

Electronic Supplementary Information

Morphology tuning of noble metal nanoparticles by diffusion-reaction control

Feng Ye,^a Hui Liu,^{ab} Wenlai Huang^{*c} and Jun Yang^{*a}

^a State Key Laboratory of Multiphase Complex Systems, Institute of Process Engineering, Chinese Academy of Sciences, Beijing, China 100190. Fax: 86-10-8254 4915; Tel: 86-10-8254 4915; E-mail: jyang@ipe.ac.cn

^b University of Chinese Academy of Sciences, No. 19A Yuquan Road, Beijing, China 100049

^c EMMS Group, State Key Laboratory of Multiphase Complex Systems, Institute of Process Engineering, Chinese Academy of Sciences, Beijing, China 100190. Fax: 86-10-8254 8065; Tel: 86-10-8254 4942; E-mail: wluang@ipe.ac.cn

Financial supports from State Key Laboratory of Multiphase Complex Systems, Institute of Process Engineering, Chinese Academy of Sciences (MPCS-2012-A-11), the 100 Talents Program of the Chinese Academy of Sciences, and National Natural Science Foundation of China (No.: 21173226, 21376247) is gratefully acknowledged.

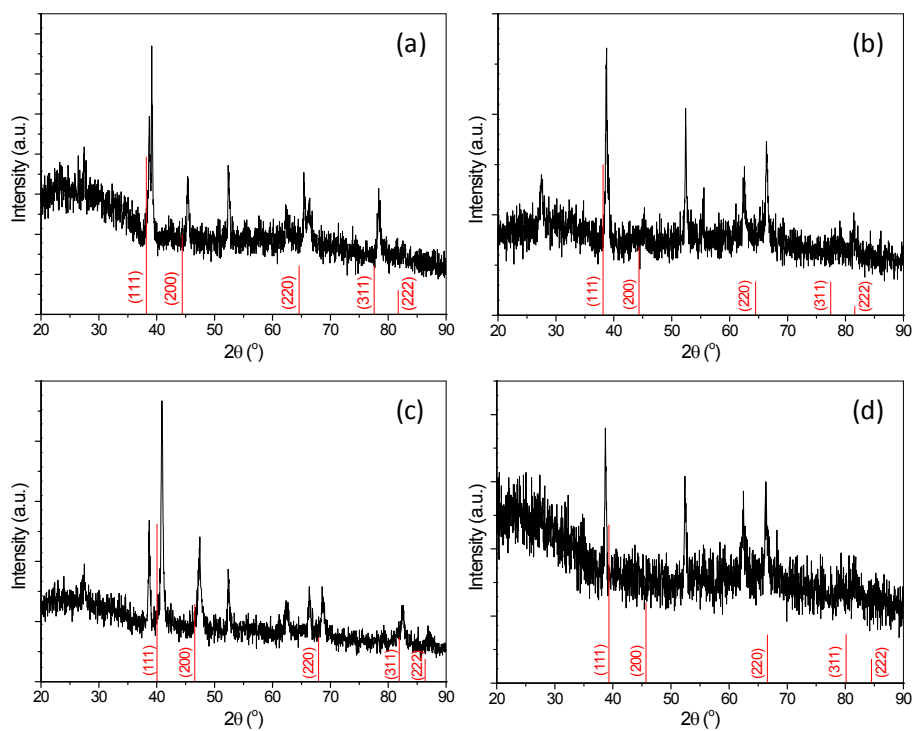


Fig. S1 XRD patterns of face-centered cubic (fcc) Au (a), Ag (b), Pd (c), and Pt nanoparticles (d) prepared by electrochemical reduction approach with the current density of 0.1 mA/cm^2 and diffusion length (L) of 5 cm, respectively. The references are JCPDS 893697 for Au, JCPDS 893722 for Ag, JCPDS 882335 for Pd, and JCPDS 882343 for Pt, respectively.

