Electronic Supplementary Information (ESI)

CeO_2 Nanowires Self-inserted Porous Co_3O_4 Frameworks as High-performance "Noble Metal Free" Hetero-catalysts

Xiao Wang, Shuna Zhao, Yibo Zhang, Zhuo Wang, Jing Feng, Shuyan Song and Hongjie Zhang**

State Key Laboratory of Rare Earth Resource Utilization, Changchun Institute of Applied Chemistry, Chinese Academy of Sciences, Changchun 130022, P. R. China.

E-mail: songsy@ciac.ac.cn; hongjie@ciac.ac.cn

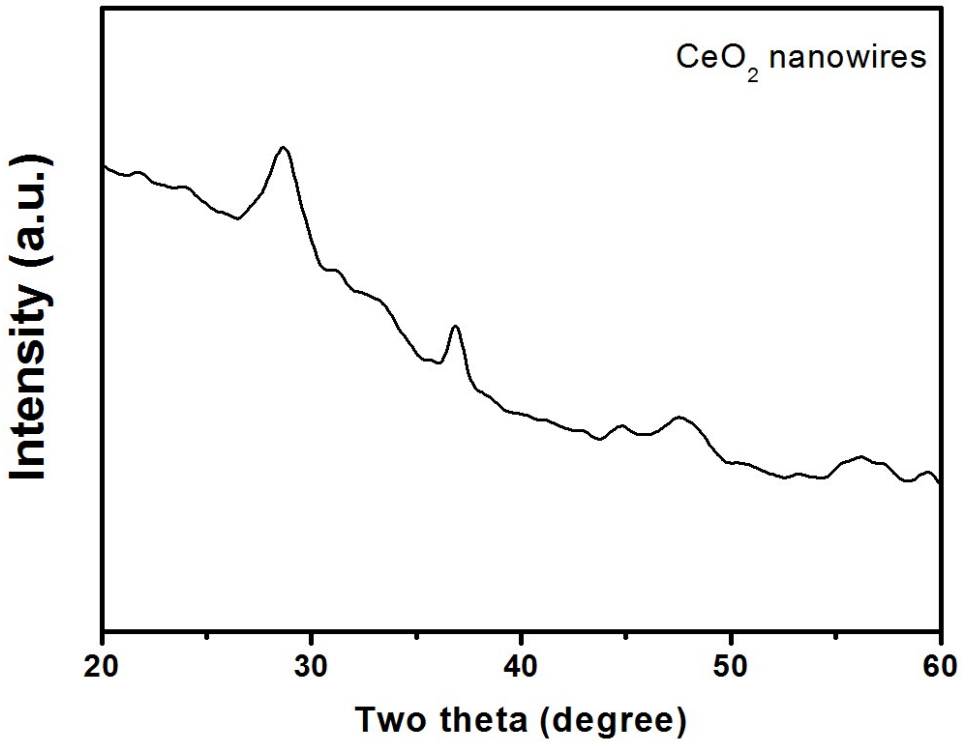

Fig. S1. XRD spectrum of pure CeO_2 nanowires.

