Supplementary Information

Yolk-shell nanospheres with soluble amino-polystyrene as reservoir for Pd NPs

Guojun Lan [a,b], *Xiaoming Zhang* [b], *Xiaomin Zhang* [b], *Mingrun Li* [b], *Ying Li* [a*], *Qihua Yang* [b*]

[a] Institute of Industrial Catalysis, Zhejiang University of Technology, Hangzhou 310014 (China)

[b] State Key Laboratory of Catalysis, Dalian Institute of Chemical Physics, Chinese Academy of Sciences, 457 Zhongshan Road, Dalian 116023 (China)

[*] To whom correspondence should be addressed Email Address: yangqh@dicp.ac.cn; liying@zjut.edu.cn;URL: http://www.hmm.dicp.ac.cn;

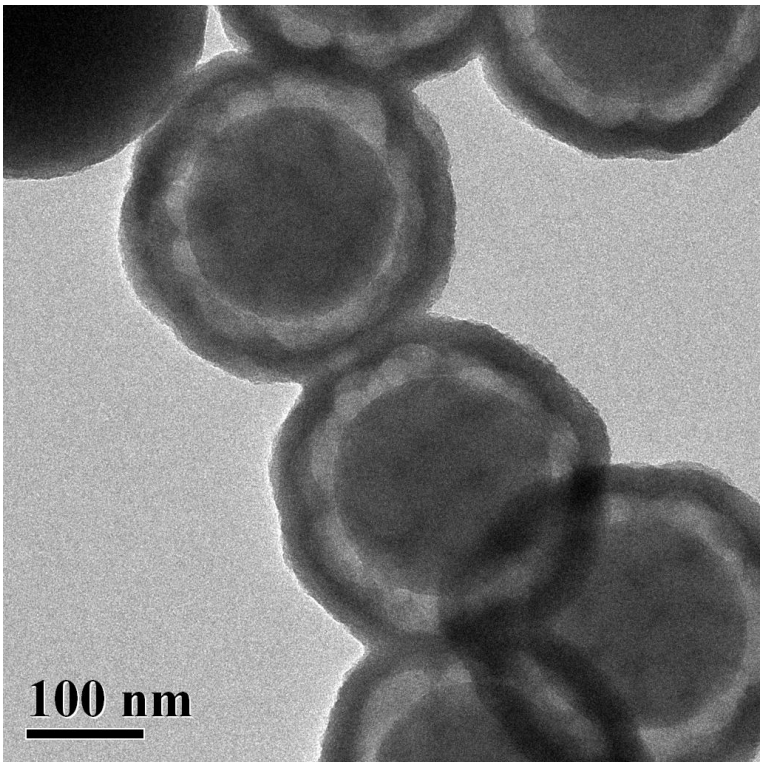

Figure S1. TEM image of PS @mesoSiO$_2$ YSNs

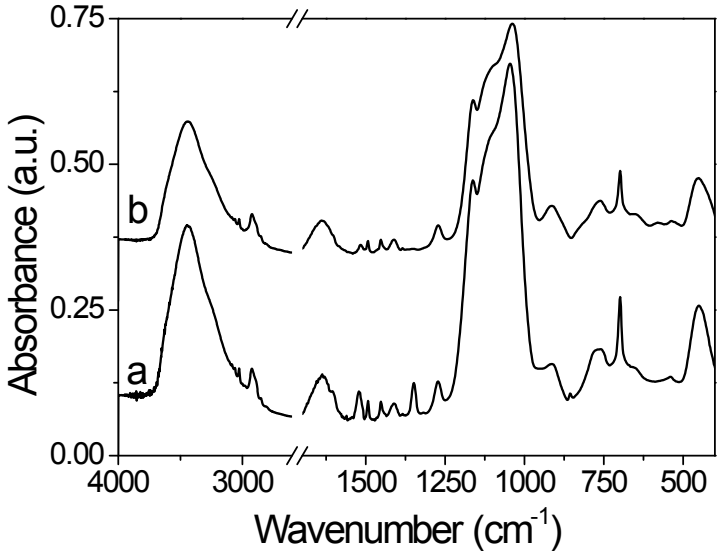

Figure S2. IR spectra for PS@mesoSiO$_2$-S YSNs (a) before nitration, (b) after nitration with 0.5mL HNO_3.

