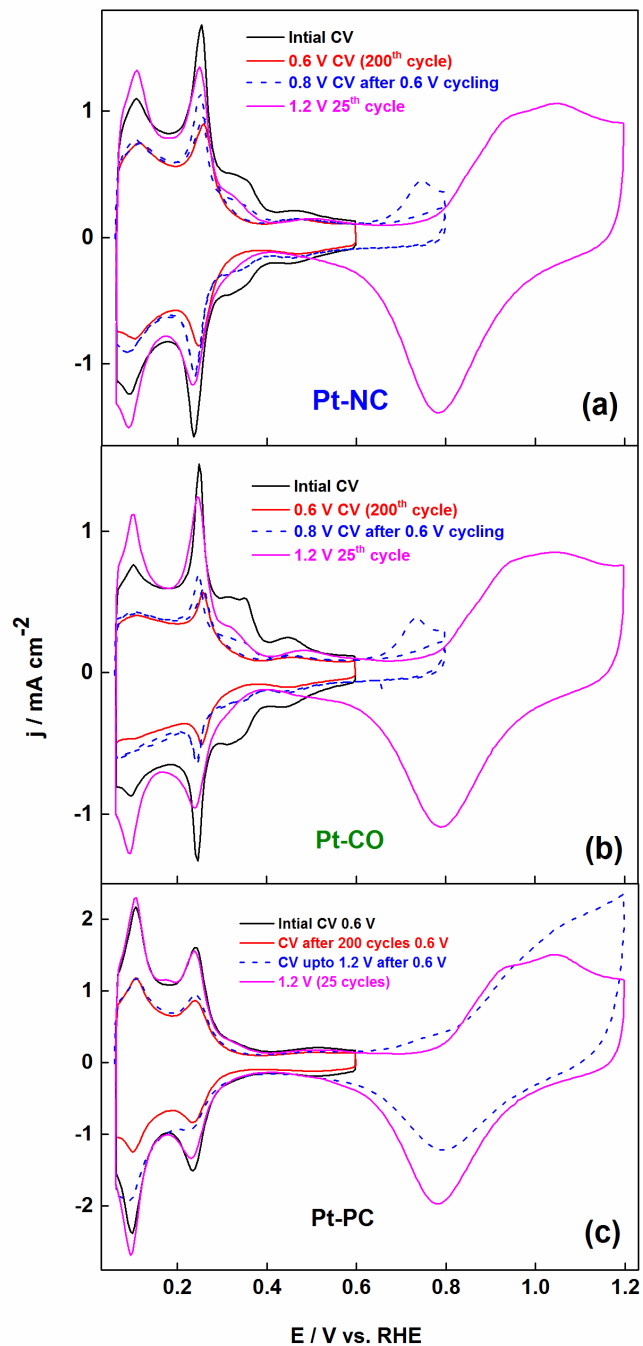


Fig. S4 Comparison of the CVs (initial and after 0.6 V cycling (200 cycles)) followed by the CVs recorded upto 0.8 V (2 cycles) and 1.2 V (25th cycle) of Pt-NC (a), Pt-CO (b), and Pt-PC (c) at scan rate of 50 mV s^{-1} in test electrolyte H_2SO_4 prepared using Ultrapur water (Wasser Agua Eau Água Aqua) obtained from Merck.

