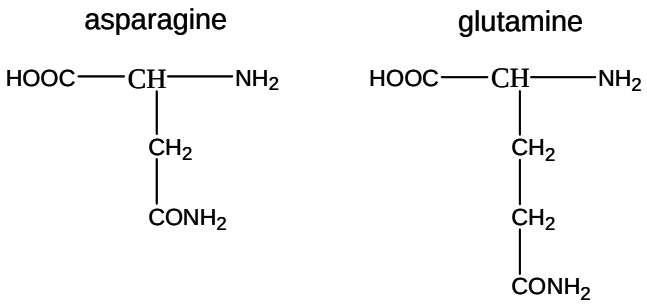
Electronic Supplementary Information for Dalton Transactions

Supporting information

Porous lanthanide oxides *via* a precursor method: Morphology control through competitive interaction of lanthanide cations with oxalate anions and amino acids

*Zhu-Rui Shen, Jin-Gui Wang, Ping-Chuan Sun, Da-Tong Ding, and Tie-Hong Chen**

Institute of New Catalytic Materials Science, Key Laboratory of Energy-Material Chemistry (Tianjin) and Engineering Research Center of Energy Storage & Conversion (MOE), College of Chemistry, Nankai University, Tianjin 300071, PR China



Scheme S1. The diagrams of asparagine and glutamine.

Figure S1. Optical photos of the cerium organic foam monolith.

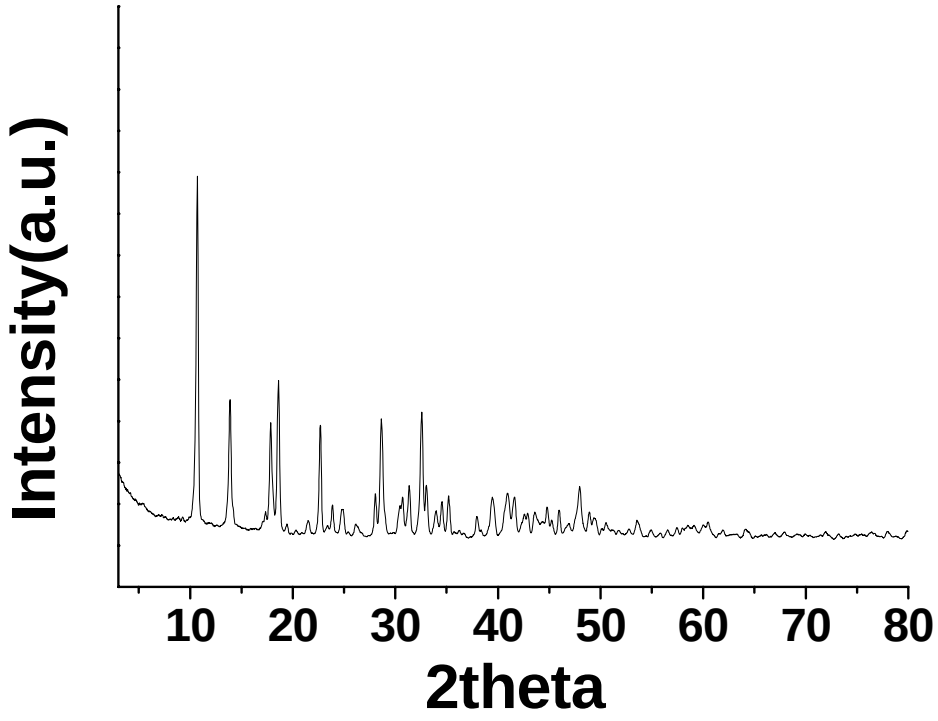


Figure S2. XRD pattern of Ce-based products obtained at reactant molar ratio (asparagine / Ce^{3+}/oxalate)= 6:2:3 after reaction at 160 °C for 48 h.

