10.1071/CH18160_AC

Australian Journal of Chemistry 2018, 71(7), 504-510

Supplementary Material

Facile Surfactant-Free Synthesis of Composition-Tunable Bimetallic PtCu Alloy Nanosponges for Direct Methanol Fuel Cell Applications

Yanna Hu,[A] Taiyang Liu,[A] Chaozhong Li,[A,B] and Qiang Yuan[A,B,C]

[A]College of Chemistry and Chemical Engineering, Guizhou University, Guiyang, Guizhou 550025, China.
[B]Department of Chemistry, Tsinghua University, Beijing 100084, China.
[C]Corresponding author. Email: qyuan@gzu.edu.cn

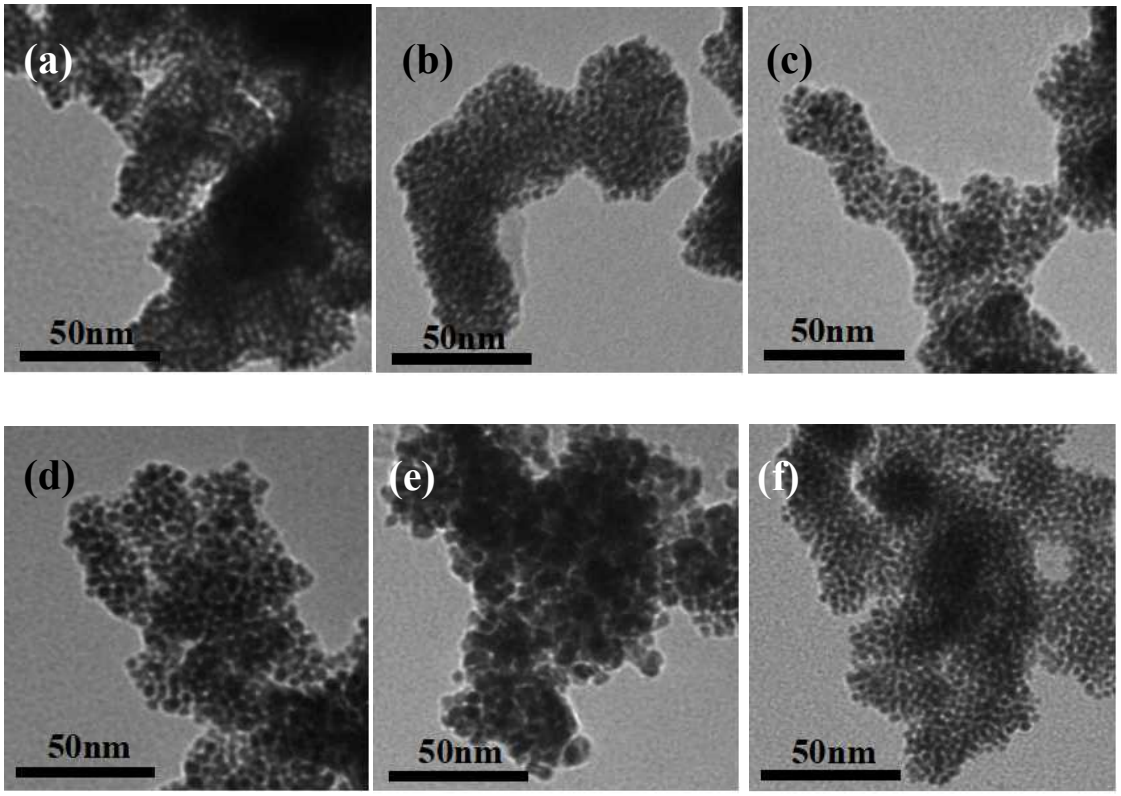

Fig. S1 TEM images of the as-prepared nanosponge PtCu alloy nanosponges (a; Pt_3Cu), (b; Pt_2Cu), (c; PtCu), (d; $PtCu_2$), (e; $PtCu_3$) and pure Pt nanosponges (f).