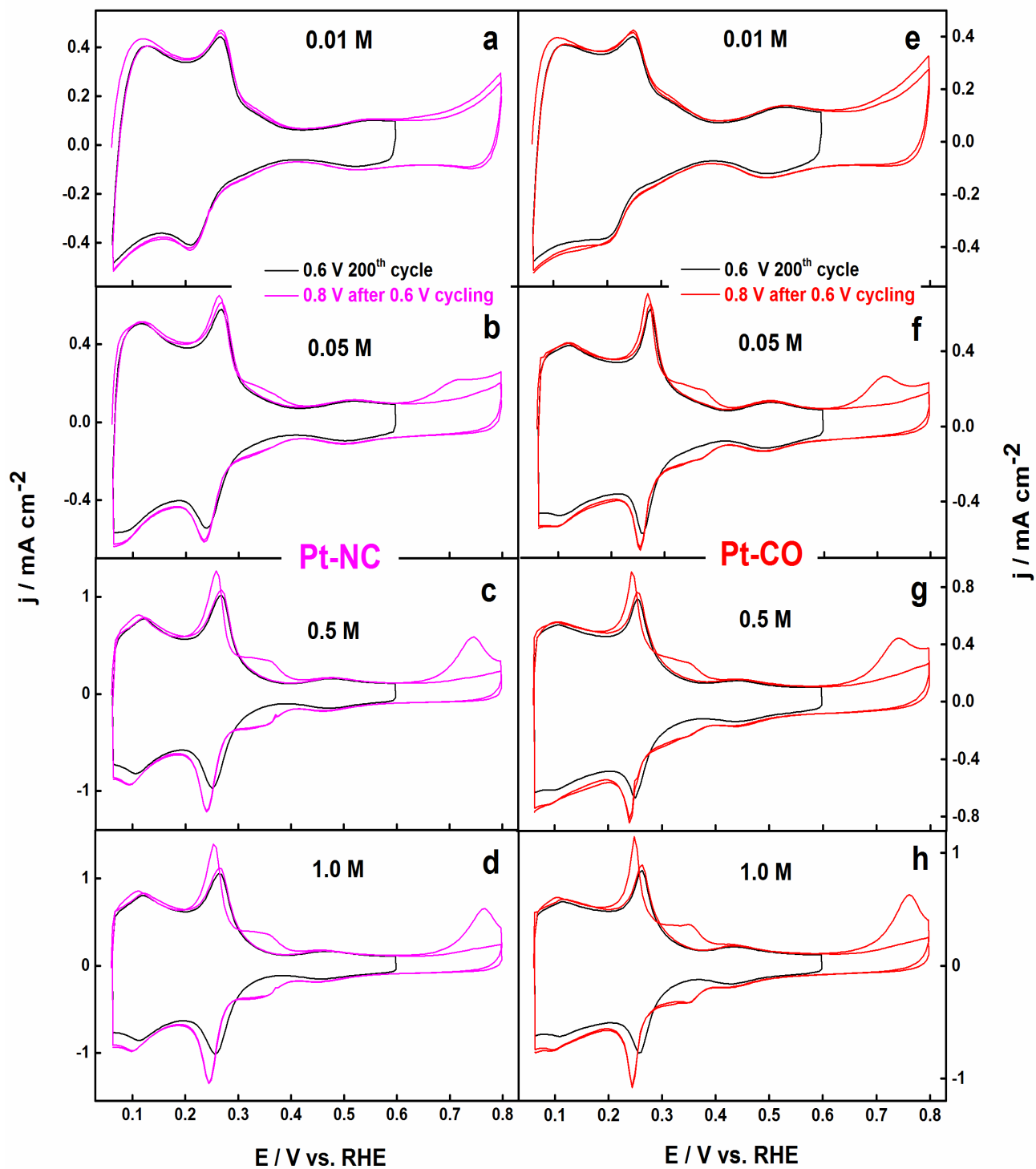


Fig. S5 Comparison of CVs after 0.6 V cycling (200th cycle) and CVs after excursion to 0.8 V (2 cycles) with change in concentration of the test electrolyte H₂SO₄; left panel Pt-NC and right panel Pt-CO.

