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Supporting Information

Enhanced oxygen reduction of multi-Fe_3O_4@carbon core-shell electrocatalysts through nanoparticle/polymer co-assembly strategy

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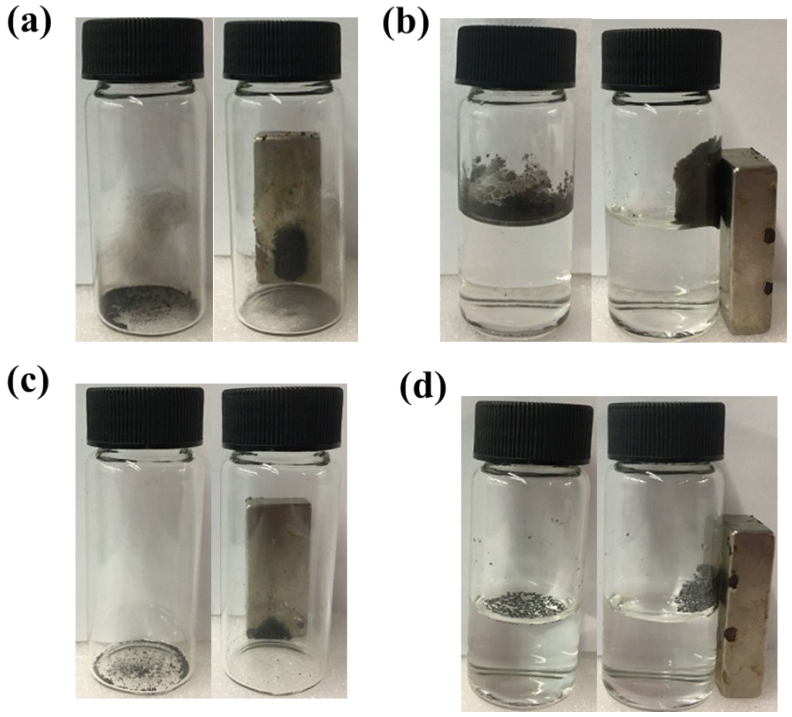

Fig.S1 Digital graphsof (a) Fe_3O_4NPs, (b) Fe_3O_4 NPs in water, (c) mFe_3O_4@C and (d) mFe_3O_4@C in water.

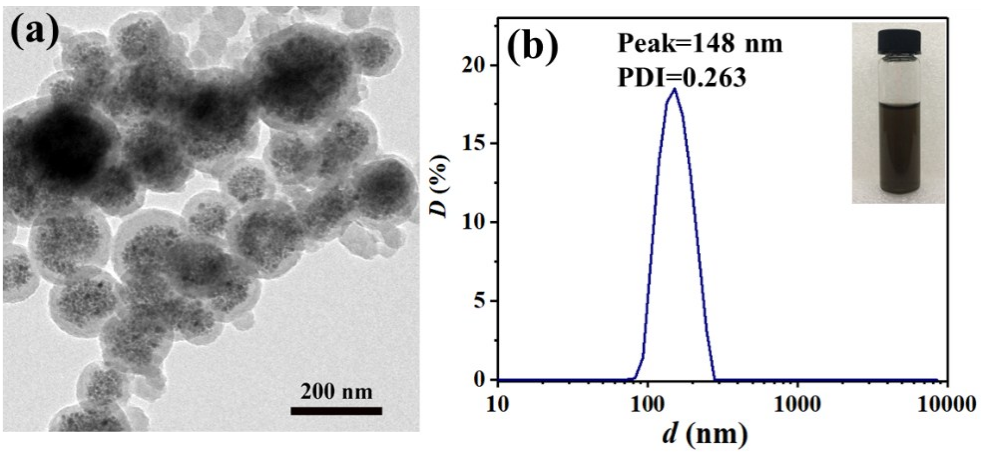

Fig.S2 (a)TEM images and (b) DLS of mFe_3O_4@PS-*b*-PEO@PDA.

