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Electronic supplementary information

CeO_2 supported low-load Au as enhanced catalyst for low temperature oxidation of carbon monoxide

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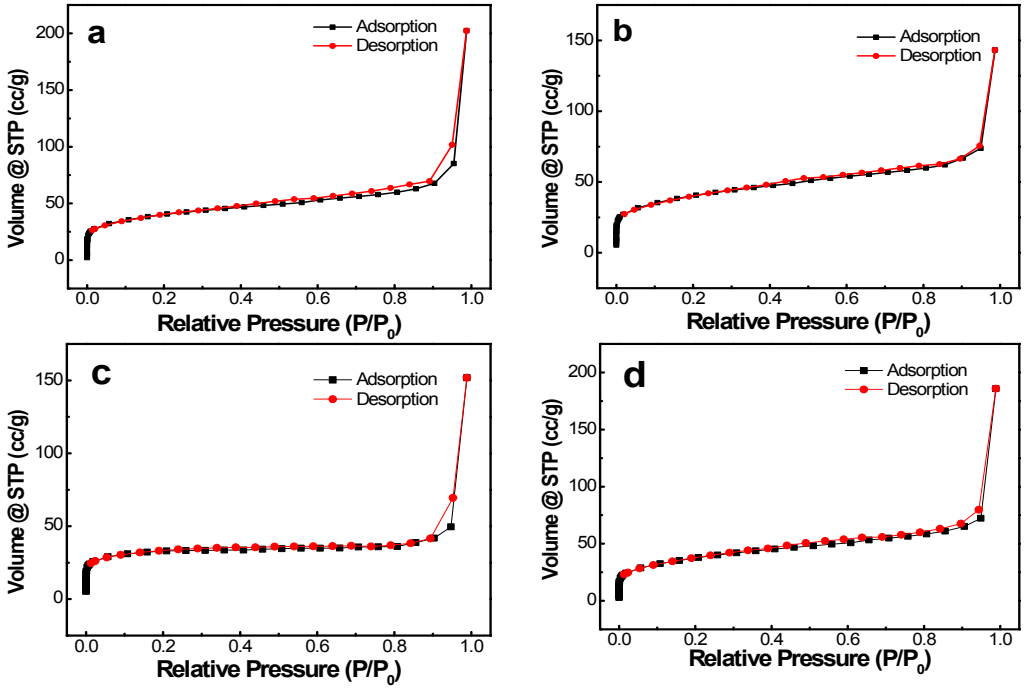

Fig. S1. N_2 adsorption–desorption isotherms of the catalysts: (a) CeO_2, (b) 0.2%-Au/CeO_2, (c) 0.4%-Au/CeO_2 and (d) 0.8%-Au/CeO_2