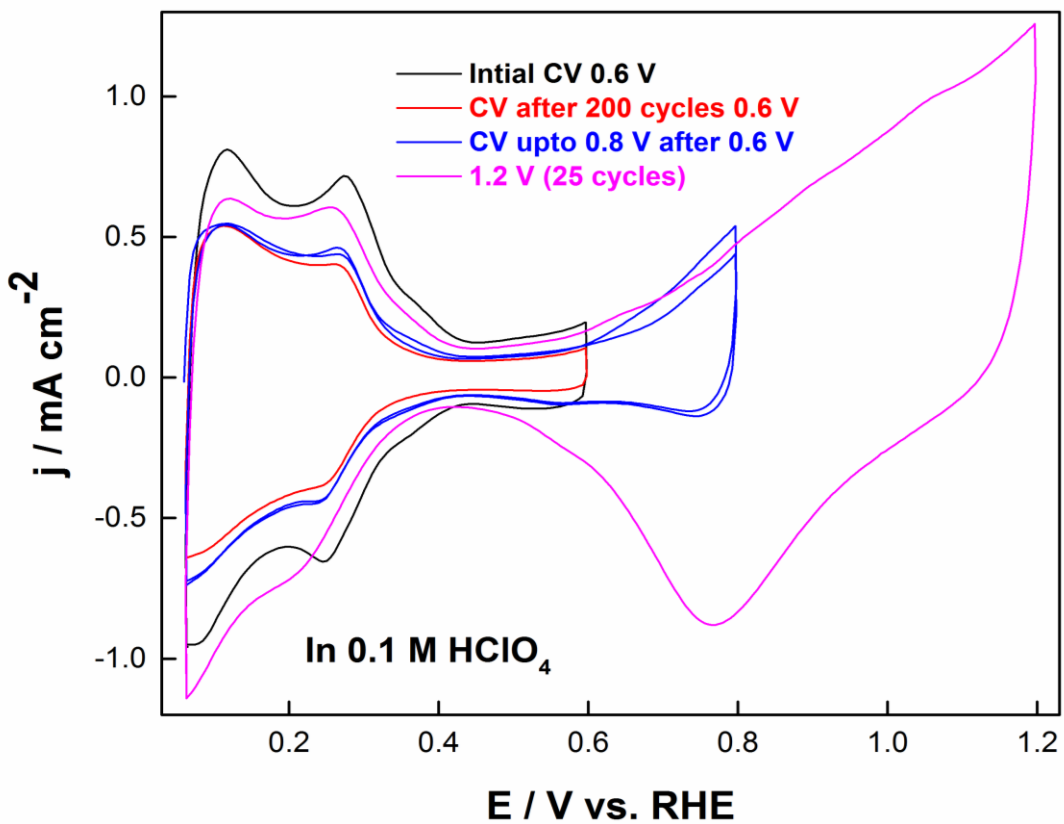


Fig. S6 Comparison of the CVs (initial and after 0.6 V cycling (200 cycles)) followed by recording the CV upto 0.8 V (2 cycles) and 1.2 V (25th cycle) of Pt-NC in 0.1 M HClO₄ electrolyte recorded at a scan rate of 50 mV s⁻¹.

