Electronic Supplementary Material (ESI) for Inorganic Chemistry Frontiers.

Supporting Information

Facile Synthesis of Clean PtAg Dendritic Nanostructures with Enhanced Electrochemical Properties

Yi Lai,[a] Guifen Du,[a] Zhiping Zheng,[a] Yongdi Dong,[a] Huiqi Li,[a] Qin Kuang,*[a] and Zhaoxiong Xie*[a,b]

[a]State Key Laboratory of Physical Chemistry of Solid Surfaces, Collaborative Innovation Center of Chemistry for Energy Materials, and Department of Chemistry, College of Chemistry and Chemical Engineering, Xiamen University, Xiamen 361005, China. E-mail: qkuang@xmu.edu.cn

[b]Pen-Tung Sah Institute of Micro-Nano Science and Technology, Xiamen University, Xiamen 361005, Fujian (P. R. China). E-mail: zxxie@xmu.edu.cn

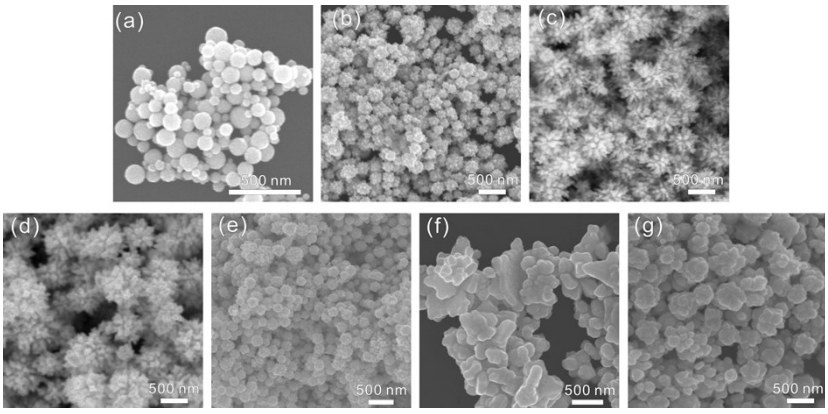

Fig. S1 SEM images of PtAg NCs that were prepared with different molar ratios of Pt to Ag salt precursors: (a) Pt, (b) 9:1, (c) 7:3, (d) 5:5, (e) 3:7, (f) 1:9, (g) Ag.

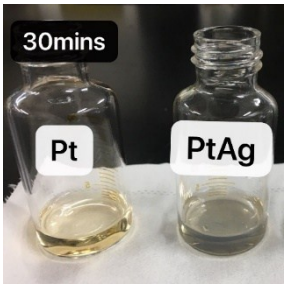

Fig. S2 Photos of reaction solutions for pure Pt and PtAg NCs after reaction for 30 min.

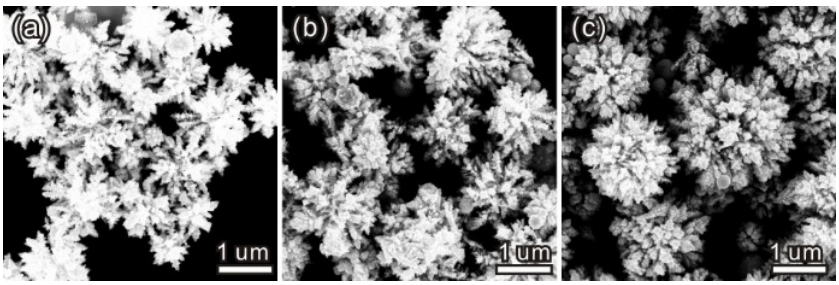

Fig. S3 SEM images of PtAg NCs prepared with different concentrations of AA: (a) 1 mM, (b) 5 mM, (c) 10 mM.

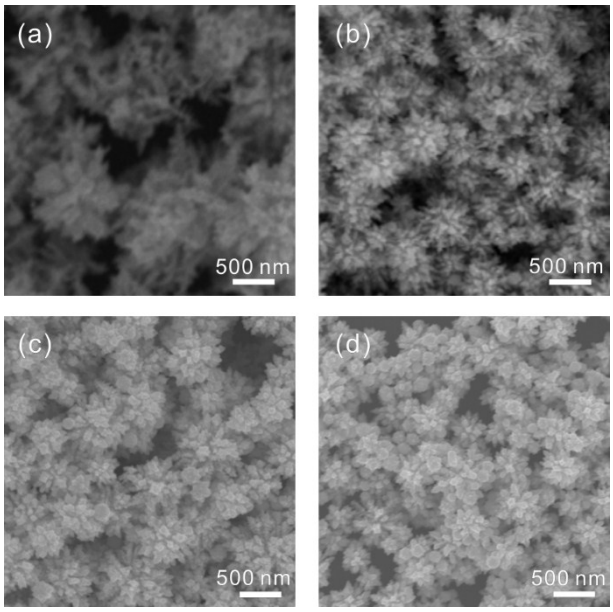

Fig. S4 SEM images of PtAg NCs prepared with different temperature: (a) 5 °C, (b) 35 °C, (c) 65 °C, (d) 95 °C.