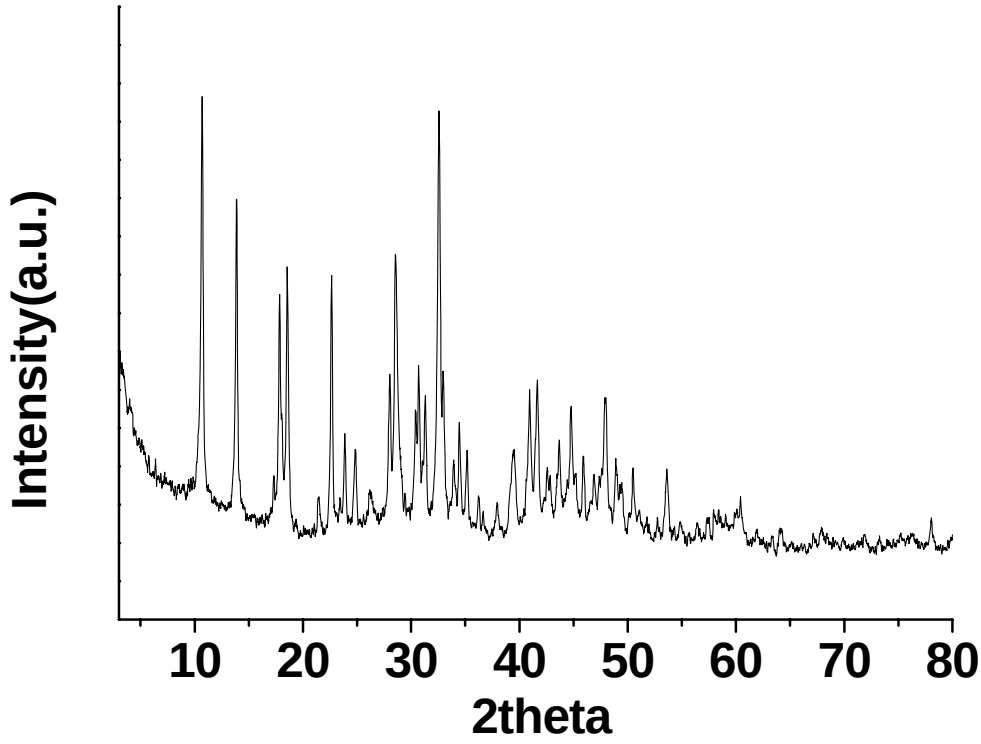


Figure S3. XRD pattern of cerium based precursor with the morphology of bread-like particles.