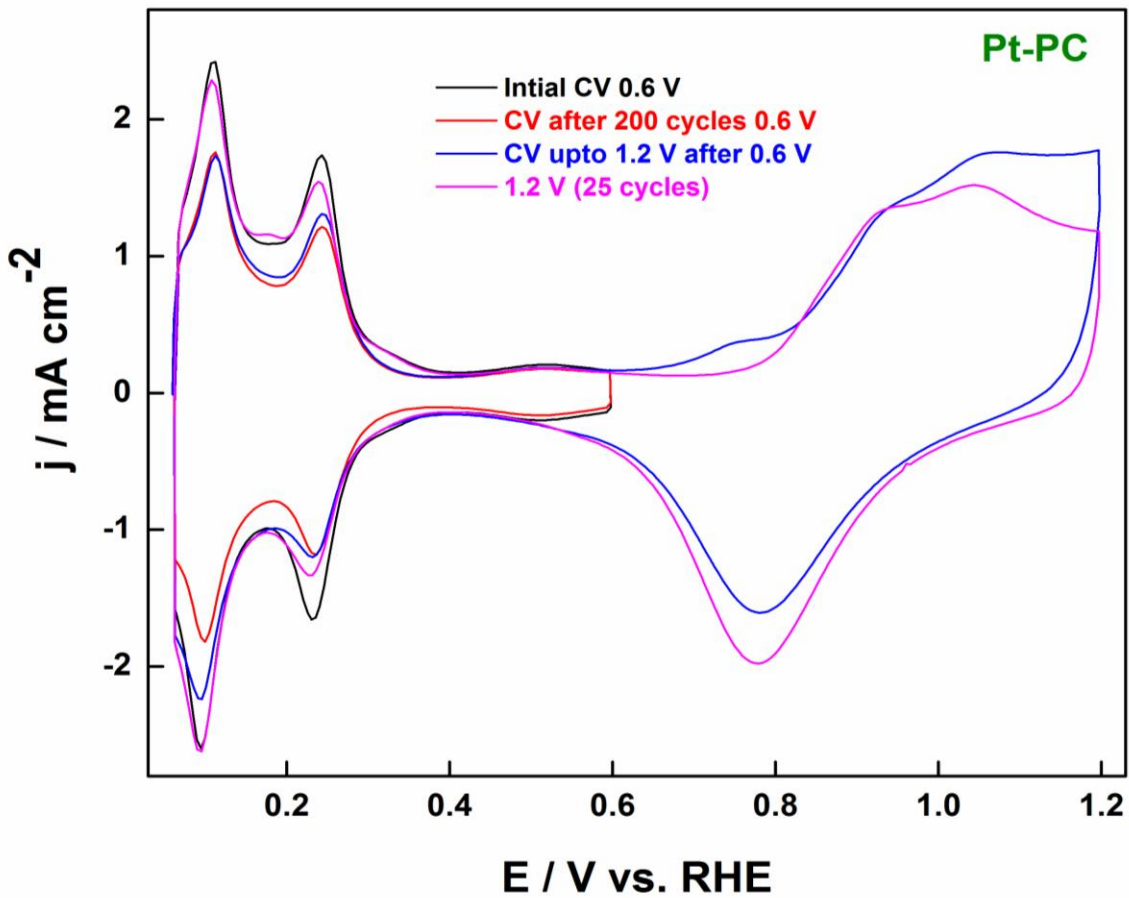


Fig. S7 Comparison of the CVs of Pt-PC (intial and after 0.6 V cycling (200 cycles)) followed by recording the CV upto 1.2 V and 1.2 V 25th cycle in 0.5 M H₂SO₄ electrolyte recorded at a scan rate of 50 mV s⁻¹.

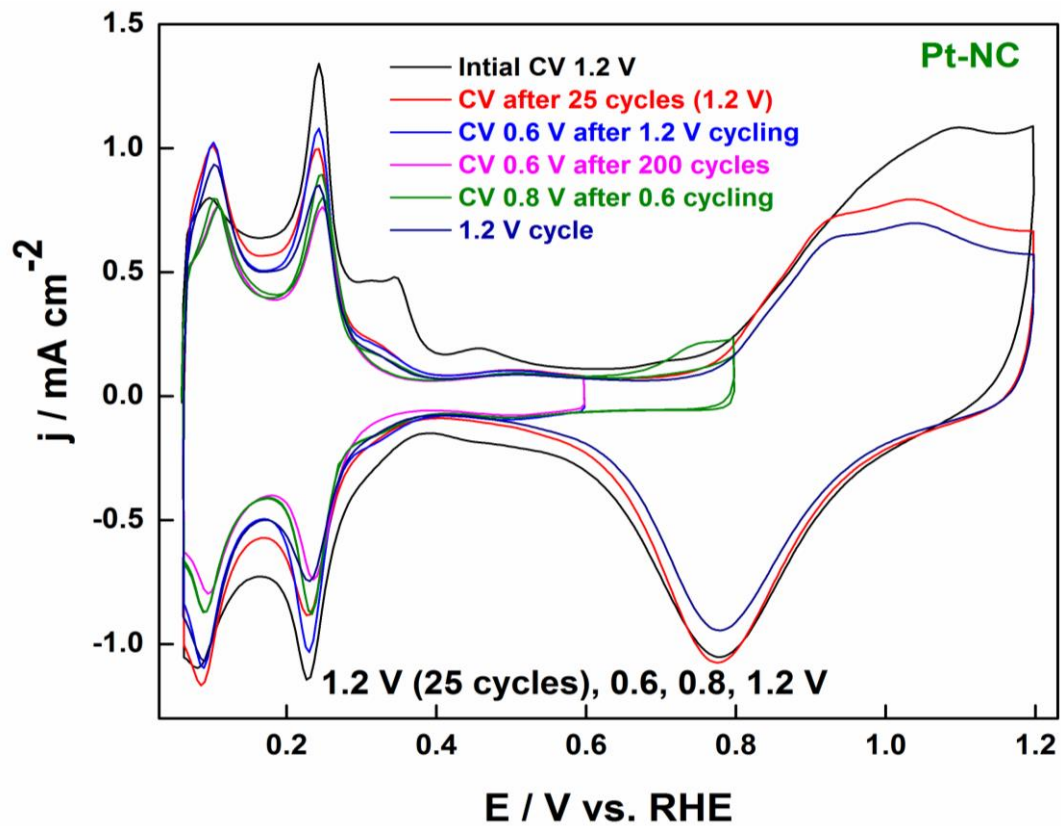


Fig. S8 Comparison of the CVs of Pt-NC (initial and after 1.2 V cycling (25 cycles)) followed by recording the CV upto 0.6 V (200 cycles) and 0.8 V (2 cycles) and 1.2 V in 0.5 M H₂SO₄ electrolyte recorded at a scan rate of 50 mV s⁻¹.