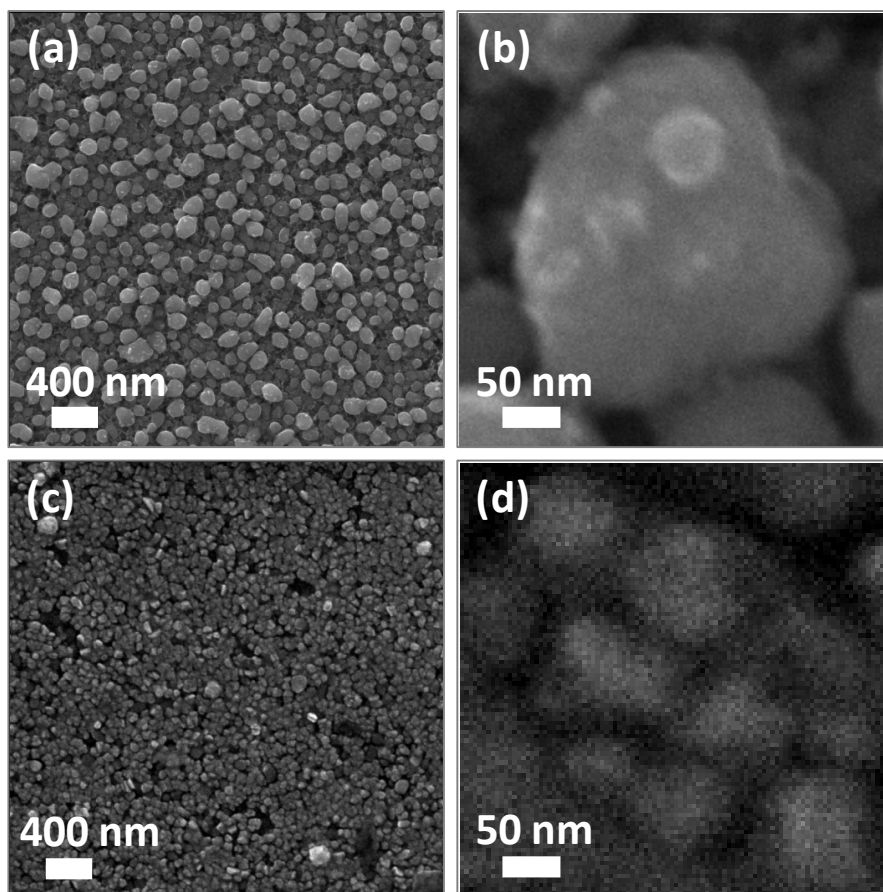


Fig. S2 SEM images with low magnification (a,c) and high magnification (b,d) of Au nanoparticles synthesized by electrochemical reduction approach with diffusion length (L) of 5 cm and current density of 0.33 mA/cm² (a,b) and 0.66 mA/cm² (c,d), respectively.

