

Figure supporting

Fig. S1 HRTEM images of the obtained (a) $\text{SiO}_2/\text{CeO}_2$ and (b) $\text{SiO}_2/\text{CeO}_2/\text{Au}$.

Fig. S2 The EDX spectrum data for the obtained (a) $\text{SiO}_2/\text{CeO}_2$, (b) $\text{SiO}_2/\text{CeO}_2/\text{Au}$ microspheres.

Fig. S3 SEM (a) and the elemental mapping images (b,c,d) of hollow $\text{CeO}_2/\text{Au}/\text{C}$ microspheres.

Fig. S4 Nitrogen adsorption-desorption isotherm (a) and corresponding pore size distribution curve (b) of hollow $\text{CeO}_2/\text{Au}/\text{C}$ microspheres.

Fig. S5 The UV-vis spectra of prepared CeO_2/Au , Au/C and hollow $\text{CeO}_2/\text{Au}/\text{C}$ nanostructures.

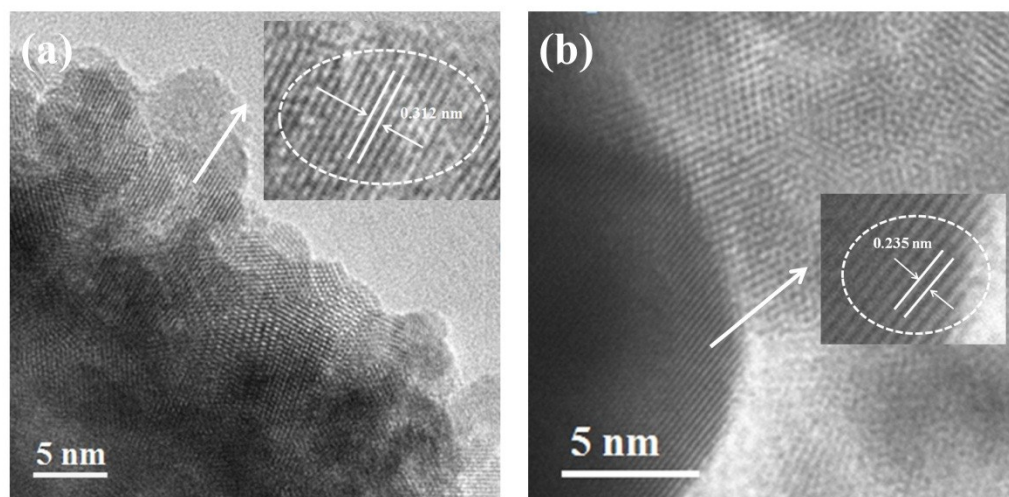


Fig. S1 HRTEM images of the obtained $\text{SiO}_2/\text{CeO}_2$ (a) and $\text{SiO}_2/\text{CeO}_2/\text{Au}$ (b).

