Electronic Supplementary Information (ESI)

Dealloying Assisted High-Yield Growth of Surfactant-Free <110> Highly Active Cu-Doped CeO_2 Nanowires for Low-Temperature CO Oxidation

Tianyi Kou[†,‡], Conghui Si[†], John Pinto[§], Chunyan Ma[⊥], Zhonghua Zhang[†,*]

[†] Key Laboratory for Liquid-Solid Structural Evolution and Processing of Materials (Ministry of Education), School of Materials Science and Engineering, Shandong University, Jingshi Road 17923, Jinan, 250061, P.R. China. E-mail: zh_zhang@sdu.edu.cn
[‡] Department of Chemistry and Biochemistry, [§] Department of Physics, University of California, Santa Cruz, California 95064, United States
[⊥] Research Center for Eco-Environmental Sciences, Chinese Academy of Sciences, Beijing 100085, P.R. China.

Table S1. EDX results showing the atomic percent and actual Cu/Co ratio of the as-dealloyed samples after thermal annealing at 500 ^{o}C.

Sample	Atomic Percent (%)		Actual Cu/Ce ratio	
	Cu	Ce	Cu	Ce
$Cu_{2.5}Ce_{7.5}$	11.52	26.22	1	2.27
Cu_5Ce_5	25.71	19.20	1.34	1
$Cu_{7.5}Ce_{2.5}$	34.29	9.61	3.57	1

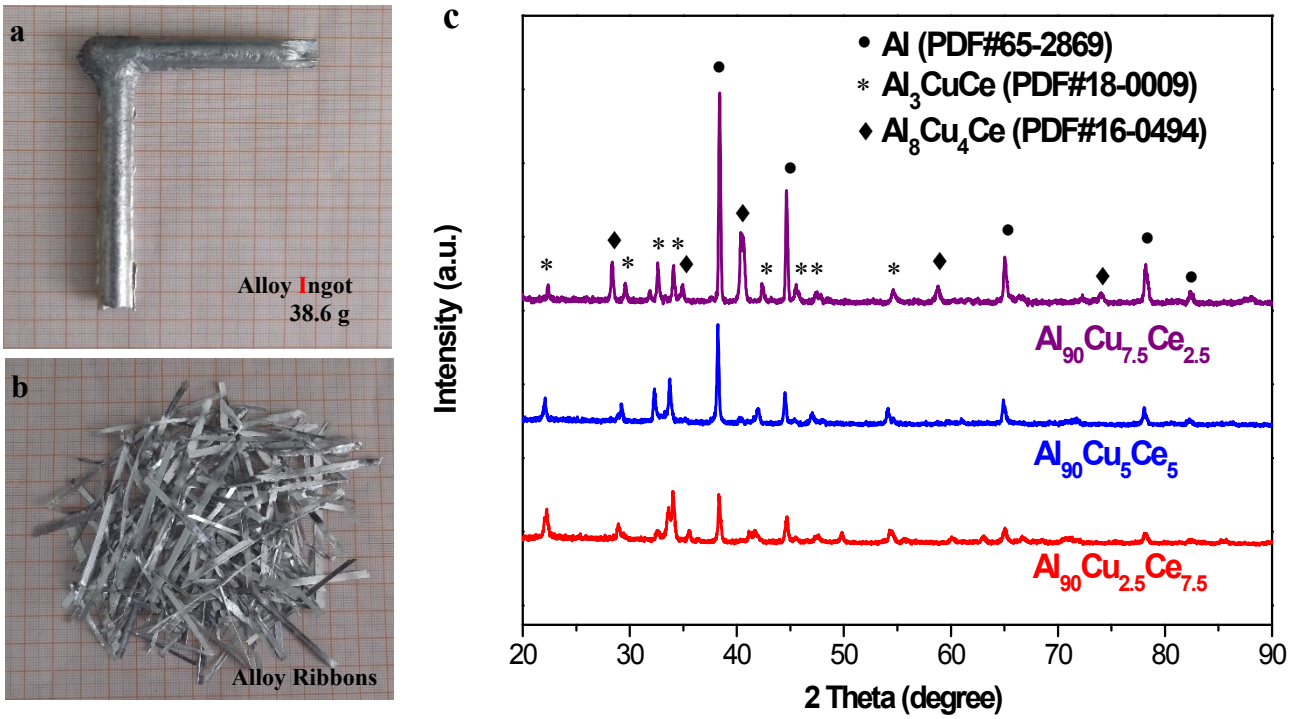

Figure S1. Digital images showing a typical alloy ingot with a mass of 38.6 g (a), alloy ribbons (b), and associated XRD patterns of as-prepared alloy ribbons (c).