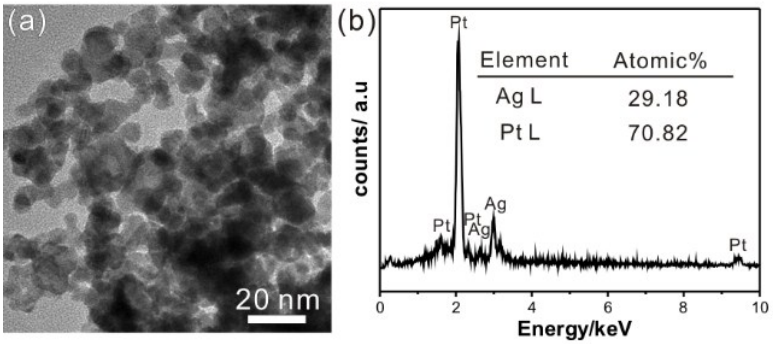

Fig. S5 TEM image and EDS data of PtAg NCs prepared with $NaBH_4$.

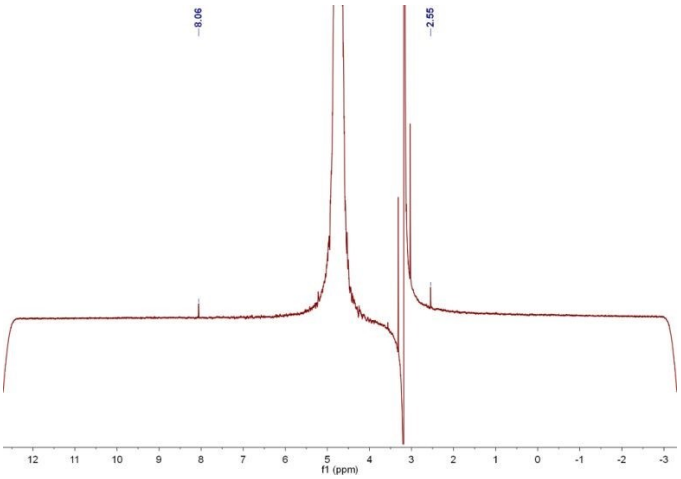

Fig. S6 ^1H NMR (500 MHz, $CDCl_3$) spectrum showing the information of protons from products formed in the methanol oxidation reaction (MOR) test.

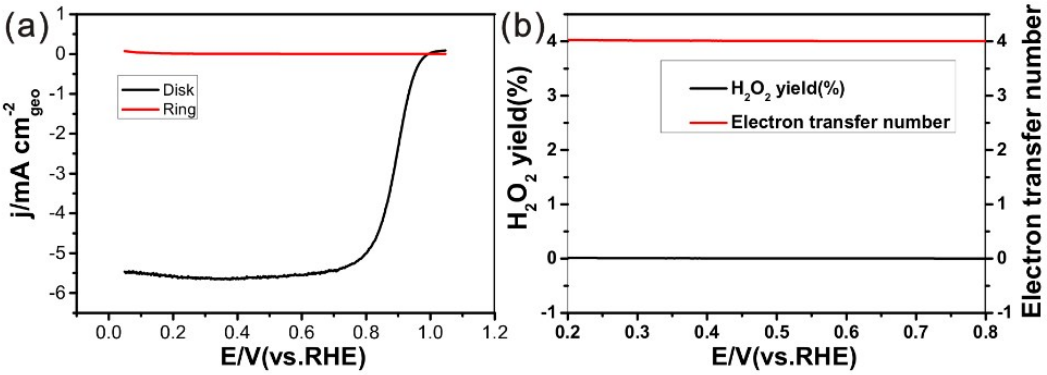

Fig. S7 (a) LSV curves of disk current and ring current;(b) H_2O_2 yield and electron transfer number(right column).

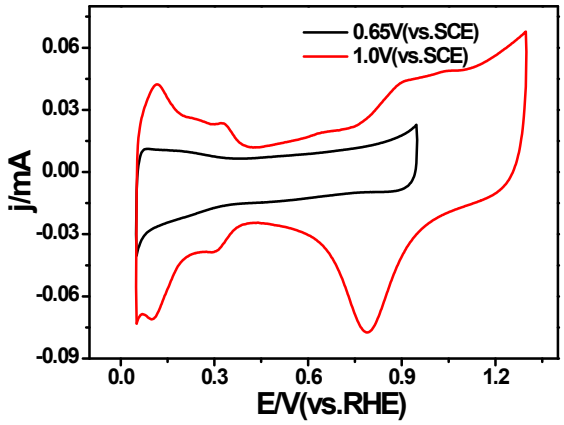

Fig. S8 CV curves of PtAg-7:3 NCs with different up-limit potentials in 0.10 M $HClO_4$.

