

Supplementary data

Carbon nanotubes decorated with Pt nanoparticles via electrostatic self-assembly: a highly active oxygen reduction electrocatalyst

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Electrochemical measurements: The electrochemical tests were carried out in a standard three-electrode system controlled with a CHI660C station (CH Instruments, Inc., USA) with Pt wire and Hg/Hg₂SO₄ as the counter electrode and reference electrode, respectively. The working electrodes were prepared by applying catalyst ink onto the pre-polished glass carbon disk electrodes.¹ The total loading of catalyst was 15 μg (3 μg Pt). The linear sweep voltammograms (LSV) for oxygen-reduction reaction (ORR) is measured with a Pine rotator system (Pine Instruments Company, USA) in oxygen-saturated 0.5 M H₂SO₄ solution between 1.0 V and 0.25 V at a scan rate of 10 mV s⁻¹. The background current was measured similarly in an N₂ atmosphere without rotation. The durability tests were carried out in N₂-saturated 0.5 M H₂SO₄ solution with potential step method (1.4V _ 10 s - 0.85 V _ 5 s).¹ CVs in N₂-purged 0.5 M H₂SO₄ solution and LSV in O₂-saturated 0.5 M H₂SO₄ solution were recorded before and after the degradation test.

All the tests were conducted at room temperature. All potentials were reported versus reversible hydrogen electrode (RHE).

Reference:

1. Y. Y. Shao, R. Kou, J. Wang, V. V. Viswanathan, J. H. Kwak, J. Liu, Y. Wang, Y. H. Lin, *J. Power Sources*, 2008, **185**, 280-286.