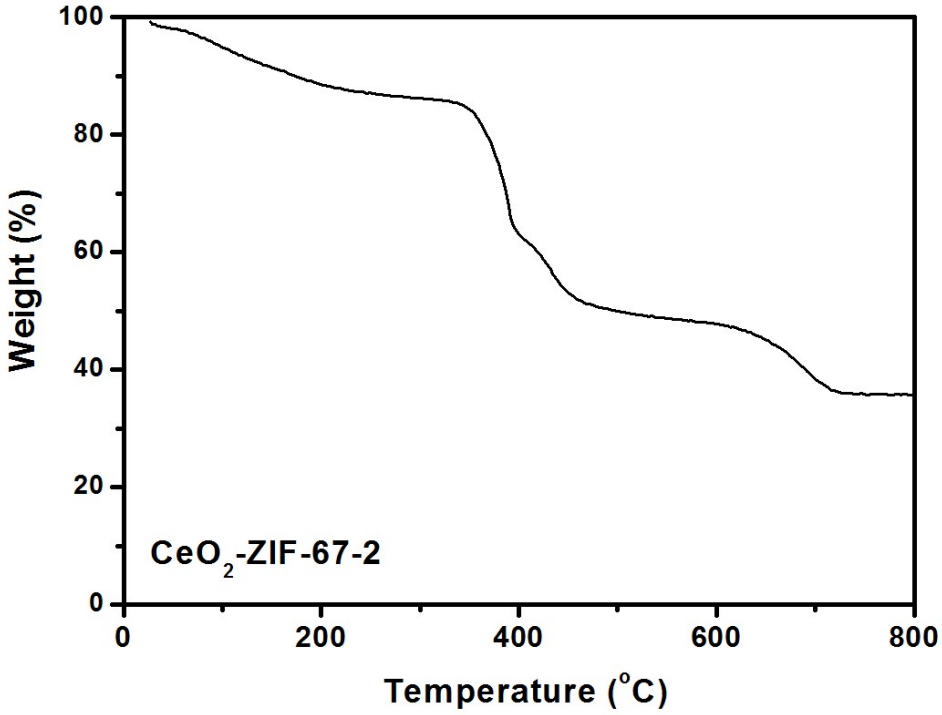

Fig. S2. TG curve of CeO_2-ZIF-67-2 precursor.

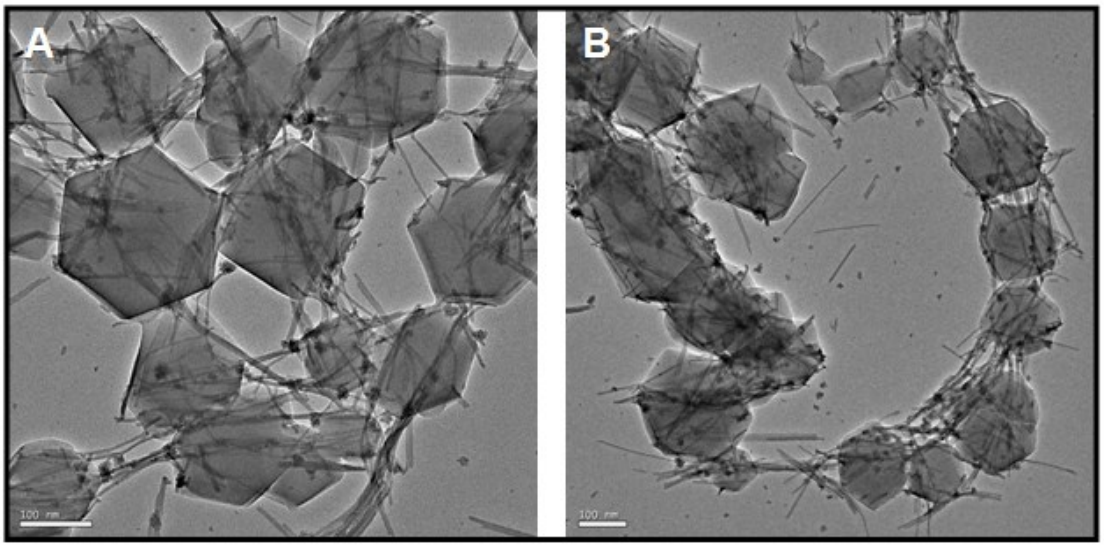

Fig. S3. TEM images of CeO_2-ZIF-67-1 (A) and CeO_2-ZIF-67-3 (B) precursors.

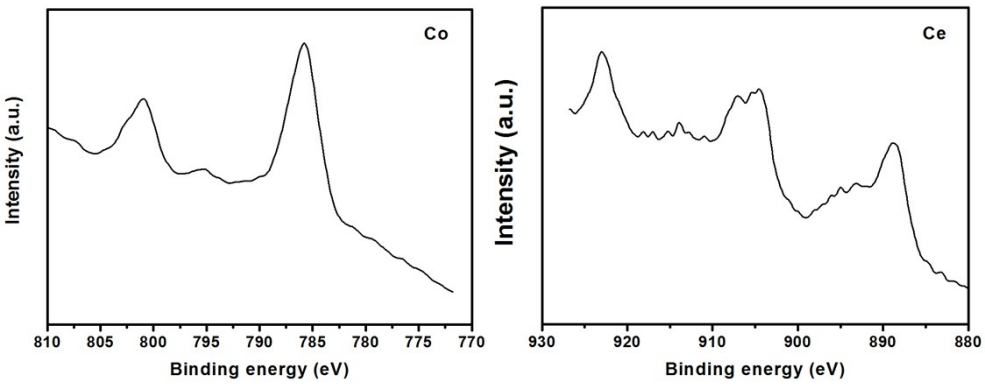

Fig. S4. XPS data of CeO_2-Co_3O_4-2 sample.

