Supplementary Material (ESI) for Journal of Materials Chemistry
This journal is © The Royal Society of Chemistry 2011

Electronic Supplementary Information (ESI)

Transverse oxidation of gold nanorods assisted by selective end capping of silver oxide

Zhihong Bao,[a,b] Zhenhua Sun,[c] Manda Xiao,[a] Huanjun Chen,[a] Linwei Tian*[b] and Jianfang Wang*[a]

[a]Department of Physics, [b]School of Public Health and Primary Care, The Chinese University of Hong Kong, Shatin, Hong Kong SAR, [c]Shenyang National Laboratory for Materials Science, Institute of Metal Research, Chinese Academy of Sciences, 72 Wenhua Road, Shenyang 110016, China

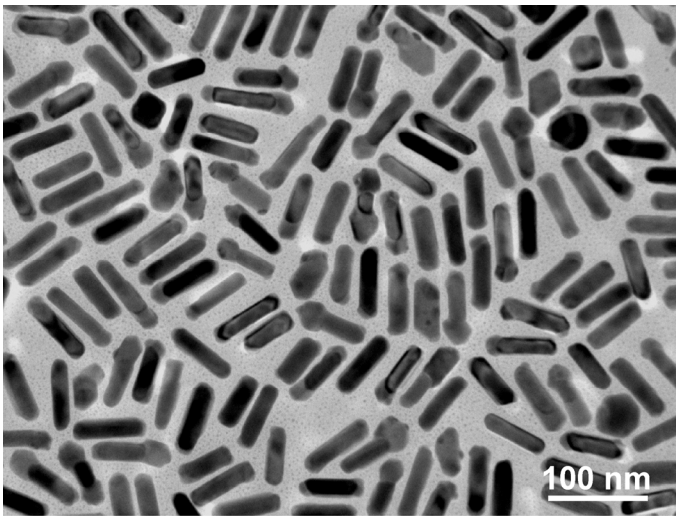

Fig. S1 TEM image of the Ag_2O-capped Au nanorods obtained from the hydrothermal reaction for 6 h.

Supplementary Material (ESI) for Journal of Materials Chemistry
This journal is © The Royal Society of Chemistry 2011

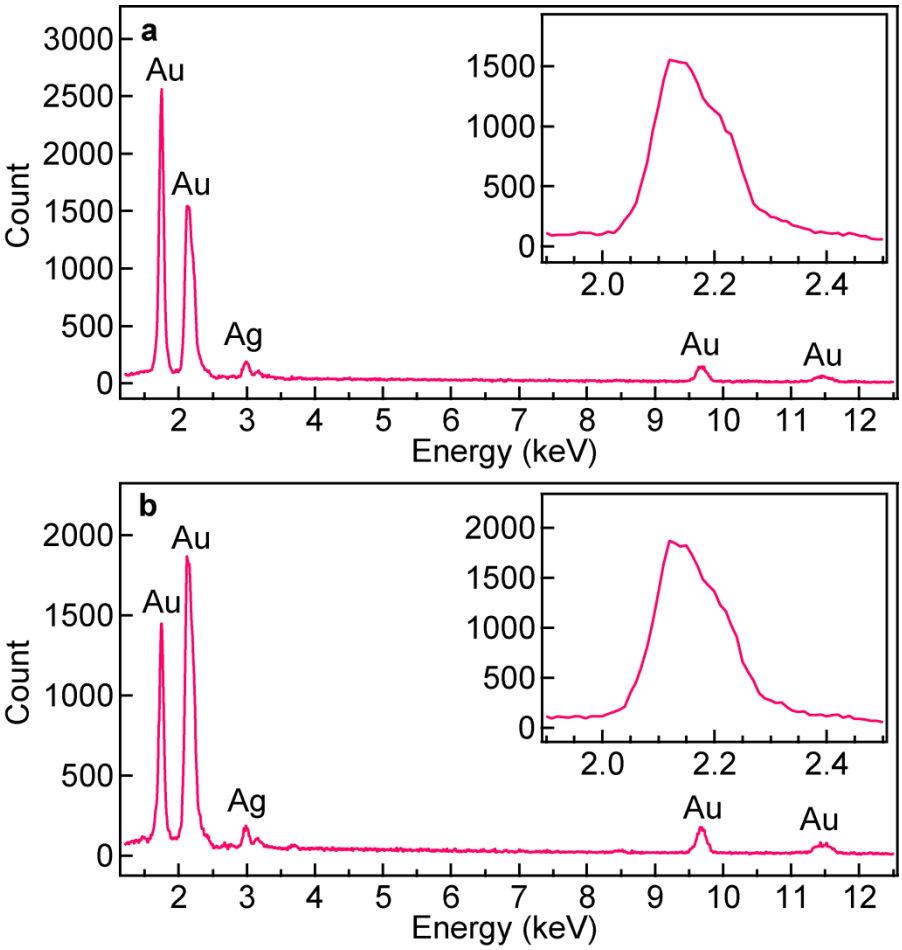

Fig. S2 EDX spectra of the Ag_2O-capped Au nanorods obtained from the hydrothermal reaction at 140 °C for (a) 1 h and (b) 3 h, respectively. The insets are the enlarged EDX spectra in the range from 1.9 to 2.5 keV. The absence of the small peak at 2.31 keV (please see the EDX spectra in Fig. S5 of ESI of our previous publication: *Nanoscale*, 2010, **2**, 1650–1652) suggests that no sulfur is present in these samples.