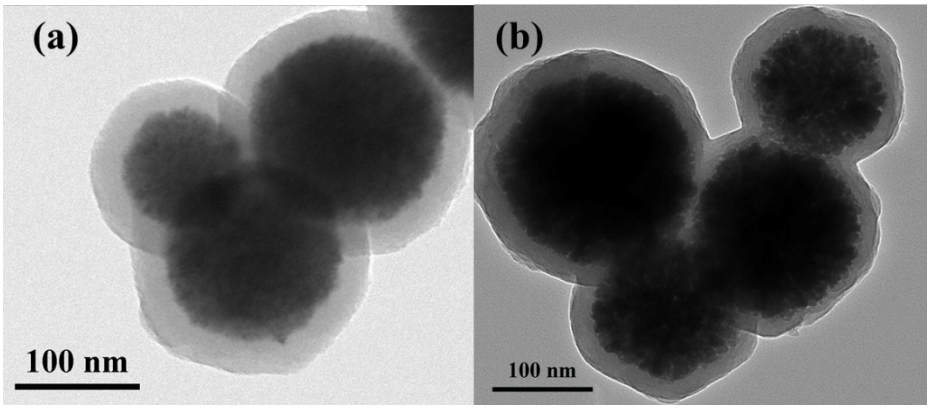

Fig.S3 TEM images of (a) Fe_3O_4@PDA and (b) Fe_3O_4@C.

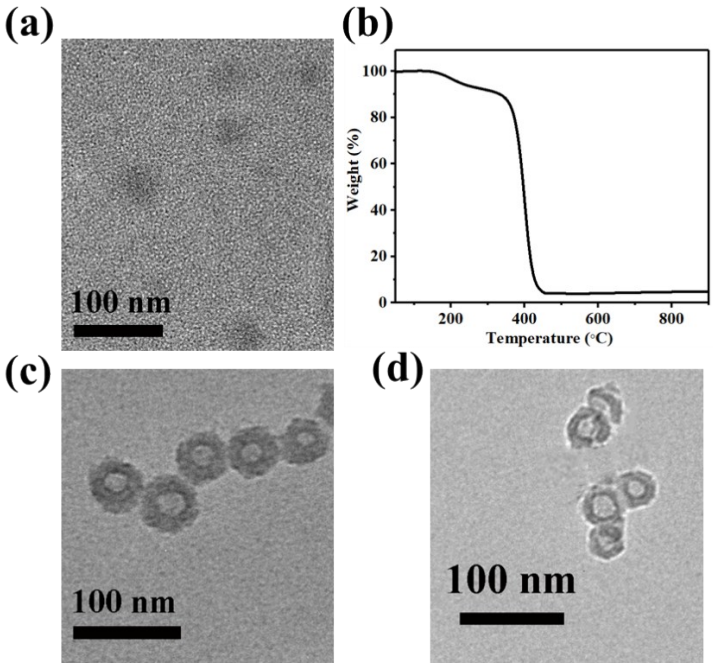

Fig.S4(a) TEM images of PS-*b*-PEO micelles and (b)TGA of PS-*b*-PEO micelles under nitrogen atmosphere, (c) and (d) TEM images of PS-*b*-PEO@PDA and derived hollow carbon shell.

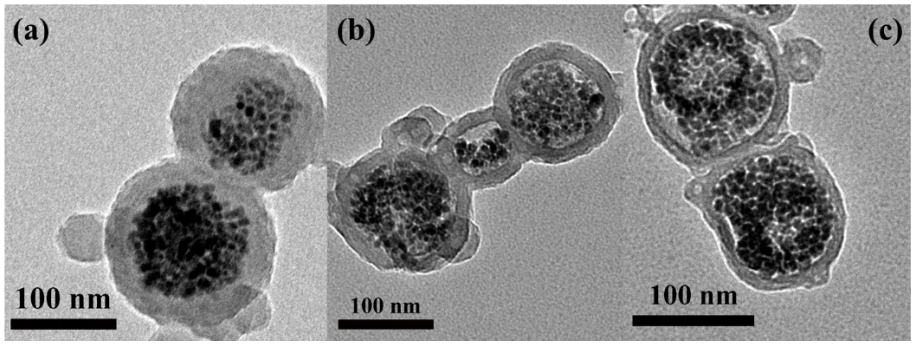

Fig.S5 TEM images of mFe_3O_4@PS-*b*-PEO@PDA carbonized at different temperatures at (a) 100 ℃,(b) 300 ℃ and (c) 500 ℃.