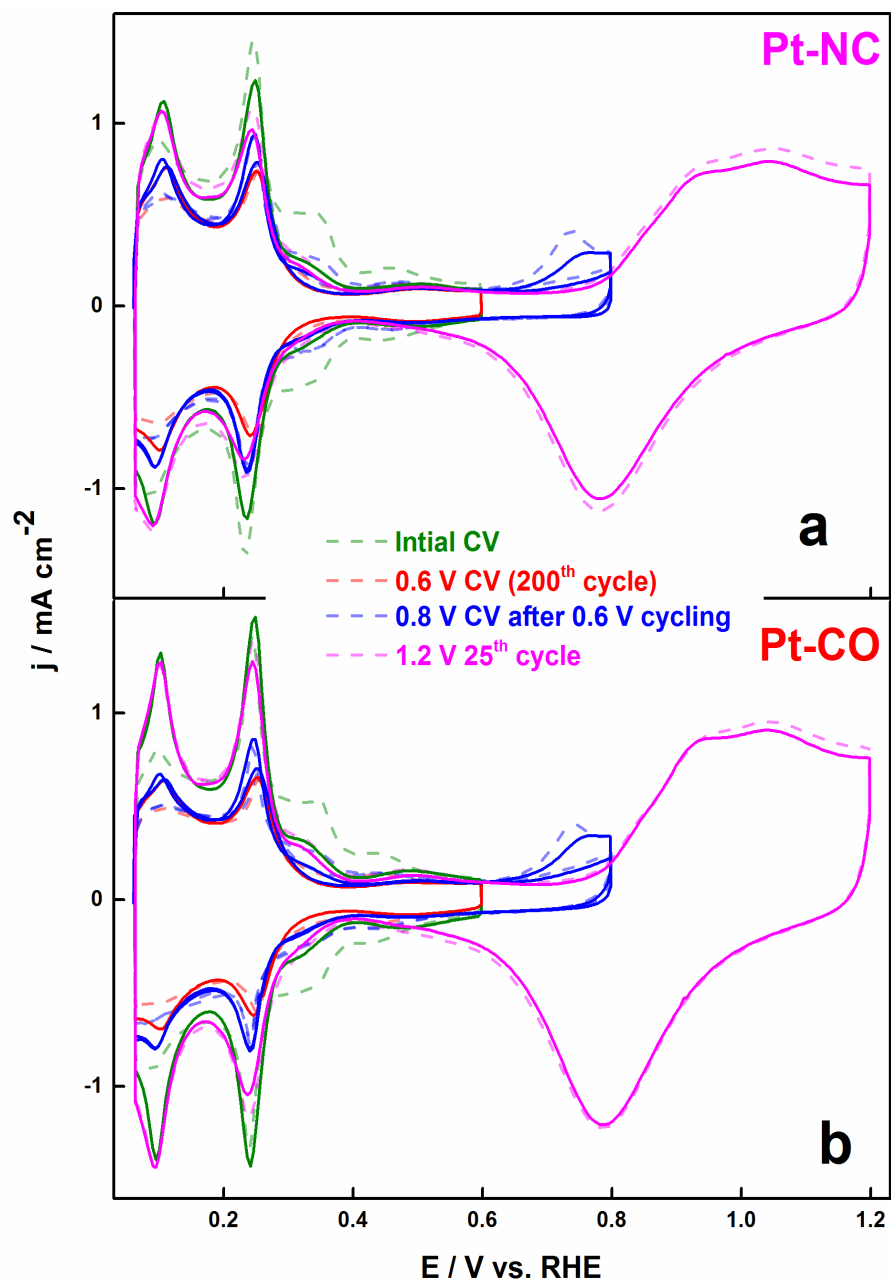


Fig. S9 Comparison of the CVs (intial and after 0.6 V cycling (200 cycles)) followed by recording the CV upto 0.8 V (2 cycles) and 1.2 V (25th cycle) (dotted lines); repeating the sequential experiment on the same electrode (solid lines) for both (a) Pt-NC and (b)Pt-CO.

