Electronic supplementary information

CeO$_2$ supported low-load Au as enhanced catalyst for low temperature oxidation of carbon monoxide

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Fig. S1. $\text{N}_2$ adsorption–desorption isotherms of the catalysts: (a) CeO$_2$, (b) 0.2%-Au/CeO$_2$, (c) 0.4%-Au/CeO$_2$ and (d) 0.8%-Au/CeO$_2$
Fig. S2. BJH pore size distribution of the catalysts: (a) CeO$_2$, (b) 0.2%-Au/CeO$_2$, (c) 0.4%-Au/CeO$_2$ and (d) 0.8%-Au/CeO$_2$.

Fig. S3. XRD patterns of CeO$_2$ (S$_1$), 0.2%-Au/CeO$_2$ (S$_2$), 0.4%-Au/CeO$_2$ (S$_3$), and 0.8%-Au/CeO$_2$ (S$_4$) after the CO oxidation reaction. (Purple is the standard peak of gold, and dark red is the standard peak of cerium oxide.)
Fig. S4. The TEM of CeO$_2$ (a), 0.2%-Au/CeO$_2$ (b), 0.4%-Au/CeO$_2$ (c), and 0.8%-Au/CeO$_2$ (d) after the CO oxidation reaction.
Fig. S5. The Au 4f XPS spectra of 0.2%-Au/CeO$_2$ (a), 0.4%-Au/CeO$_2$ (b), and 0.8%-Au/CeO$_2$ (c) after the CO oxidation reaction. After the reaction, almost all of the gold exists in the form of Au$^0$, indicating that Au$^\delta^++$ is involved in the reaction, which is consistent with the phenomenon reported in the literature.$^{1,2}$ After re-calcination, Au$^\delta^+$ will be regenerated on the surface to ensure the repeatability and stability of the catalyst.