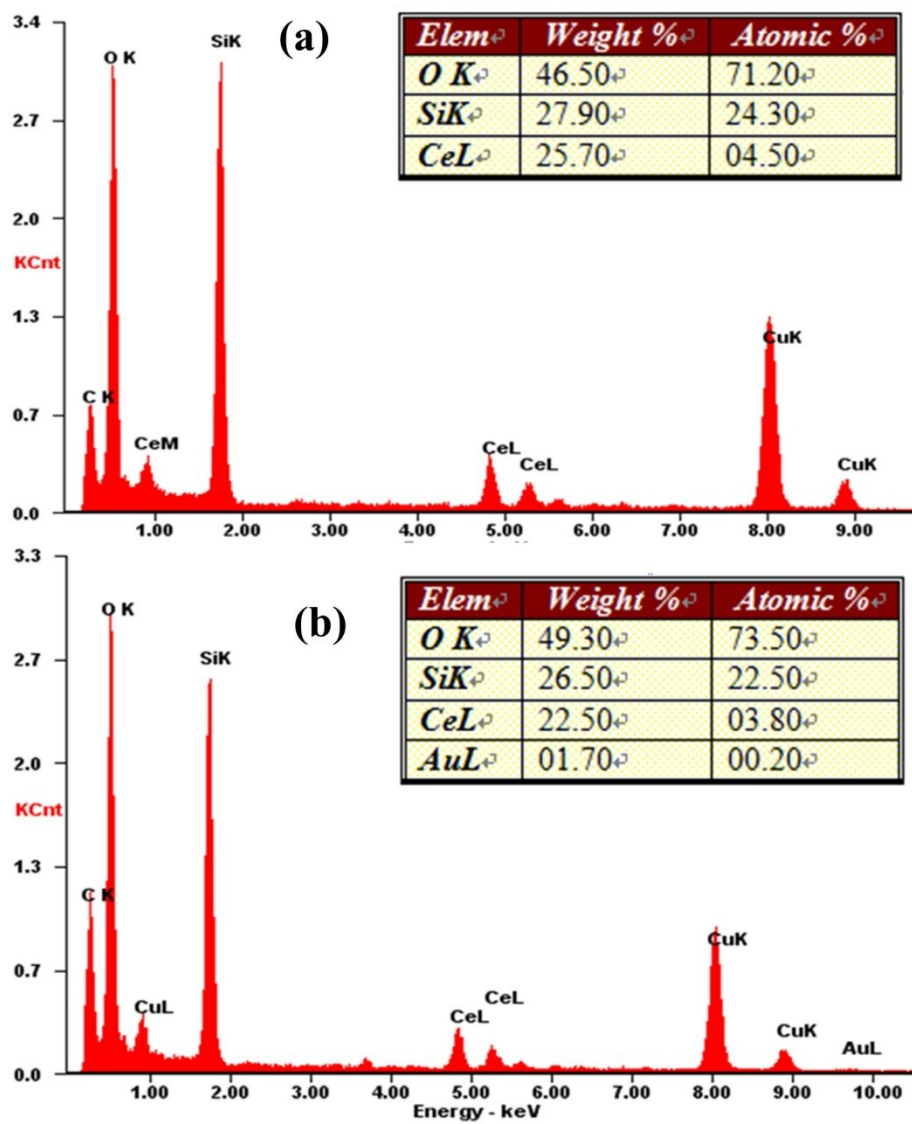


Fig. S2 The EDX spectrum data for the obtained (a) SiO₂/CeO₂, (b) SiO₂/CeO₂/Au microspheres.

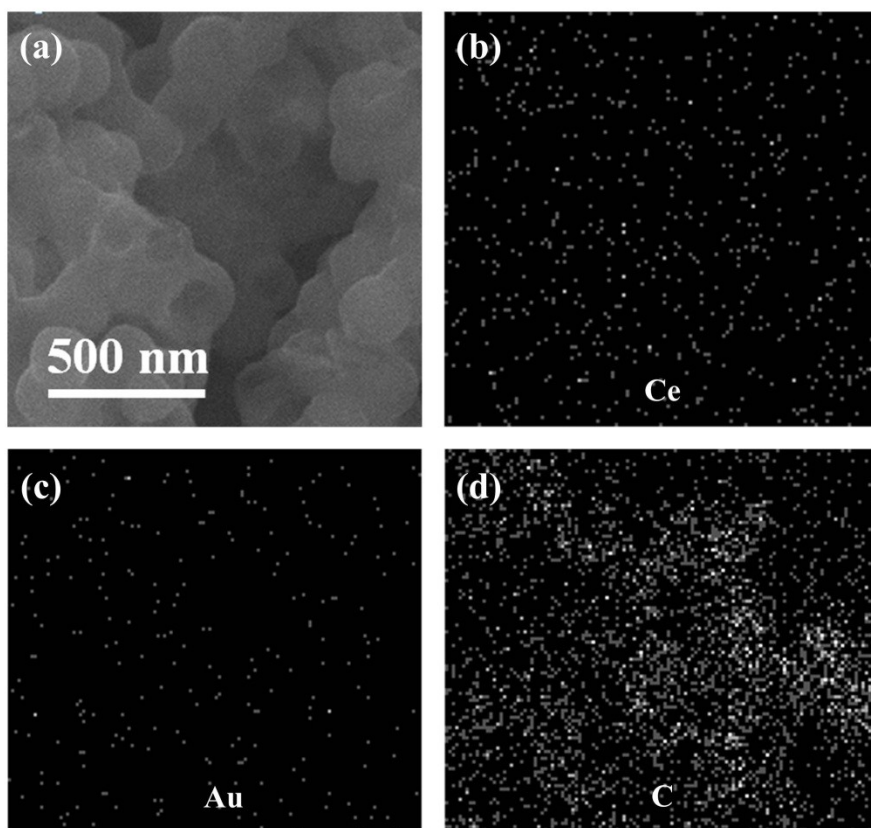


Fig. S3 SEM (a) and the elemental mapping images (b,c,d) of hollow $\text{CeO}_2/\text{Au}/\text{C}$ microspheres.