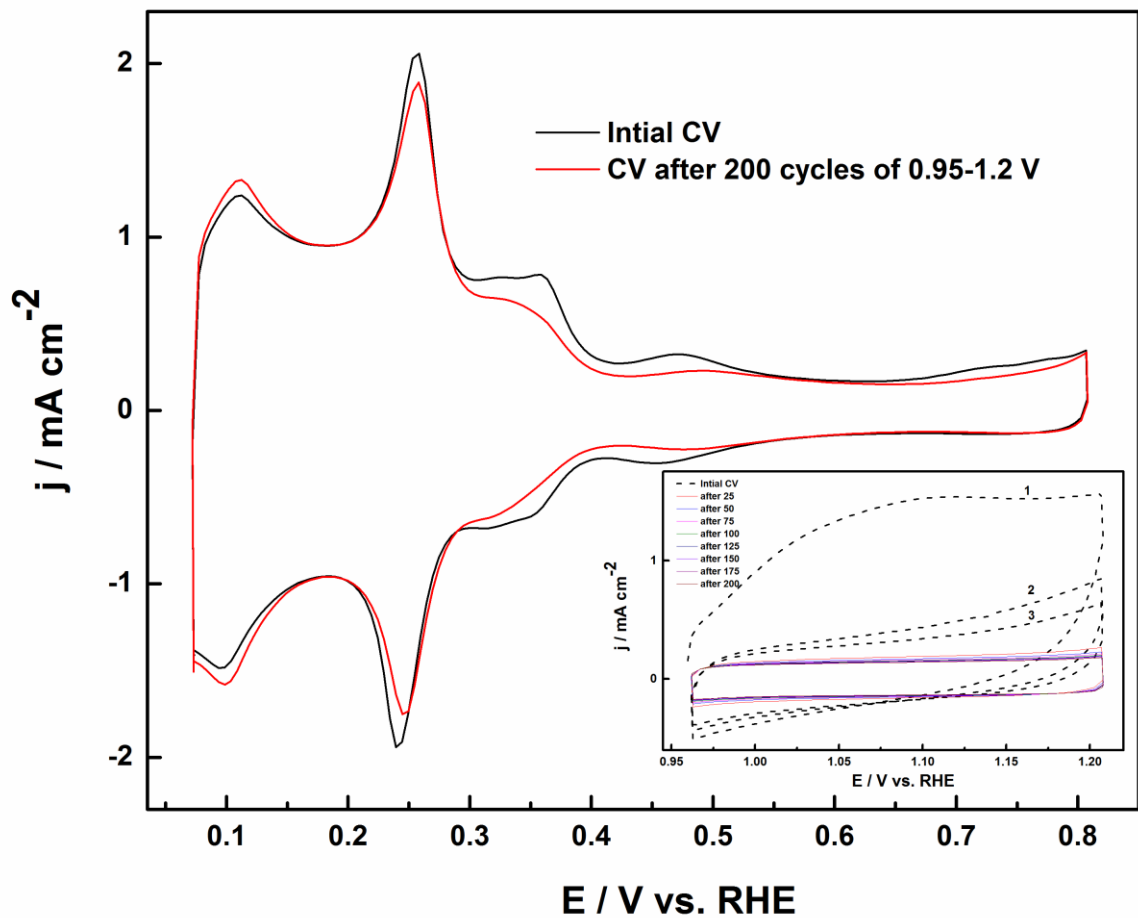


Fig. S10 Comparison of the CVs of Pt-NC (initial and after cycling in the potential range of 0.95–1.2 V for 200 cycles) in argon-saturated 0.5 M H_2SO_4 electrolyte recorded at a scan rate of 50 mV s^{-1} . Inset shows the complete cycling between (0.95–1.2 V)(200 cycles).