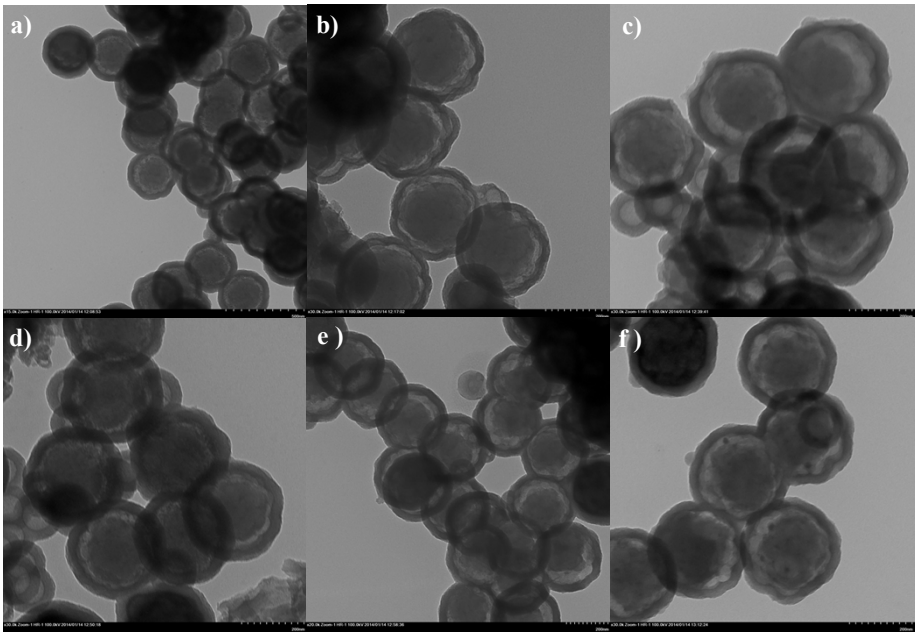

Figure S3. TEM images of PS-NH_2@mesoSiO_2-L after treatment in (a) ethyl acetate, (b) dioxane, (c) acetonitrile，(d) N, N dimethyl amide, (e) thionyl chloride and (f) dichloromethane for 19 h.

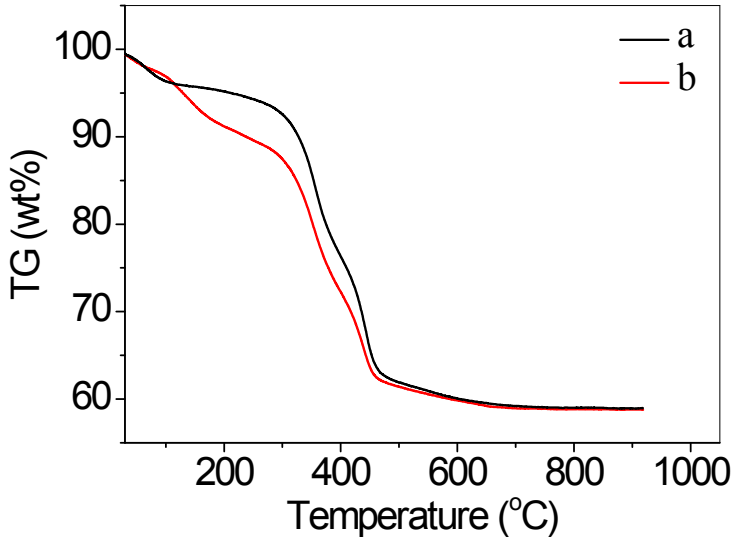

Figure S4．TG curves of (a) PS-NH_2@mesoSiO_2-S, (b) PS-NH_2@mesoSiO_2-S after treatment with TEA/toluene=1 under the air.

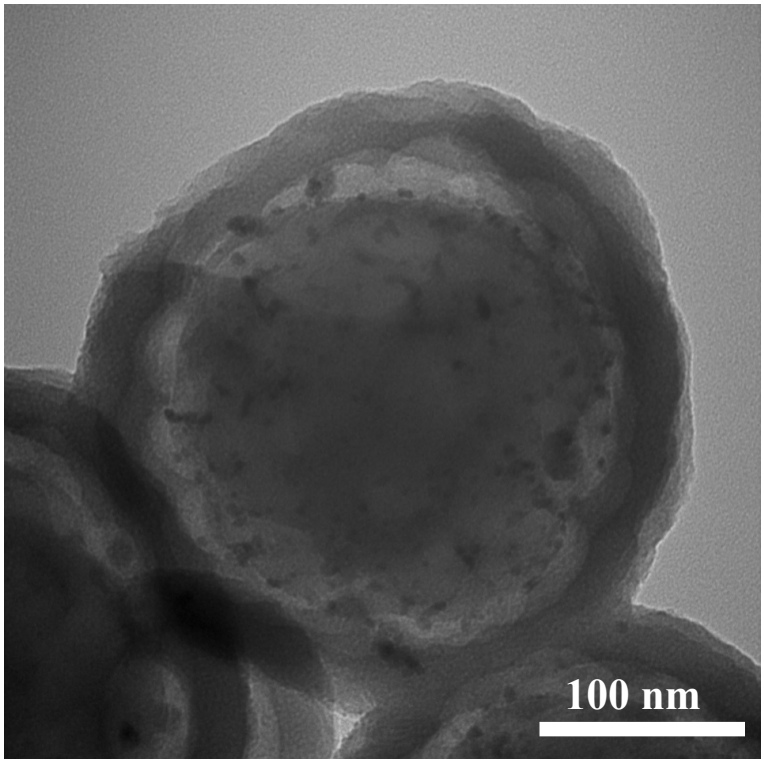

Figure S5. TEM image of 2wt%Pd/ PS-NH_2@mesoSiO_2-L after 1 cycle.

Table S1. Textural properties of Pd/PS-NH_2@mesoSiO_2 catalysts.

samples	S_{BET} ($m^2 \cdot g^{-1}$)	Pore volume ($cm^3 \cdot g^{-1}$)	Pore diameter (nm)	N content (wt%)
2wt%Pd/PS-NH_2@mesoSiO_2-S YSNs	540	0.45	1.3/2.4	1.17
2wt%Pd/PS-NH_2@mesoSiO_2-L YSNs	507	0.41	1.3/2.4	3.38
1wt%Pd/PS-NH_2@mesoSiO_2-L YSNs	521	0.42	1.3/2.4	3.44