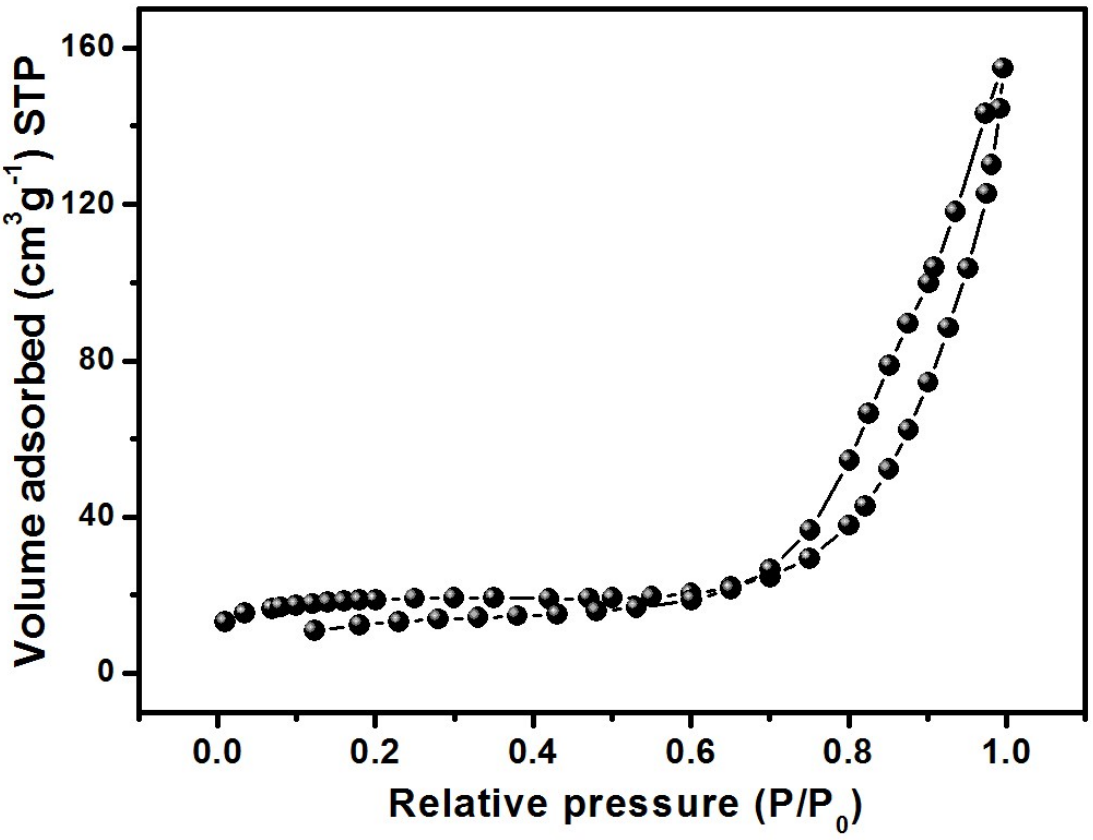

Fig. S5. N_2 adsorption-desorption isotherm of CeO_2-Co_3O_4-2 sample.