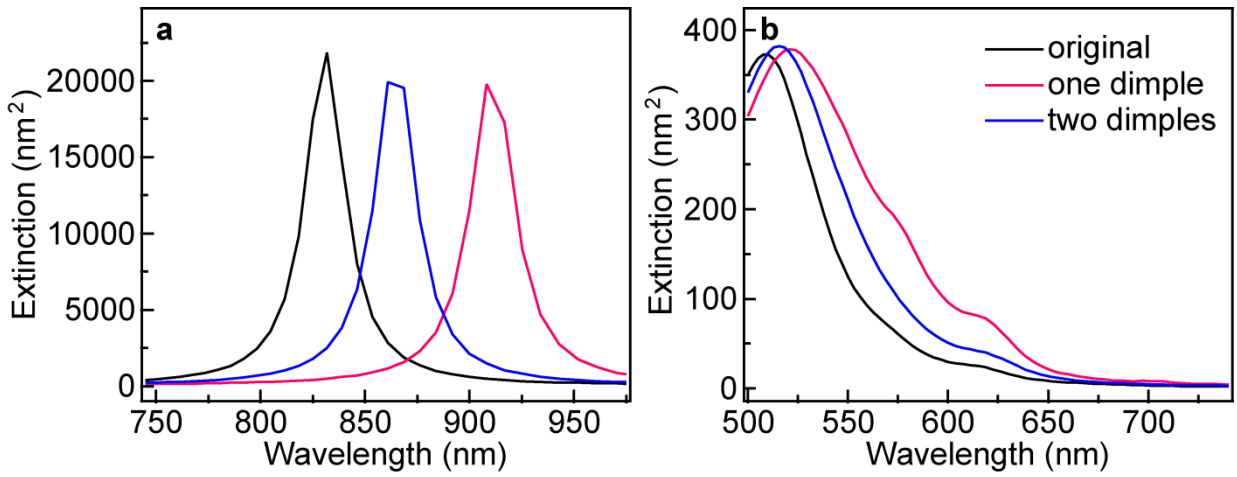

Fig. S3 Extinction spectra of the transversely oxidized Au nanorods obtained from the FDTD calculations. (a) Under longitudinal excitation. (b) Under transverse excitation.

Supplementary Material (ESI) for Journal of Materials Chemistry
This journal is © The Royal Society of Chemistry 2011

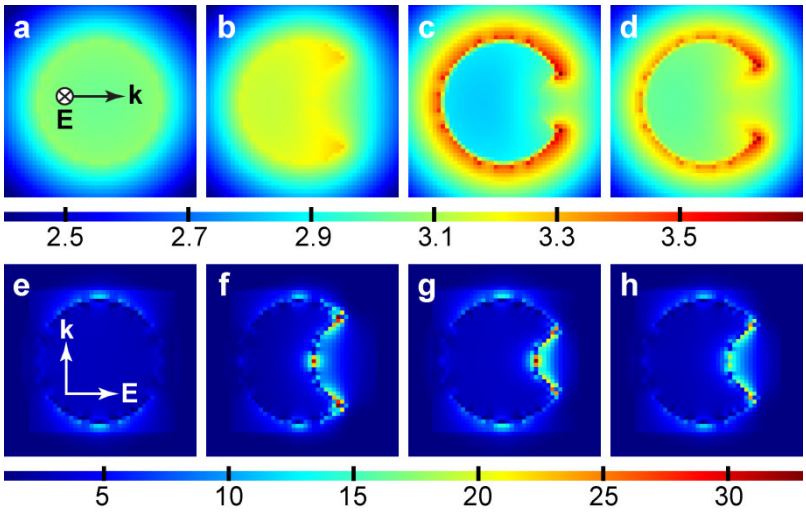

Fig. S4 Electric field intensity enhancement contours of the differently shaped Au nanorods. The top and bottom rows are for longitudinal and transverse excitation, and the contours were calculated at the LPRW and TPRW, respectively. All of the contours are for the cross sections perpendicular to the length axis. (a, e) Original nanorod. The cross section passes through the center of the nanorod. (b, f) Nanorod with one dimple. The cross section passes through the bottom of the dimple. (c, g) Nanorod with two dimples. The cross section passes through the bottom of the smaller dimple. (d, h) Nanorod with two dimples. The cross section passes through the bottom of the larger dimple. The field intensity enhancements are drawn at the logarithmic scale for longitudinal excitation and linear scale for transverse excitation, respectively.