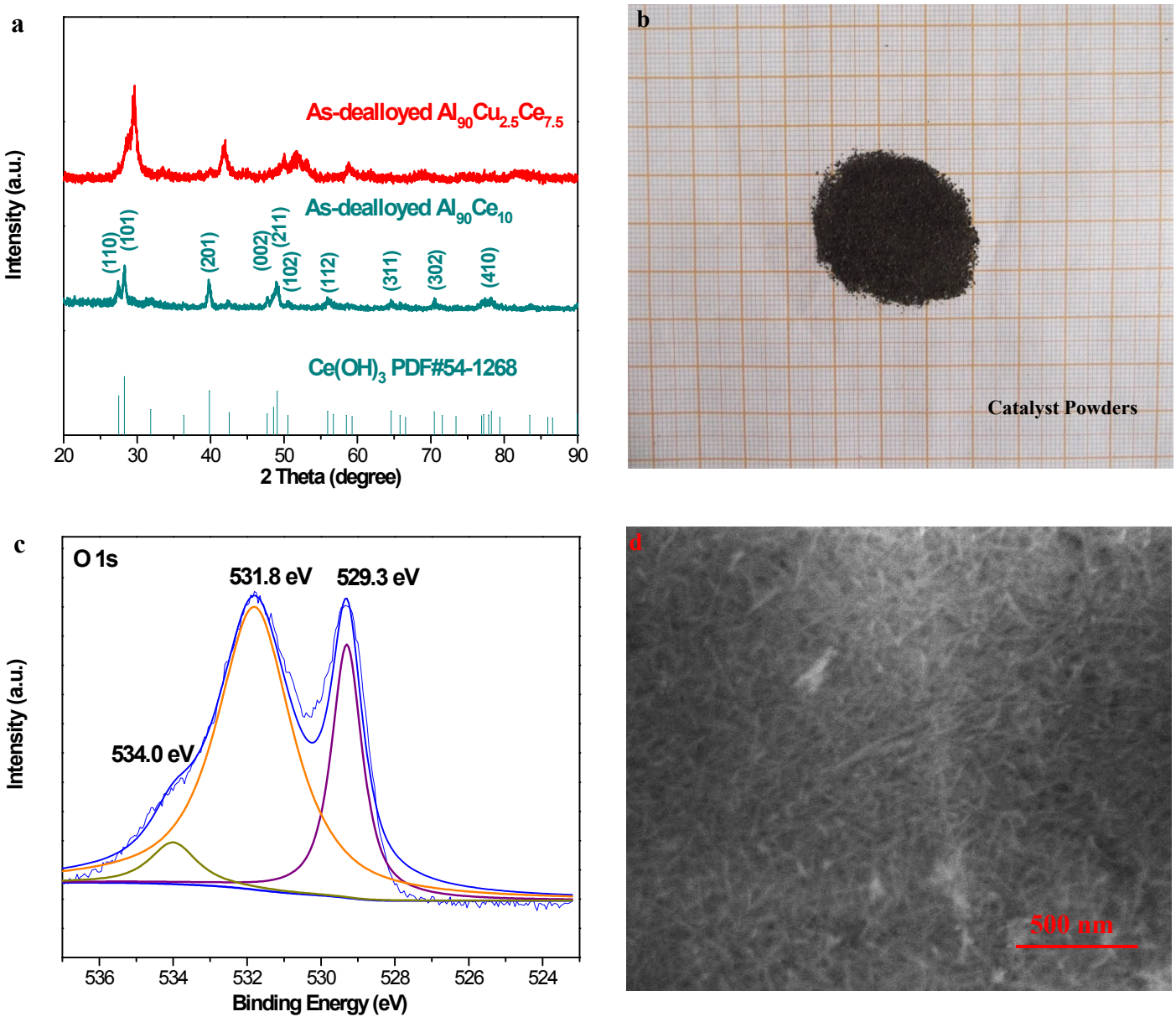

Figure S2. XRD results of as-dealloyed $Al_{90}Cu_{2.5}Ce_{7.5}$ and $Al_{90}Ce_{10}$ (a); Digital image of typical catalysts powders after annealing (b); XPS profile of O 1s in $Cu_{2.5}Ce_{7.5}$ (c); SEM image revealing the nanowire structure of $Cu_{2.5}Ce_{7.5}$ (d).