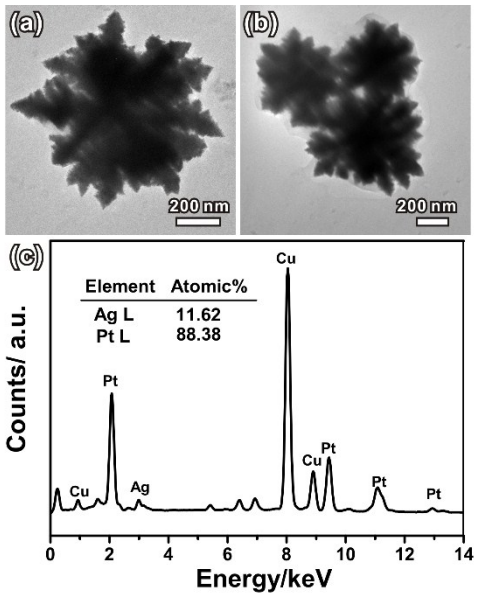

Fig. S9 (a, b) TEM images and (c) EDS spectrum of PtAg-7:3 NCs after the CV test.

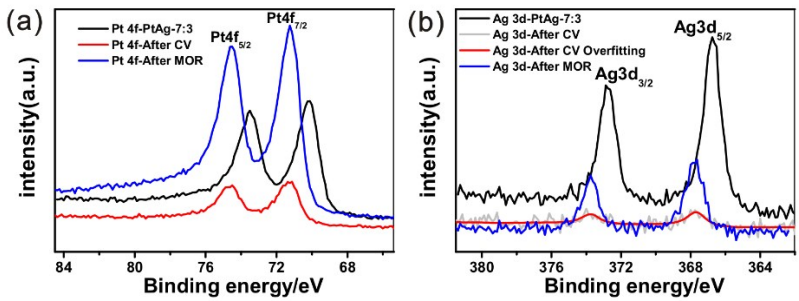

Fig. S10 High-resolution (a) Pt 4f and (b) Ag 3d XPS spectra of the original PtAg-7:3 NCs and that after CV and MOR tests.

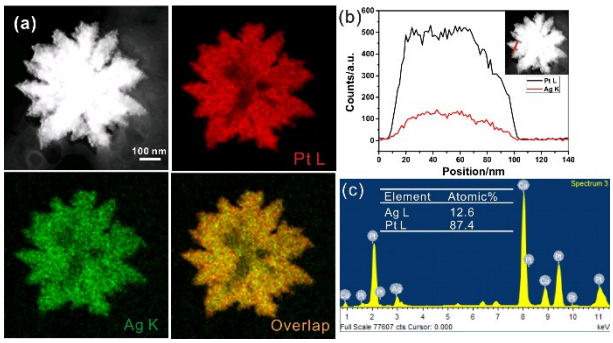

Fig. S11 (a) HAADF-STEM image and HAADF-STEM-EDS mappings of PtAg-7:3 NCs after electrochemical reaction; (b) The cross-sectional compositional line profiles of one branch of PtAg-7:3 NCs after electrochemical reaction (recorded from FEI TECNAI F30); (c) EDS spectrum and data of PtAg-7:3 NCs after electrochemical reaction (recorded from JEM-2100).

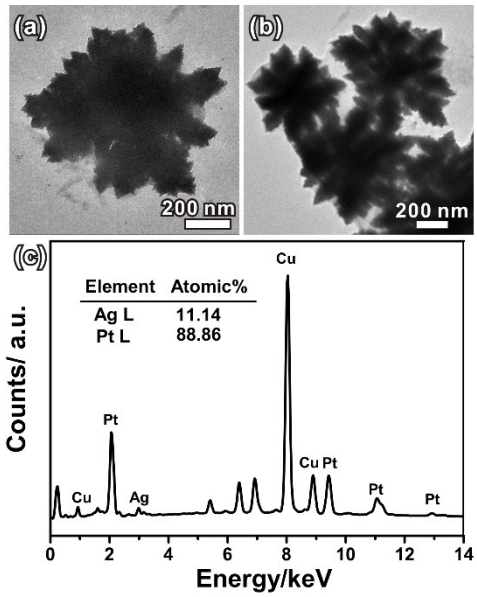

Fig. S12 (a, b) TEM images and (c) EDS spectrum of PtAg-7:3 NCs after the durability test.