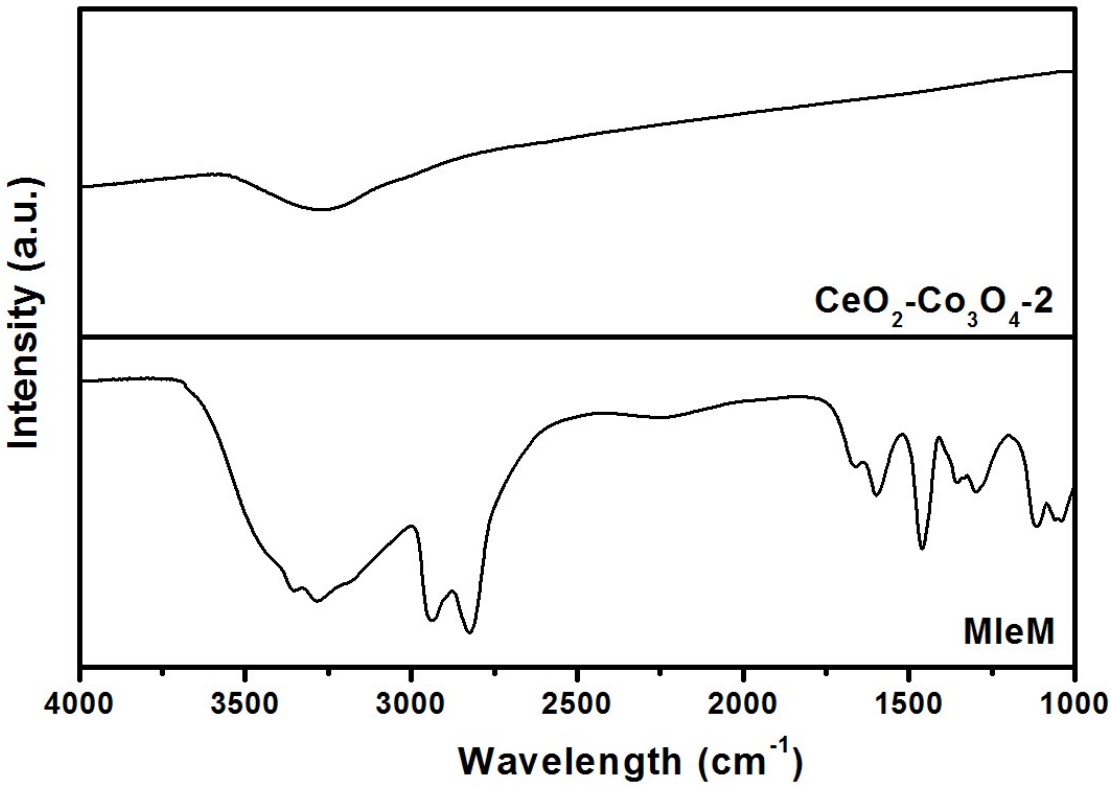

Fig. S6. IR spectra of MieM molecule and final CeO_2-Co_3O_4-$_2$ sample.

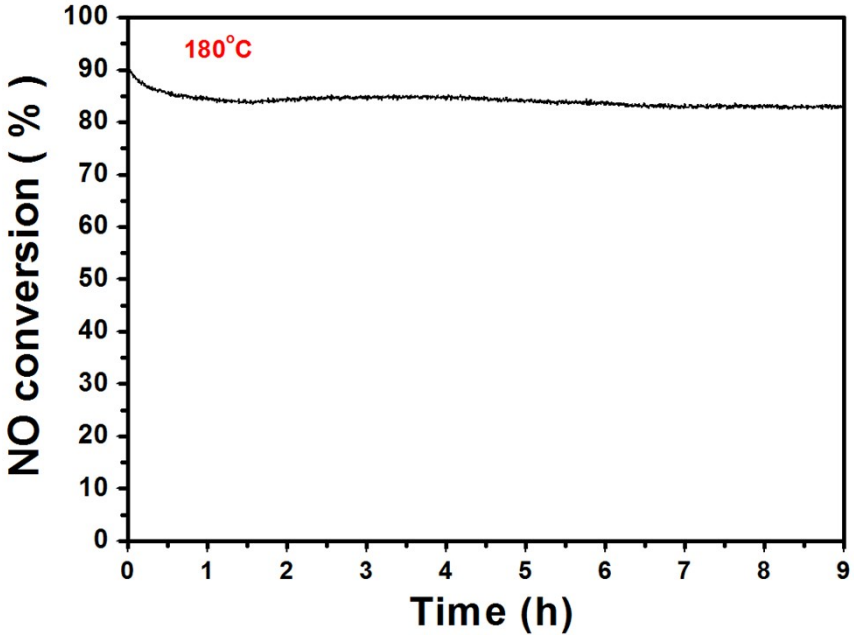

Fig. S7. NO conversion obtained by using CeO_2-Co_3O_4-2 hybrid nanocatalyst at 180 °C for 9 hours.

	CeO_2-ZIF-67-1	CeO_2-ZIF-67-2	CeO_2-ZIF-67-3
CeO_2/Co_3O_4*	8/35	14/32	17/22

*: the molar ratio of Ce/Co is calculated from the ICP results.

Table S1. The molar ratios of CeO_2/Co_3O_4 in final hybrids.