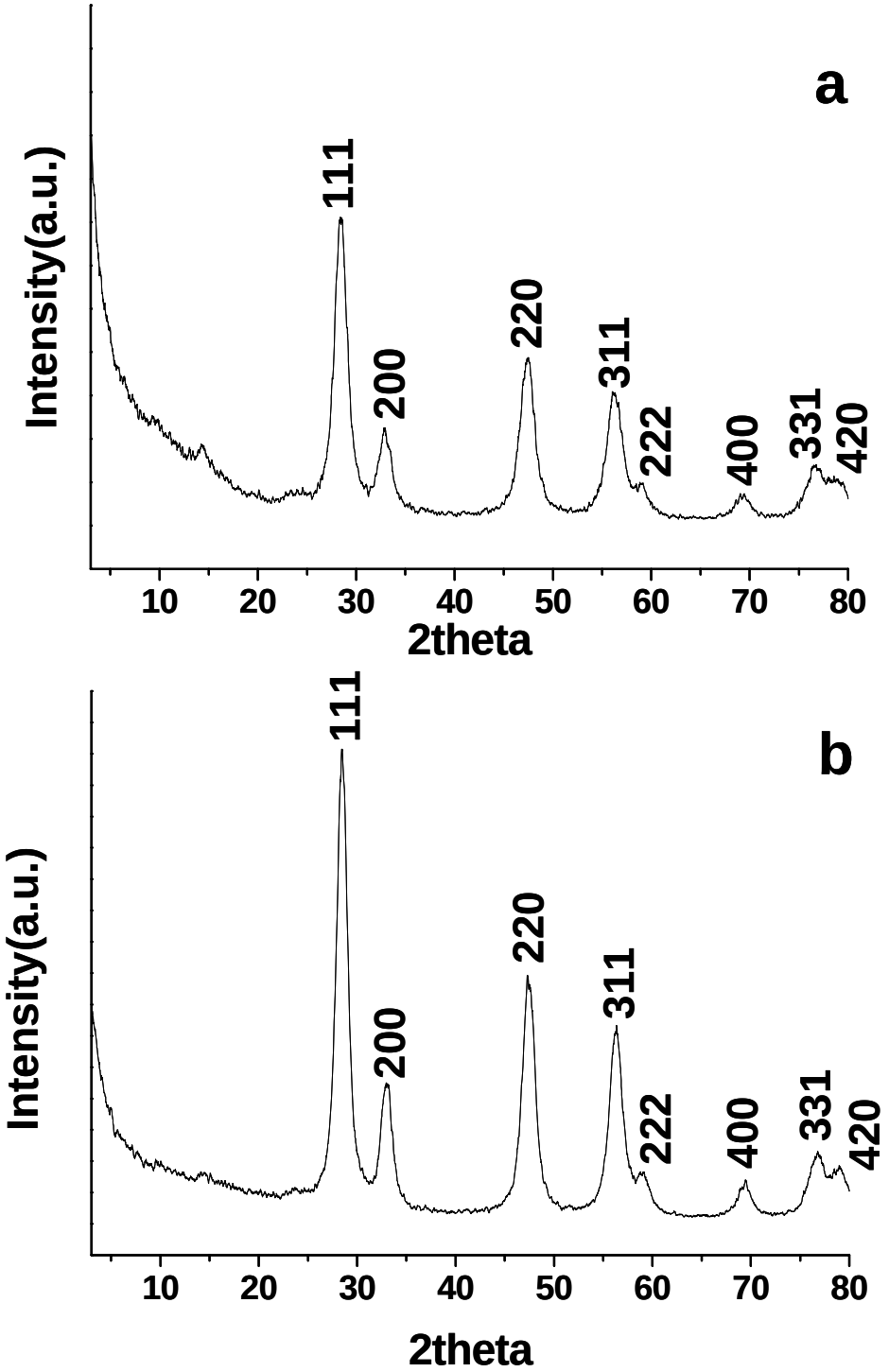


Figure S4. XRD patterns of (a) ceria nanofibers , (b) ceria 3D-macroporous foam.