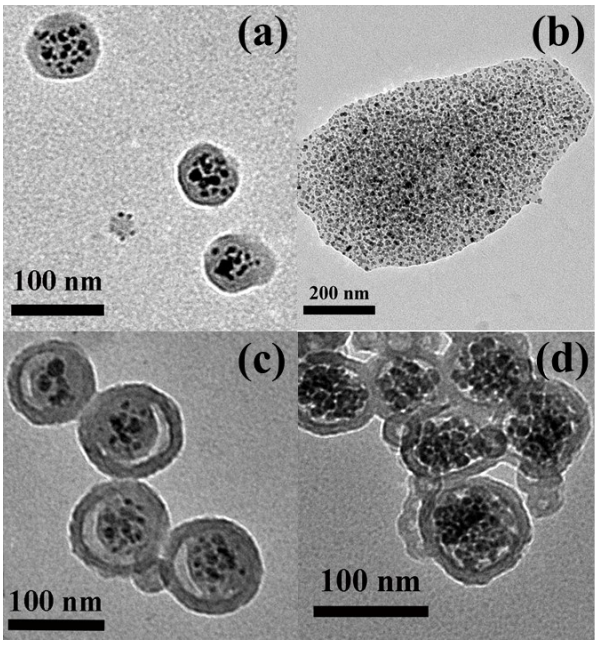

Fig.S6 TEM images of mFe_3O_4@PS-*b*-PEO from initial mass ratio of Fe_3O_4 /PS-*b*-PEO at (a) 0.3 and 10, (c) mFe_3O_4@PS-*b*-PEO@PDA and (d) mFe_3O_4@C prepared from initial mass ratio at 0.3 (denoted as mFe_3O_4@C-s for convenience).

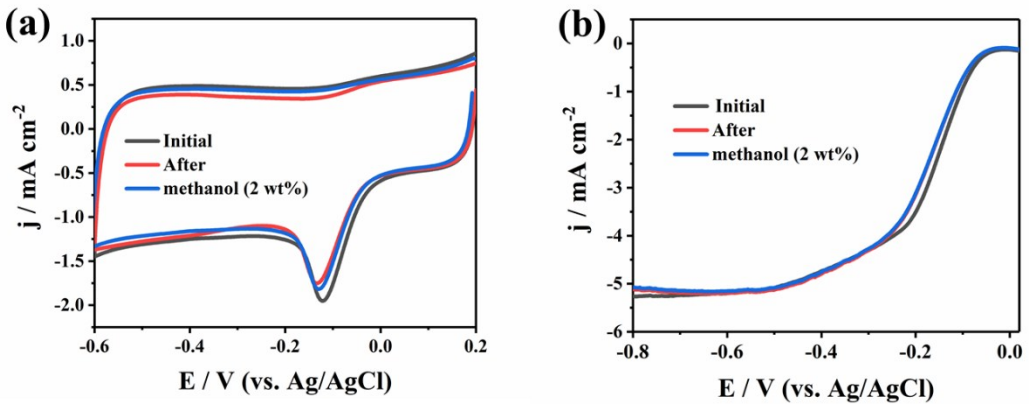

Fig.S7 (a) CV curves of mFe_3O_4@C and Pt/C after circulation and in the presence of methanol at a scan rate of 10 mV s^{-1} in O_2-saturated. (b) LSV curves of mFe_3O_4@C and Pt/C after circulation and in the presence of methanol at a rotation rate of 1600 rpm.