## **Supporting Information**

## Synthesis of CeO<sub>2</sub> assemblies through interaction with shortchain dicarboxylic acids under facile hydrothermal conditions

Xinsong Huang, 1.2 Liping Li, 3 Guangshe Li<sup>1,3</sup>\*

1. Key Laboratory of Design and Assembly of Functional Nanostructures, Fujian Institute of Research on the Structure of Matter, Chinese Academy of Sciences, Fuzhou 350002, P.R. China

2. University of Chinese Academy of Sciences, Beijing 100049, P.R. China

3. State Key Laboratory of Inorganic Synthesis & Preparative Chemistry, College of Chemistry, Jilin University, Changchun 130012, P.R. China

## AUTHOR INFORMATION

## **Corresponding Author**

\* E-mail: guangshe@jlu.edu.cn



Fig. S1 (a) Morphological characterization of Ce-PA-p and Ce-EA-p samples: (a) and (b), SEM & TEM images of Ce-PA-p, (c) and (d), SEM & TEM images of Ce-EA-p.



Fig. S2 Morphological characterization of Ce-EA sample: (a) SEM, (b) TEM and (c) HRTEM images. The inter-planar spacing along the facets is 0.32 nm, corresponding to the (111) planes of CeO<sub>2</sub>.



Fig. S3 DRIFTS spectra for Ce-EA-p and Ce-PA-p at the band range from 3000 cm<sup>-1</sup> to 2700 cm<sup>-1</sup>.



Fig. S4  $N_2$  adsorption–desorption isotherms (a) and the corresponding pore size distribution curves (b) of Ce-PA and Ce-EA.



Fig. S5 SEM images of Ce-EA-xh samples, x = 1, 1.5, 3, or 6, which represents the times in hour at the fixed temperature of 180 °C.



Fig. S6 SEM images of Ce-PA-xh samples, x = 1, 1.5, 3, or 6, which represents the times in hour at the fixed temperature of 180 °C.