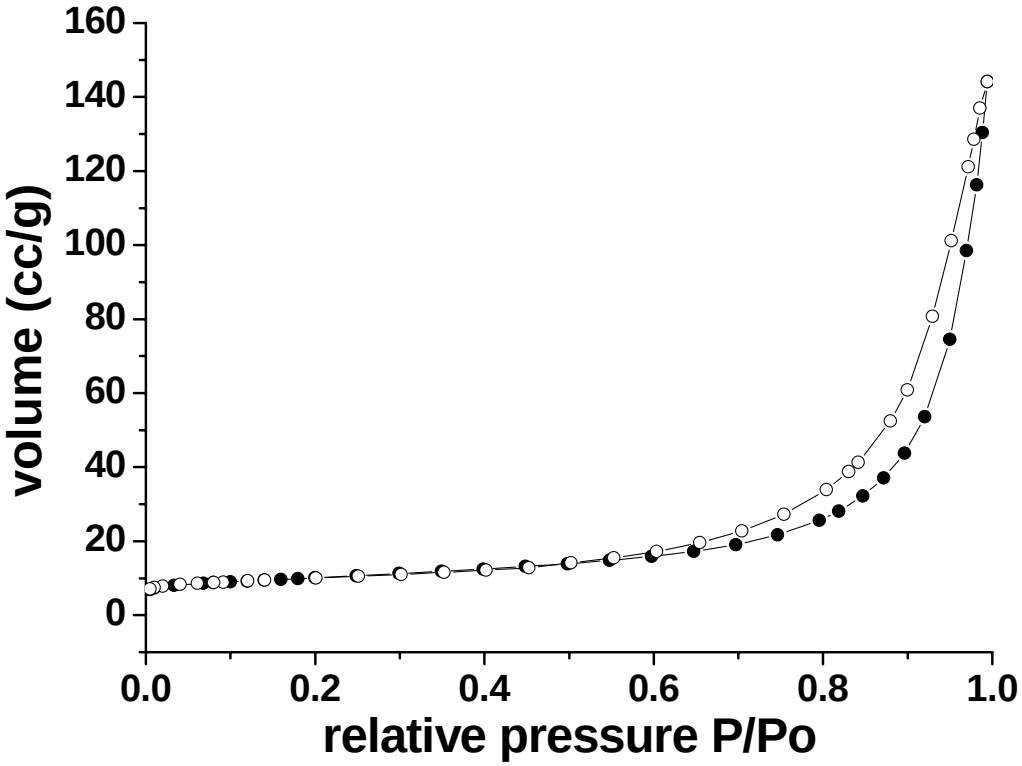


Figure S5. Nitrogen adsorption-desorption isotherm of bread-like ceria particles assembled by nanoflakes.