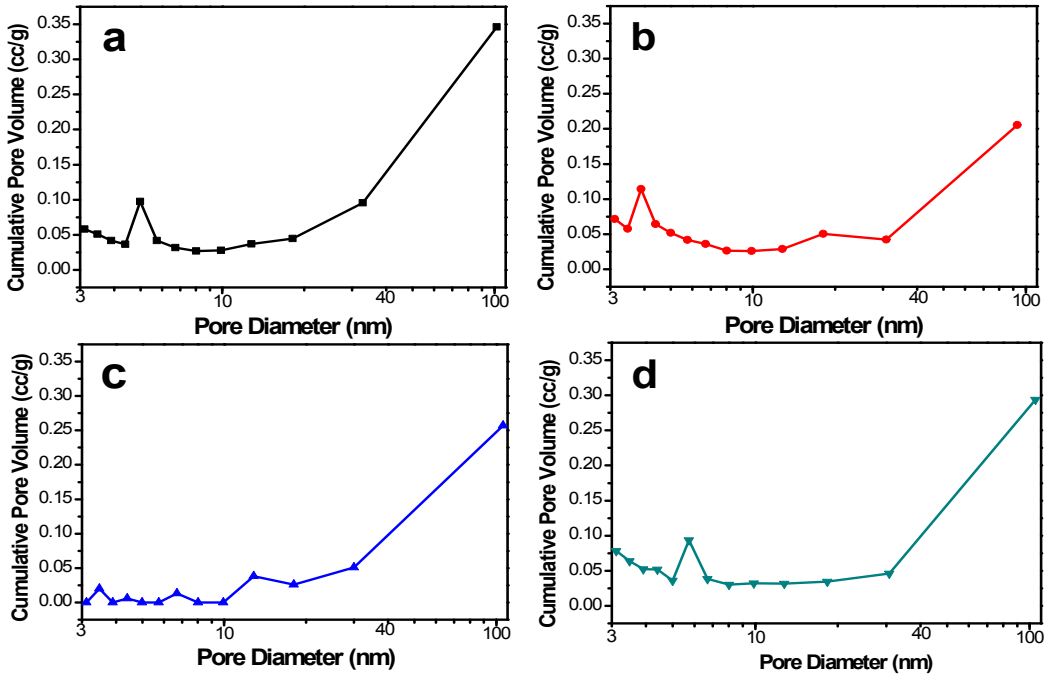

Fig. S2. BJH pore size distribution of the catalysts: (a) CeO_2, (b) 0.2%-Au/CeO_2, (c) 0.4%-Au/CeO_2 and (d) 0.8%-Au/CeO_2

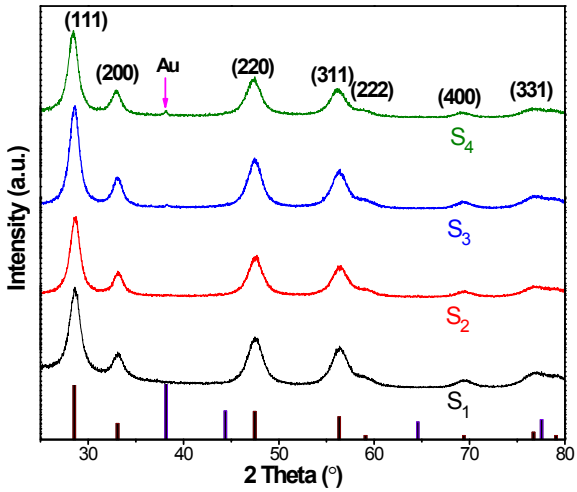

Fig. S3. XRD patterns of CeO_2 (S_1), 0.2%-Au/CeO_2 (S_2), 0.4%-Au/CeO_2 (S_3), and 0.8%-Au/CeO_2 (S_4) after the CO oxidation reaction. (Purple is the standard peak of gold, and dark red is the standard peak of cerium oxide.)

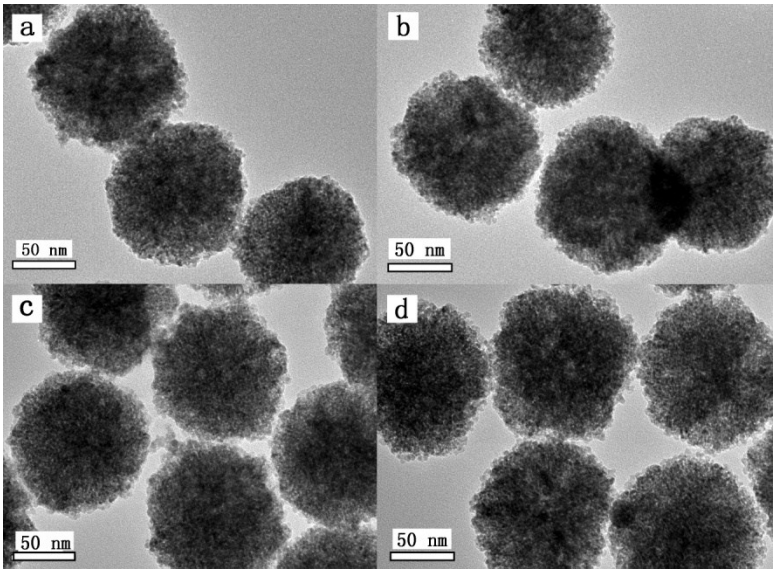

Fig. S4. The TEM of CeO_2 (a), 0.2%-Au/CeO_2 (b), 0.4%-Au/CeO_2 (c), and 0.8%-Au/CeO_2 (d) after the CO oxidation reaction.