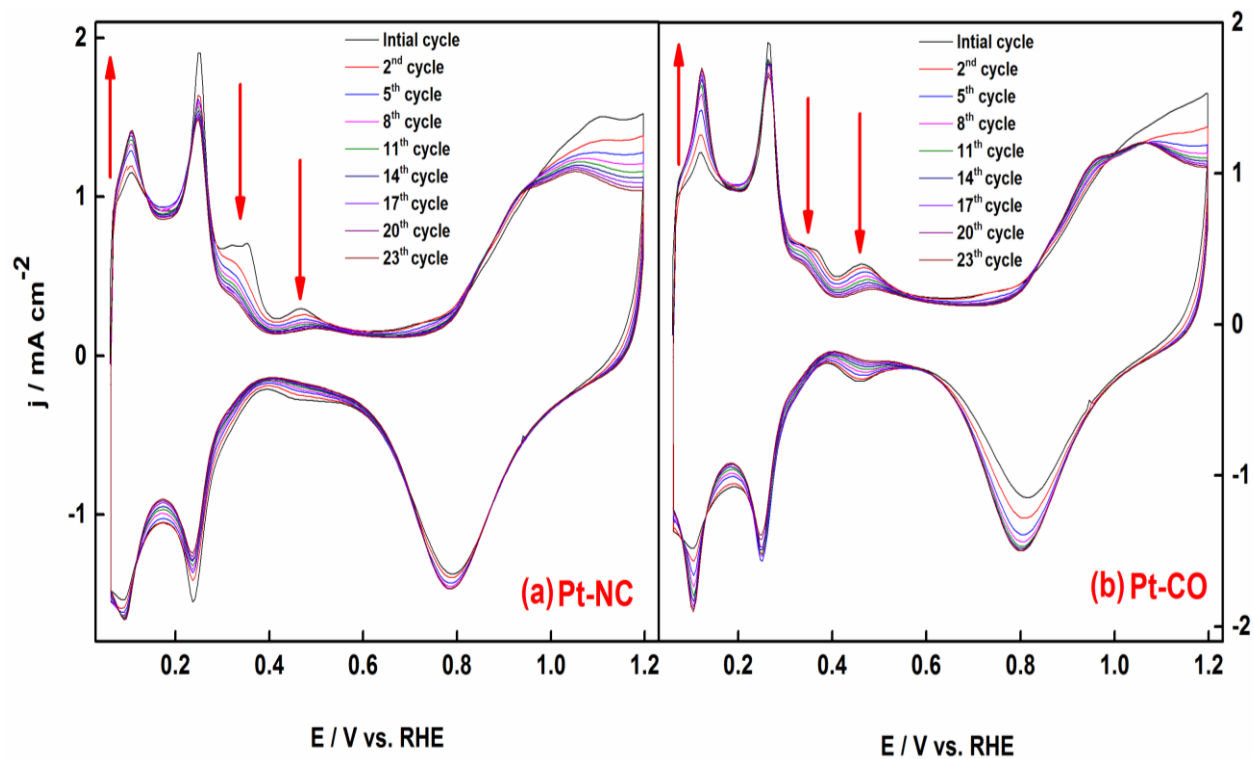


Fig. S11 Initial cycling of Pt-NC (a) and Pt-CO (b) nanoparticles upto 1.2 V in argon-saturated 0.5 M H_2SO_4 electrolytes recorded at a scan rate of 50 mV s^{-1} .