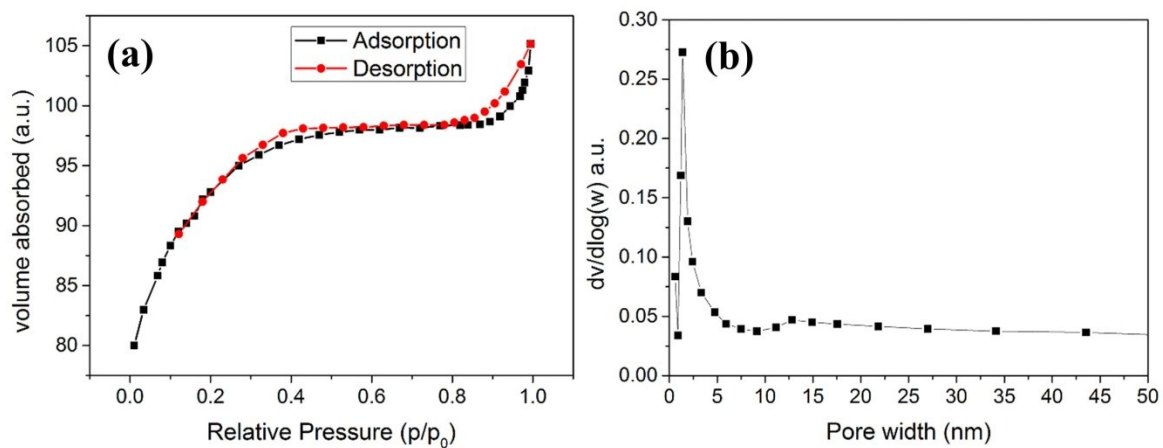


Fig. S4 Nitrogen adsorption-desorption isotherm (a) and corresponding pore size distribution curve (b) of hollow $\text{CeO}_2/\text{Au}/\text{C}$ microspheres.

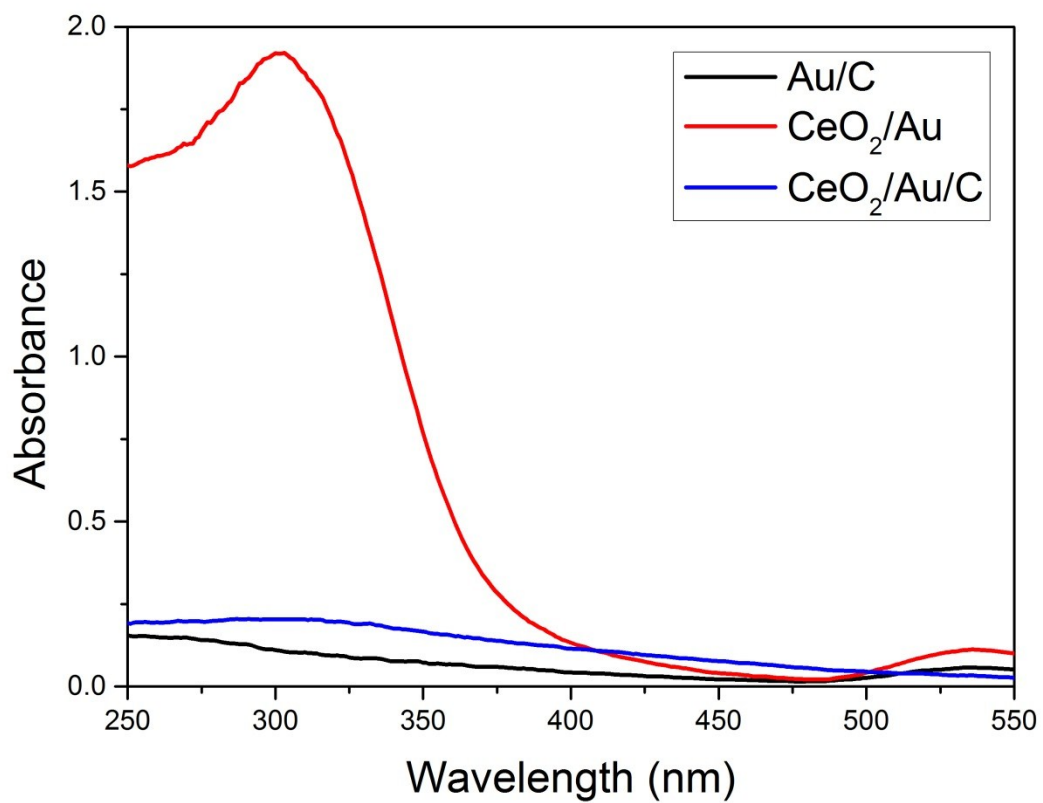


Fig. S5 The UV-vis spectra of prepared CeO₂/Au, Au/C and hollow CeO₂/Au/C nanostructures.