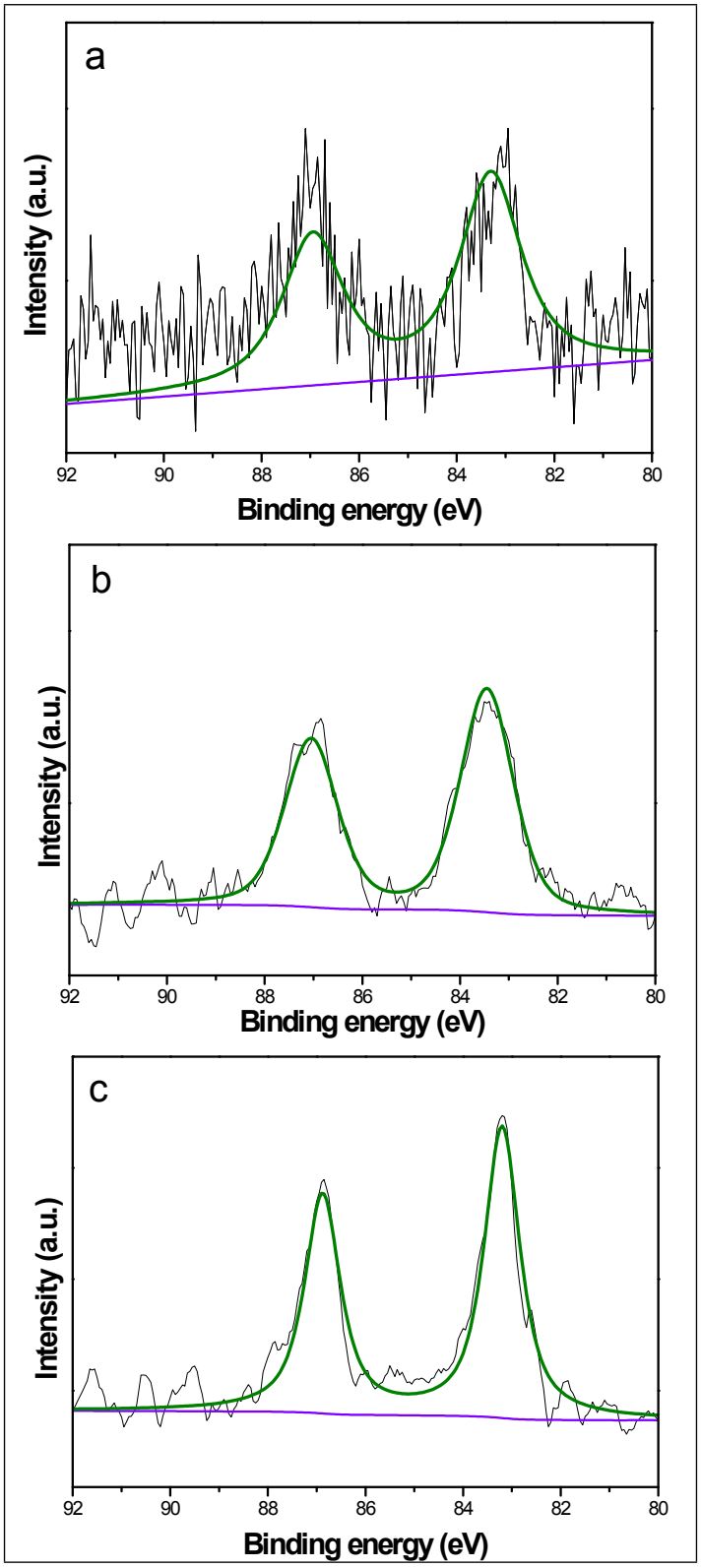

Fig. S5. The Au 4f XPS spectra of 0.2%-Au/CeO_2 (a), 0.4%-Au/CeO_2 (b), and 0.8%-Au/CeO_2 (c) after the CO oxidation reaction. After the reaction, almost all of the gold exists in the form of Au^0, indicating that $Au^{\delta+}$ is involved in the reaction, which is consistent with the phenomenon reported 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.

1 U. R. Pillai and S. Deevi, *Applied Catalysis A: General*, 2006, **299**, 266-273.
2 A. Abd El-Moemen, A. M. Abdel-Mageed, J. Bansmann, M. Parlinska-Wojtan, R. J. Behm and G. Kučerová, *Journal of Catalysis*, 2016, **341**, 160-179.