Supplementary Material (ESI) for Journal of Materials Chemistry
This journal is © The Royal Society of Chemistry 2011

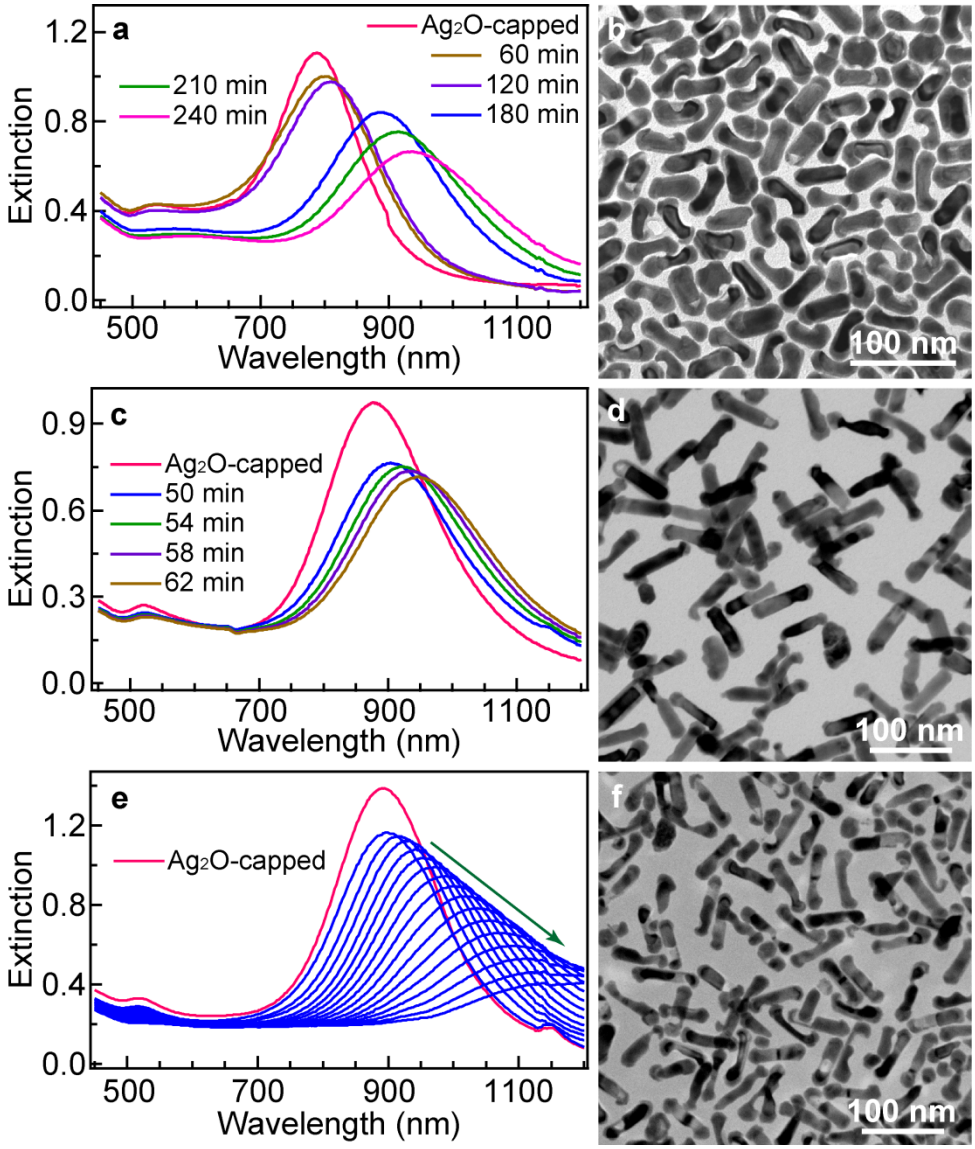

Fig. S5 (a, c, e) Extinction spectra of the Ag_2O-capped Au nanorods recorded as a function of time during transverse oxidation. (b, d, f) Corresponding TEM images of the products obtained when the oxidation process was stopped, respectively. The LPRWs of the starting Ag_2O-capped Au nanorods for (a), (c), and (e) are 788 nm, 880 nm, and 890 nm, respectively. The extinction spectra in (e) were acquired every 5 min from 0 to 75 min along the direction indicated by the green arrow. The initial drop in the extinction peak intensity is due to the dilution caused by the addition of the HCl and H_2O_2 solutions for oxidation.