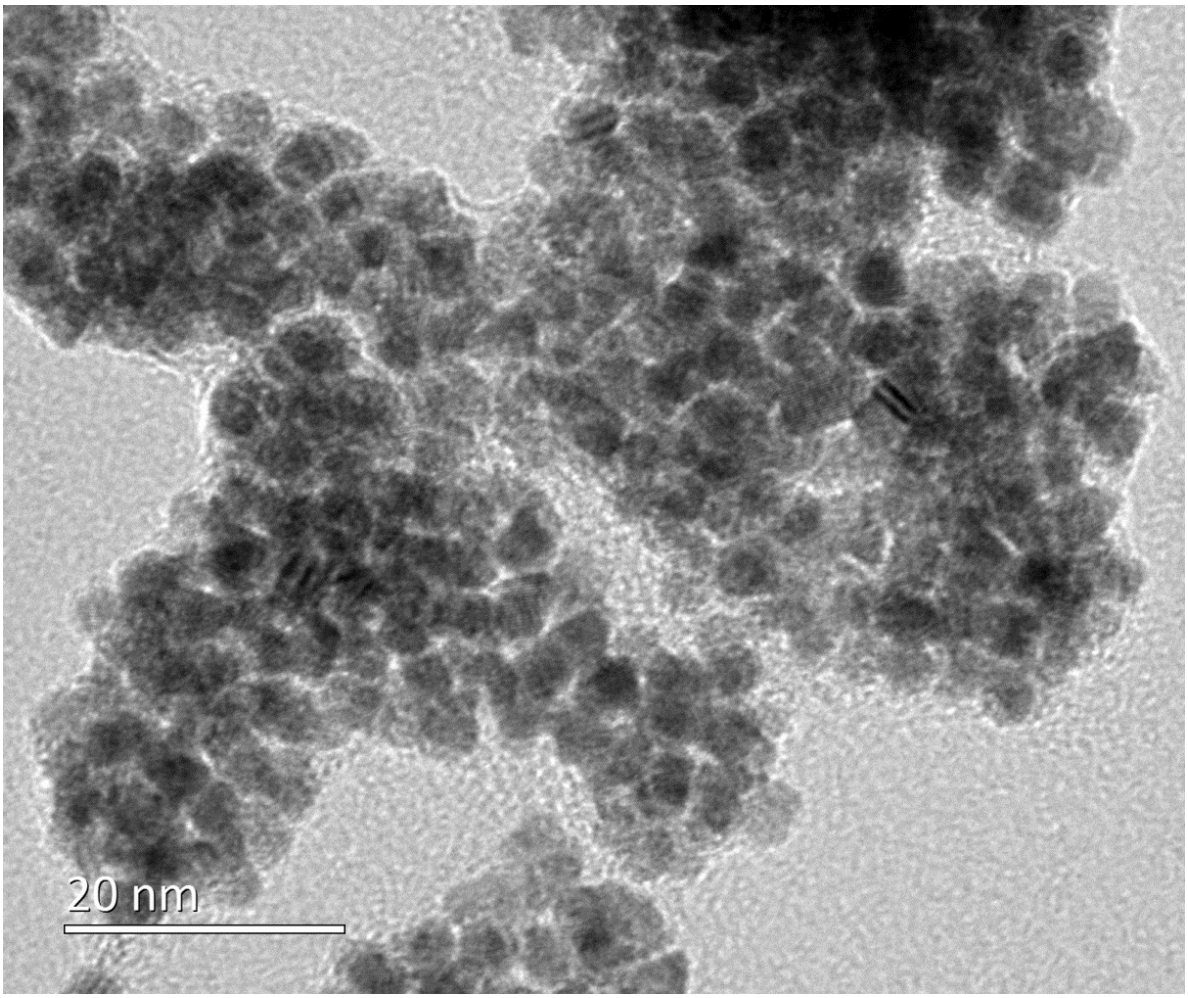

Fig. S2 HRTEM images of as-prepared $PtCu_2$ alloy nanosponges.