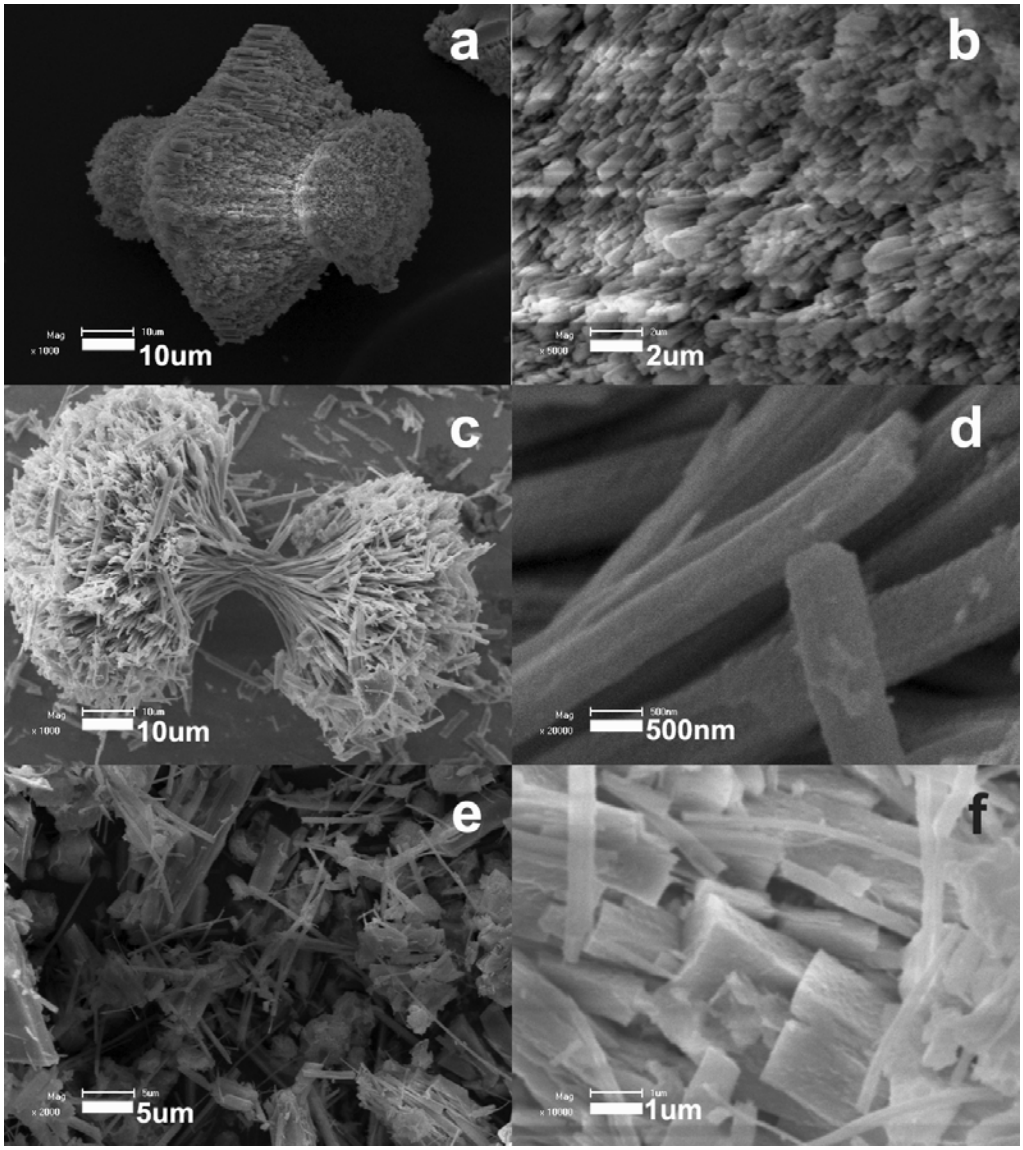


Figure S6. SEM images of lanthanide oxides fibers: (a, b) La_2O_3, (c, d) Pr_6O_{11} (e, f) Nd_2O_3.

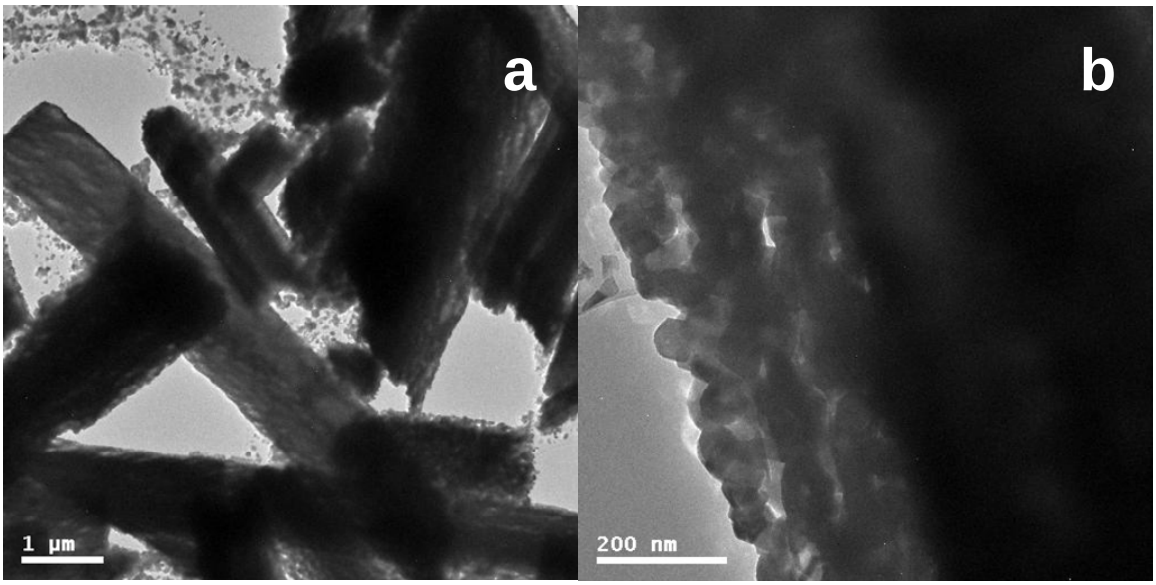


Figure S7. Typical TEM images of lanthanide oxides fibers, here we chose Pr_6O_{11} as an example. HRTEM image (b) displayed nanopores generated by aggregation of Pr_6O_{11} nanocrystals.