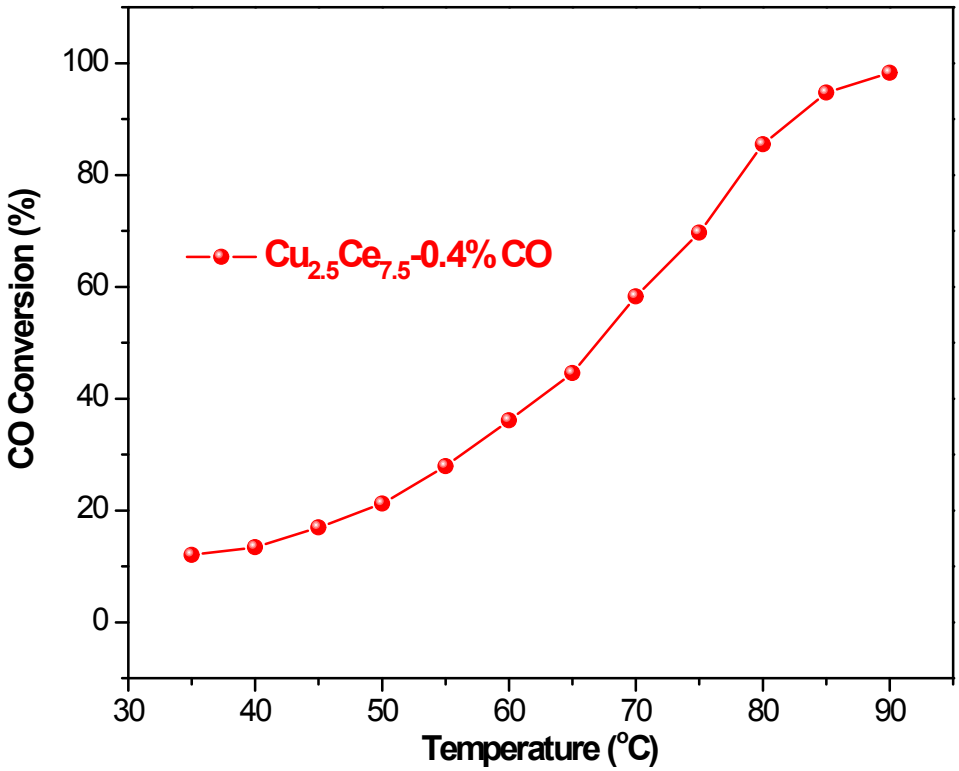

Figure S3. Catalytic performances of $Cu_{2.5}Ce_{7.5}$ tested in 0.4% CO, 10% O_2 and 89.6% N_2.

