

## Supporting Information

# Shell-adjustable Hollow ‘Soft’ Silica Spheres as a Support for Gold Nanoparticles

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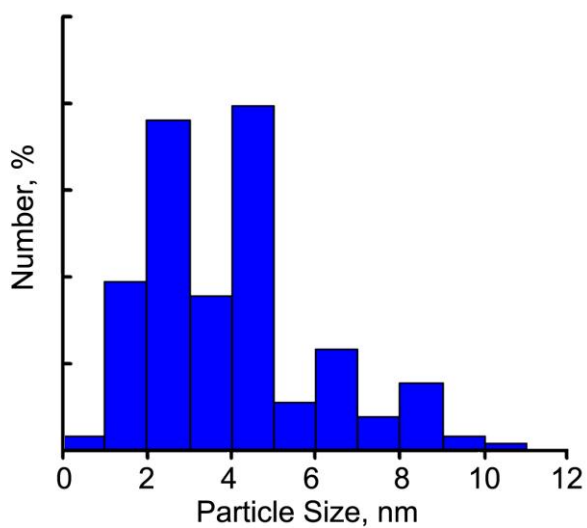
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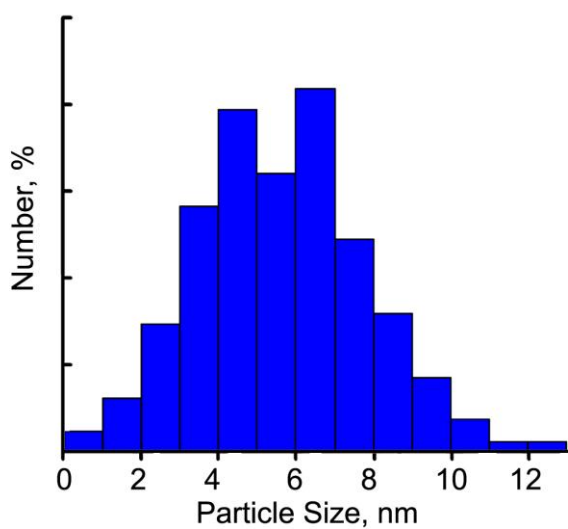
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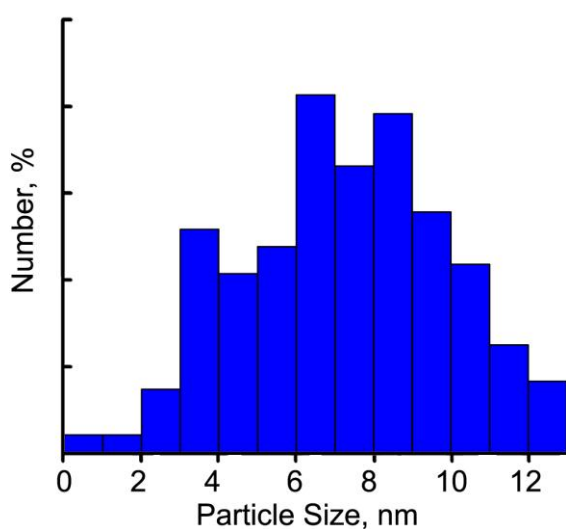
## Additional Data



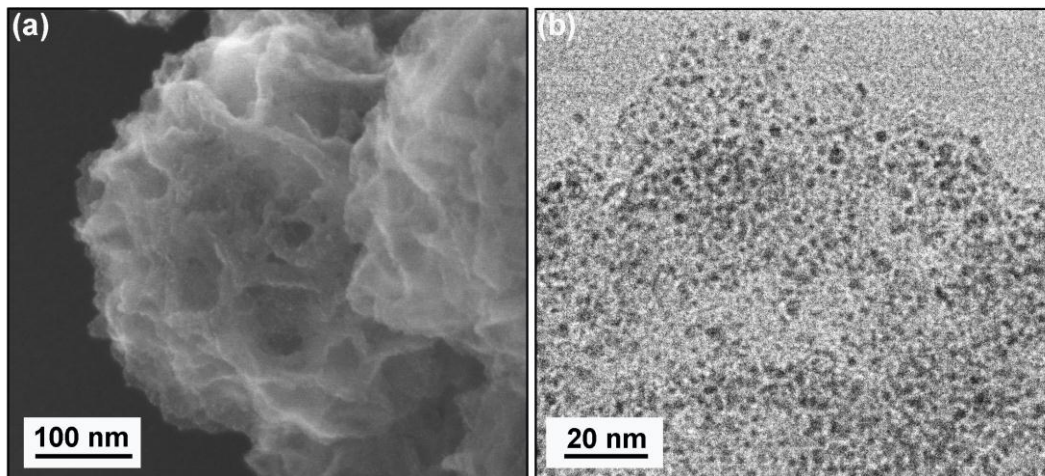
**Figure S1.** The distribution of Au nanoparticles in the Au-FlaSS1 with Au/Si mass ratio of 0.02.



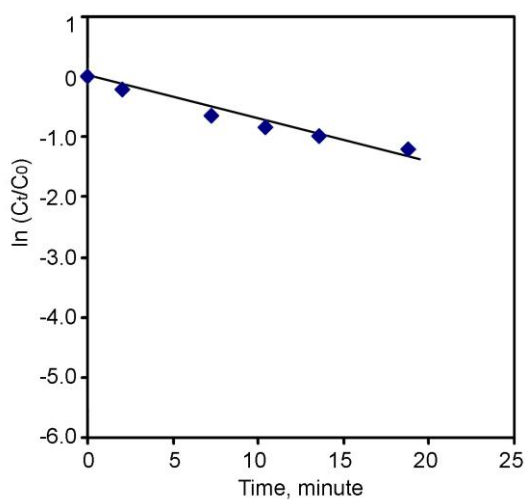
**Figure S2.** The distribution of Au nanoparticles in the Au-FlaSS2 with Au/Si mass ratio of 0.07.



**Figure S3.** The distribution of Au nanoparticles in the Au-FlaSS3 with Au/Si mass ratio of 0.21.



**Figure S4.** The SEM (a) and TEM (b) images of the Au-FlaSS2 after the modification by 1wt% 3-mercaptopropyl-trimethoxysilane solution. The TEM image showed the gold particles on the surface of the flakes in the shell.



**Figure S5.** The relationship between  $\ln(C_t/C_0)$  and reaction time ( $t$ ) for the case of the Au-FlaSS2 after the modification by 1wt% 3-mercaptopropyl-trimethoxysilane solution. The rate constants  $k$  for the reduction of 4-nitrophenol is calculated to be  $0.036 \text{ min}^{-1}$ , which is much lower than the value of Au-FlaSS2 without modification. The coverage of thiol groups on the surfaces of Au particles blocked the active site and resulted in the decrease of catalysis efficiency.