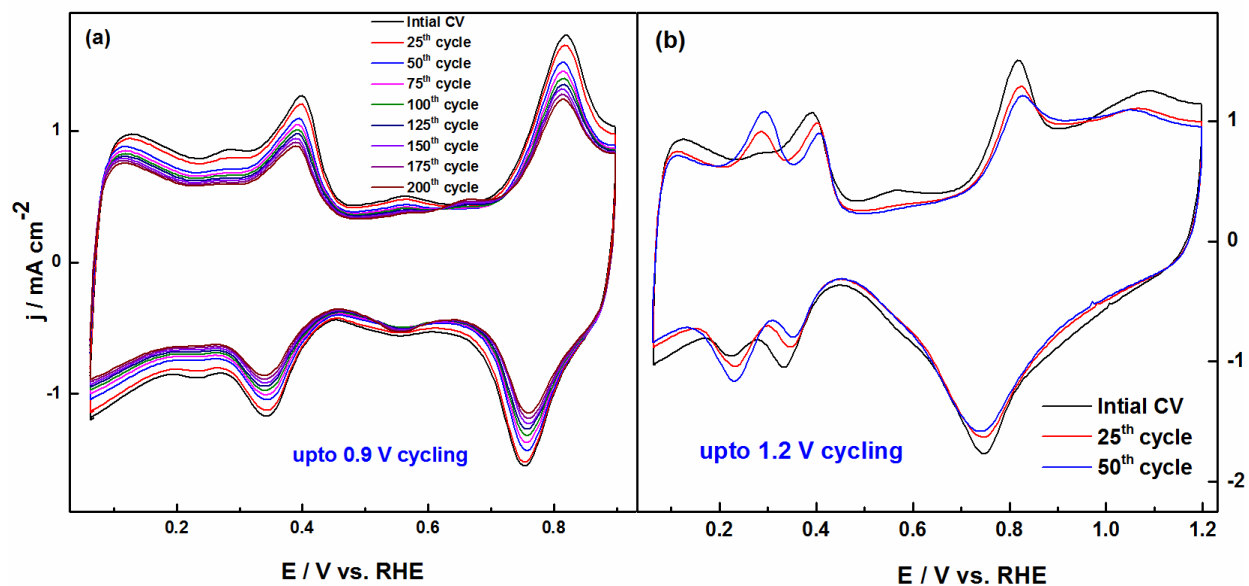


Fig. S12 Voltammograms of Pt-NC nanoparticles upto (a) 0.9 V and (b) 1.2 V (25th cycle upto 200th cycle) in argon-saturated 0.1 M NaOH electrolyte recorded at a scan rate of 50 mV s^{-1} .

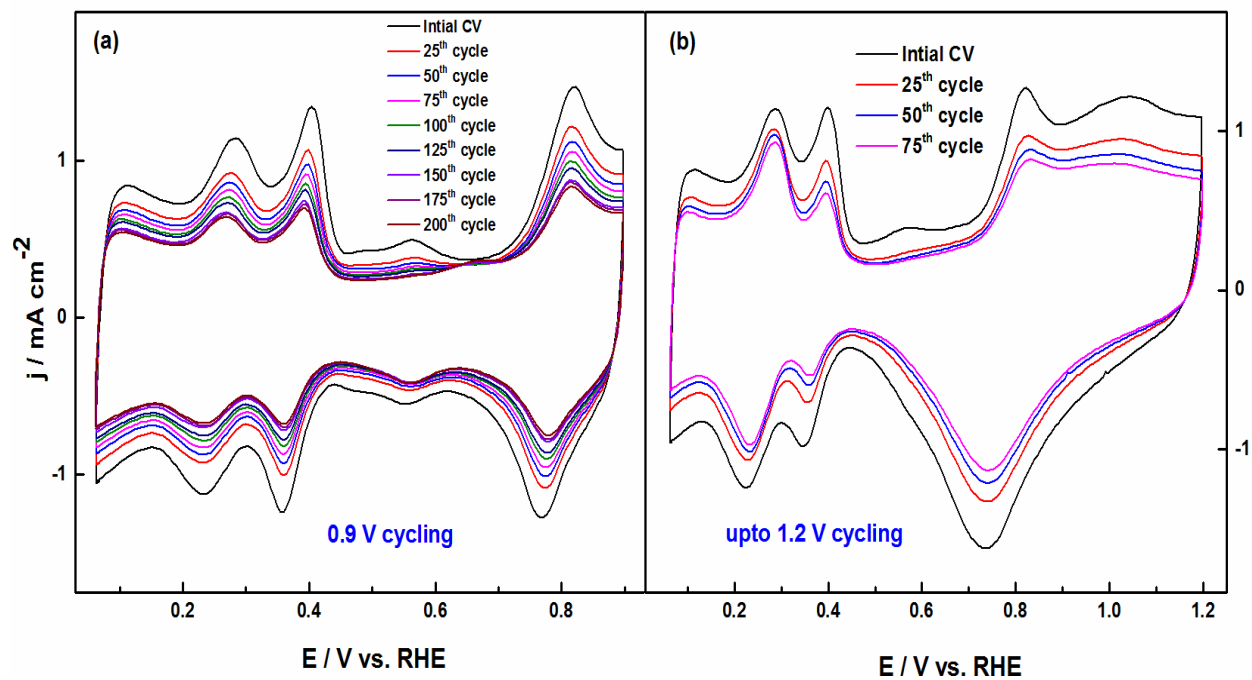


Fig. S13 Voltammograms of Pt-CO nanoparticles upto (a) 0.9 V and (b) 1.2 V (25th cycle upto 200th cycle) in argon-saturated 0.1 M NaOH electrolyte recorded at a scan rate of 50 mV s⁻¹.