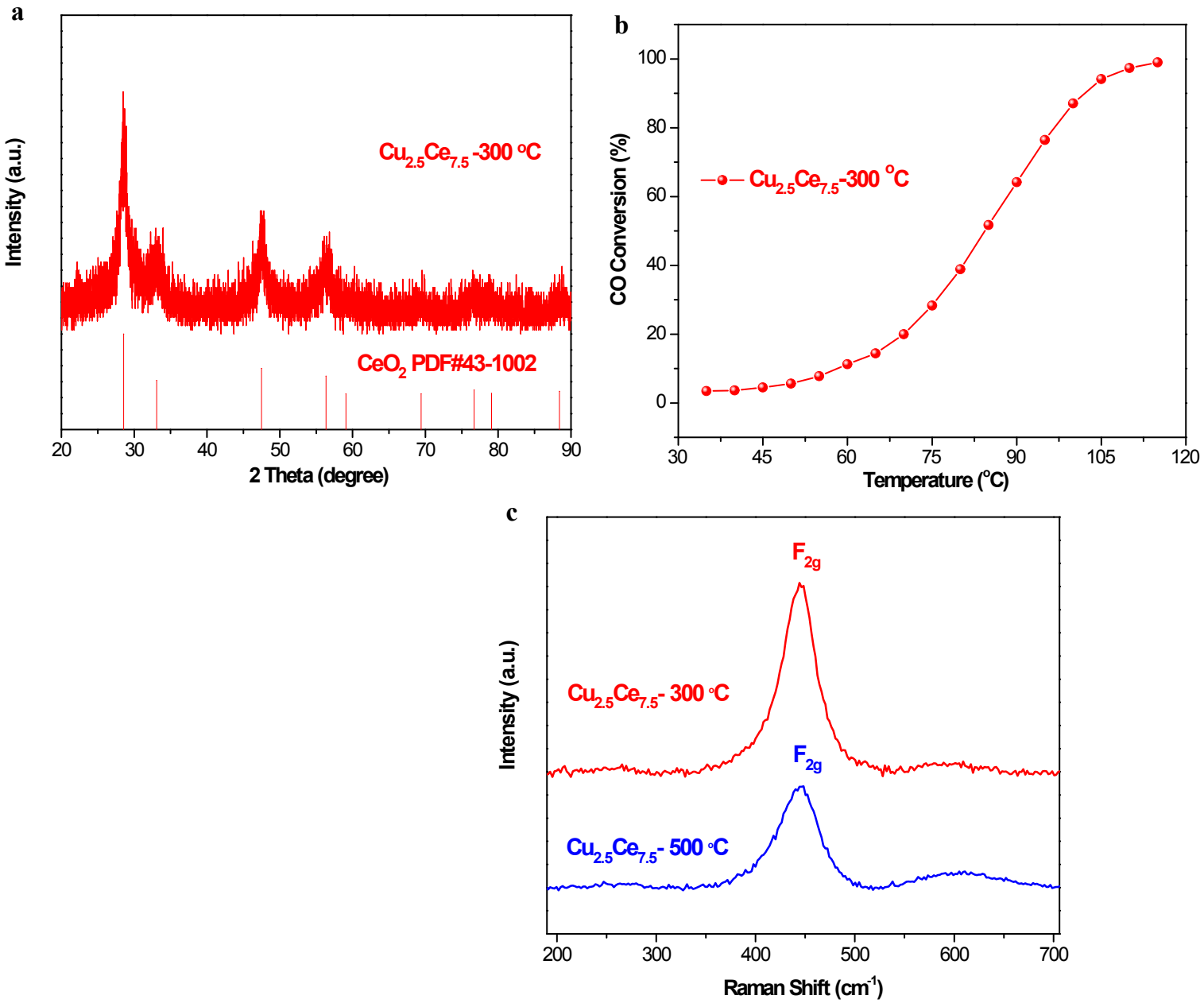

Figure S4. XRD pattern of the $Cu_{2.5}Ce_{7.5}$ annealed at 300 °C (a), its catalytic performances (b) and the Raman spectra comparison between it and $Cu_{2.5}Ce_{7.5}$ annealed at 500 °C (c).

