

## SUPPLEMENTARY MATERIAL

Table 1S. Characterization data of metal catalysts<sup>a</sup>.

Entry	Catalyst	d(nm)	%metal wt (nominal)	%metal wt (ICP)
1	Au/CeO <sub>2</sub>	2.0+-0.43	0.8	1.01
2 <sup>b</sup>	Au/CeO <sub>2</sub>	2.1+-0.36	0.8	1.1
3	Fe/CeO <sub>2</sub>	3.6+-0.36	1.0	0.75
4	Cu/CeO <sub>2</sub>	2.6+-0.36	1.0	0.67
5	Ni/CeO <sub>2</sub>	2.9+-0.36	1.0	0.95
6	Pd/CeO <sub>2</sub>	3.5+-0.36	1.0	0.70

- a) The catalysts were prepared following the impregnation method (see experimental section);  
b) the catalyst was prepared following the deposition-precipitation method (see experimental section).

Table 2S. Characterization data of Au-CeO<sub>2</sub> catalysts<sup>a</sup>.

Entry	Catalyst	d(nm)	%Au(nominal)	%Au(ICP)
1	Au/CeO <sub>2</sub>	1.99±0.43	0.8	1.01
2 <sup>b</sup>	Au/CeO <sub>2</sub>	2.30±0.95	1.03	1.03
3 <sup>c</sup>	Au/CeO <sub>2</sub>	2.81±1.12	1.03	1.03
4	Au/CeO <sub>2</sub>	2.03±0.51	1.5	1.59
5	Au/CeO <sub>2</sub>	2.62±0.40	3.0	3.46
6	Au/CeO <sub>2</sub>	3.01±0.43	5.0	4.62
7	Au/CeO <sub>2</sub>	3.31±0.58	10.0	10.98

a) Prepared by impregnation method (see experimental section); b) reduced with H<sub>2</sub> at 100°C for 3h; c) reduced with H<sub>2</sub> at 300°C for 3h.

**Figure 1S** Plots showing the evolution of conversion (%) and yield of product **2** with time in the oxidation reaction of thiol **1** to disulfide **2** with O<sub>2</sub> (PO<sub>2</sub> = 5bar) at room temperature in the presence of Au-CeO<sub>2</sub> (0.8% Au wt) prepared by impregnation method (Au-CeO<sub>2</sub> IMP) and by deposition-precipitation method (Au-CeO<sub>2</sub> DP).