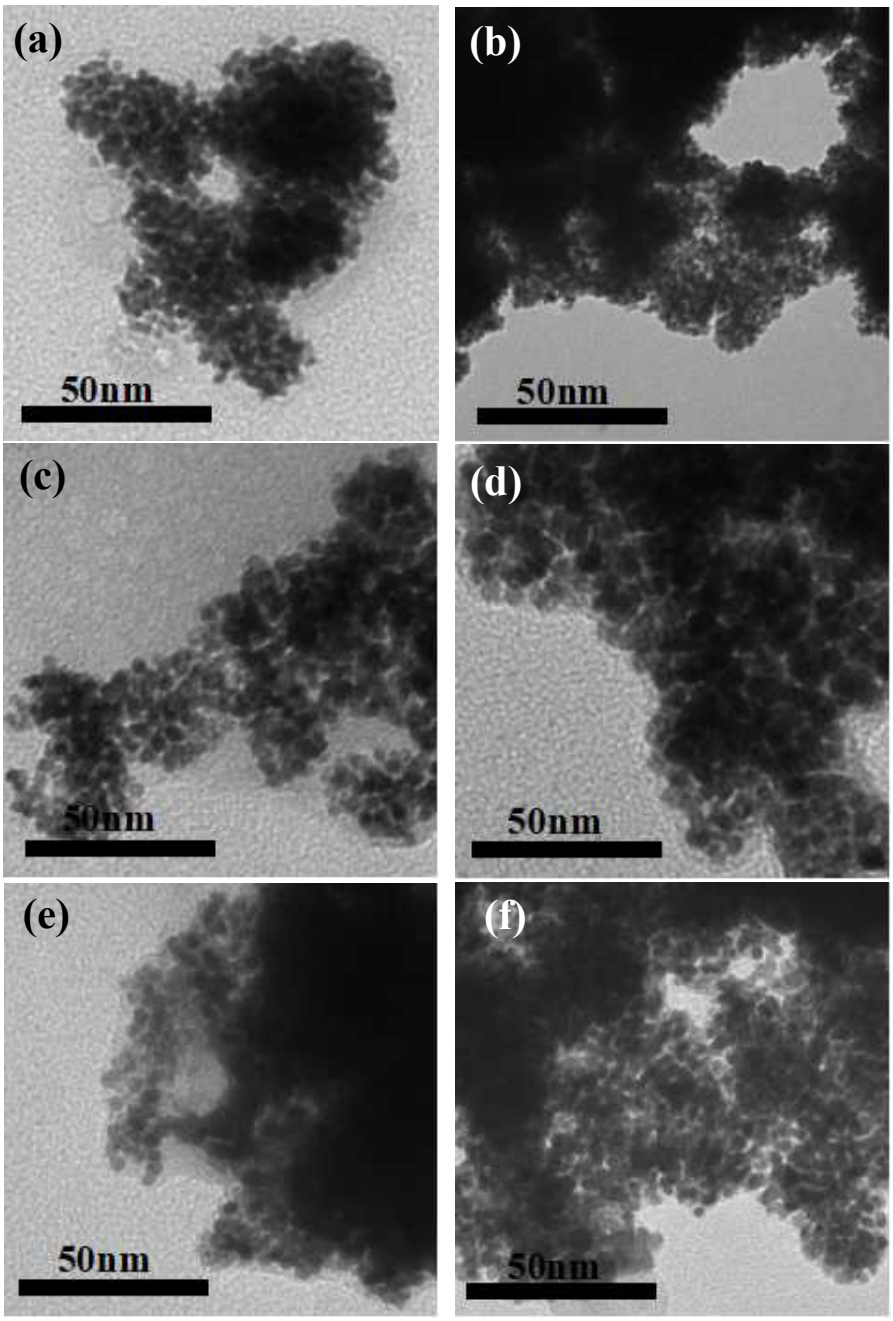

Fig. S3 TEM images of the samples after 3600 s i-t test. (a; Pt_3Cu), (b; Pt_2Cu), (c; PtCu), (d; $PtCu_2$), (e; $PtCu_3$) and pure Pt nanosponges (f).