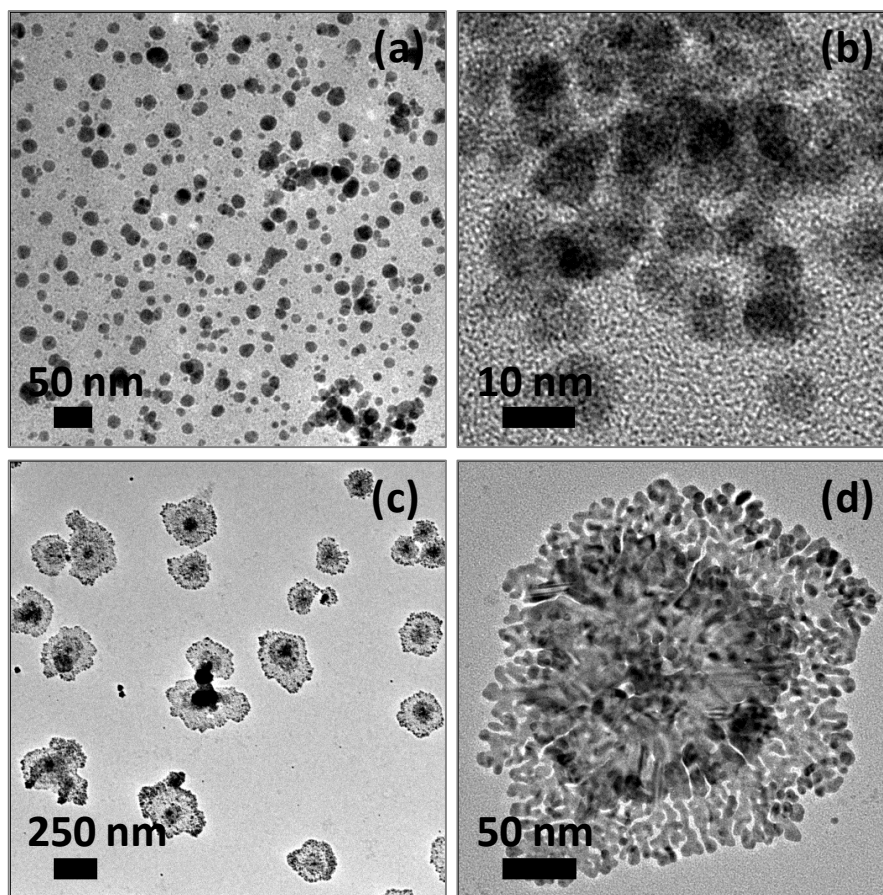


Fig. S3 TEM images with low magnification (a,c) and high magnification (b,d) of Ag nanoparticles synthesized by photo-reduction approach with diffusion length (L) of 15 cm (a,b) and 5 cm (c,d), respectively.

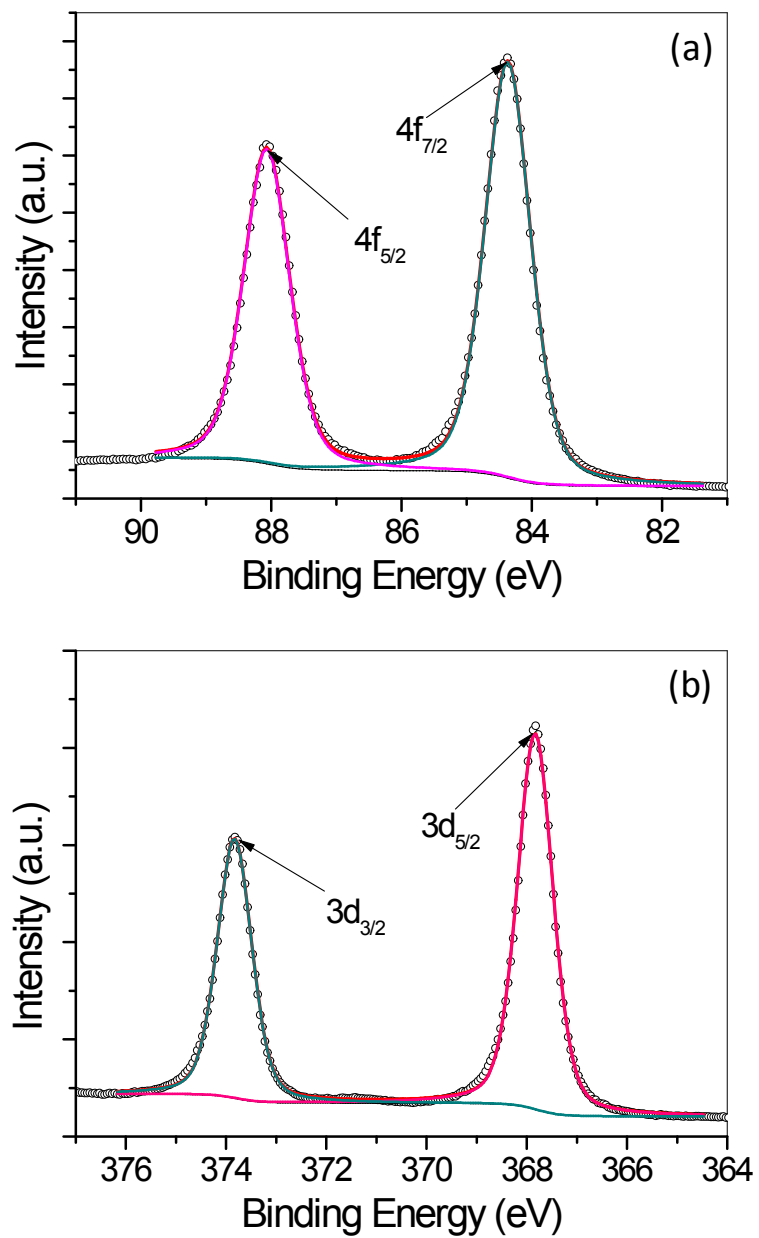


Fig. S4 XPS spectra of Au (a) and Ag nanoparticles (b) prepared by photo-reduction approach with the diffusion length (L) of 5 cm.