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**Dentritic platinum-palladium/palladium core-shell
nanocrystals/reduced graphene oxide: One-pot synthesis and
excellent electrocatalytic performances**

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Abstract

Herein, we developed a facile one-pot co-reduction method to fabricate highly dentritic platinum-palladium/palladium core-shell nanocrystals on reduced graphene oxide (PtPd@Pd NCs/rGO), where poly-L-lysine (PLL) worked as the eco-friendly structure director and stabilizer. The nanocomposite was mainly characterized by microscopic analysis, X-ray photoelectron spectroscopy (XPS), X-ray diffraction (XRD), and thermogravimetric analysis (TGA), along with the discussion of the formation mechanism. The synthesized PtPd@Pd NCs/rGO have the enlarged electrochemically active surface area (ECSA) of $51.65 \text{ m}^2 \text{ g}^{-1}$, showing 1.3 folds enhancement in the peak current density relative to commercial Pt/C (50 wt.%) for glycerol oxidation reaction (GOR), coupled with the small Tafel slope of 28 mV dec^{-1} for hydrogen evolution reaction (HER).

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