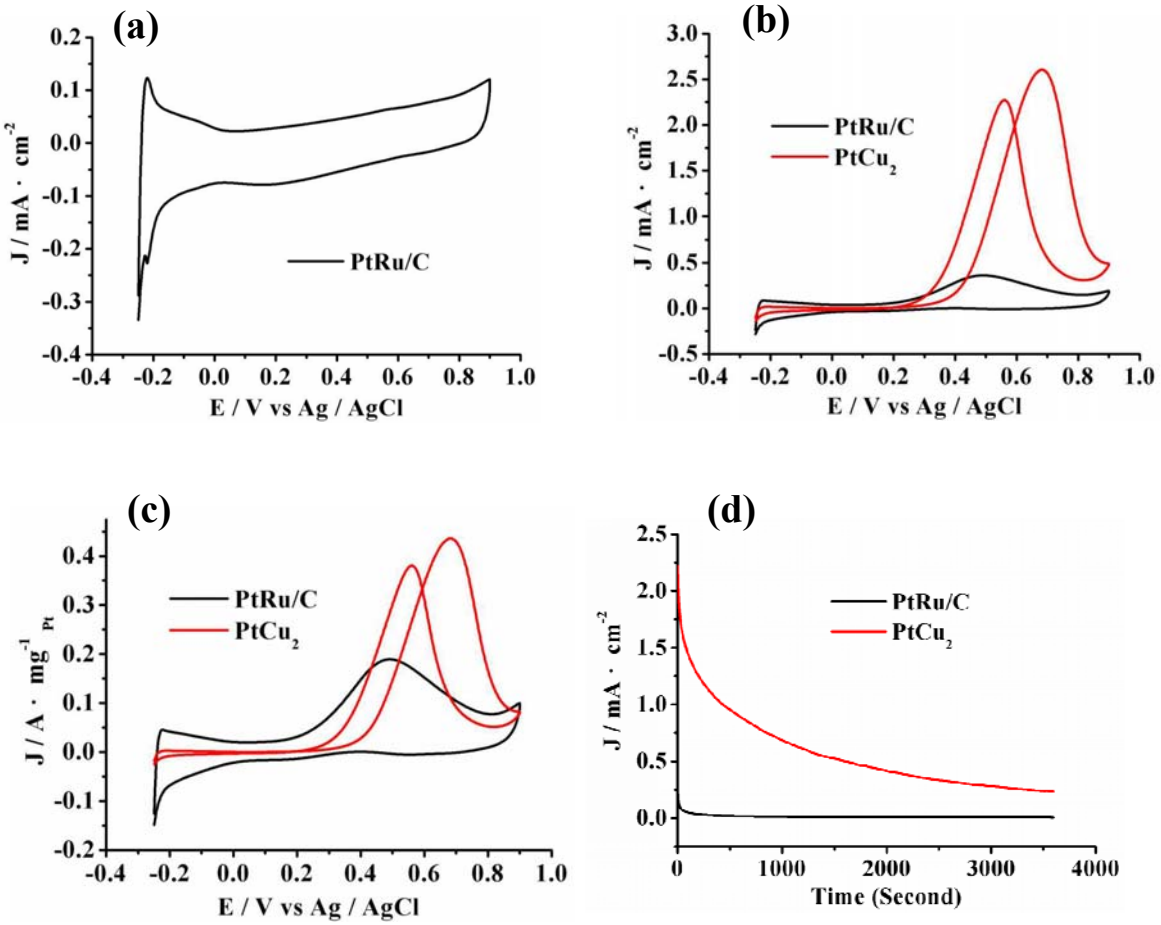

Fig. S4 The cyclic voltammetric curves (CVs) of Commercial PtRu/C (Pt: 20 wt%, Ru: 10 wt%) in 0.1 M H_2SO_4 solution (a), Commercial PtRu/C and $PtCu_2$ nanosponge in 0.1 M H_2SO_4 + 0.5 M methanol solution (b, specific activity; c, mass activity) with a scan rate of 50 mV·s^{-1} at room temperature.(d) Current–time (i-t) curves of as-prepared $PtCu_2$ alloy nanosponge and commercial PtRu/C recorded at 0.6 V for 3600 s in 0.1 M H_2SO_4 + 0.5 M methanol solution. (The ECSA of PtRu/C was 52.5 m^2/g.)