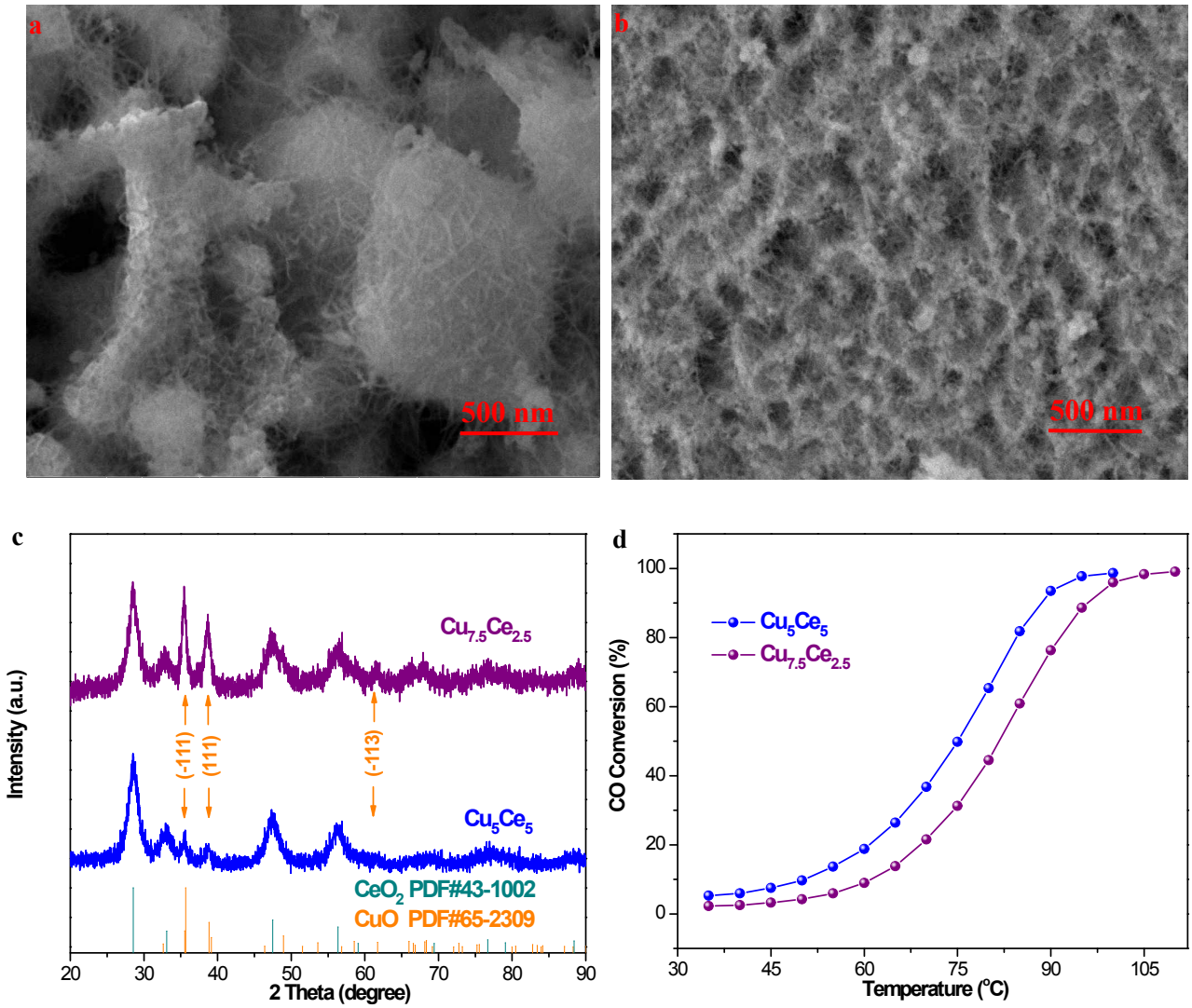

Figure S5. SEM images and XRD results of Cu_5Ce_5 and $Cu_{7.5}Ce_{2.5}$ (a-b, and c); corresponding catalytic performances of the two samples (d).

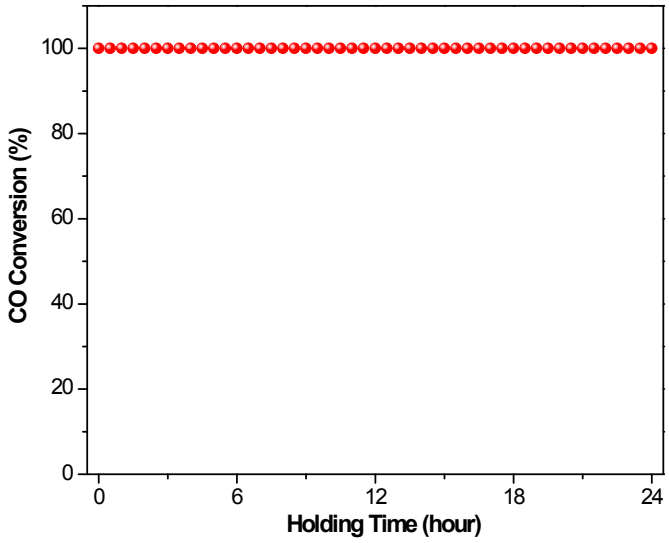

Figure S6. Catalytic stability test of $Cu_{2.5}Ce_{7.5}$ with a holding time of 24 hours at 100 ^{o}C.