Electronic Supplementary Material (ESI) for Catalysis Science & Technology.

Insights to the CO_2 deoxygenation to CO over oxygen vacancies of CeO_2

Tz-Jie Ju, Chi-Han Wang, Shawn D. Lin *

Supporting Information

1. XRD patterns

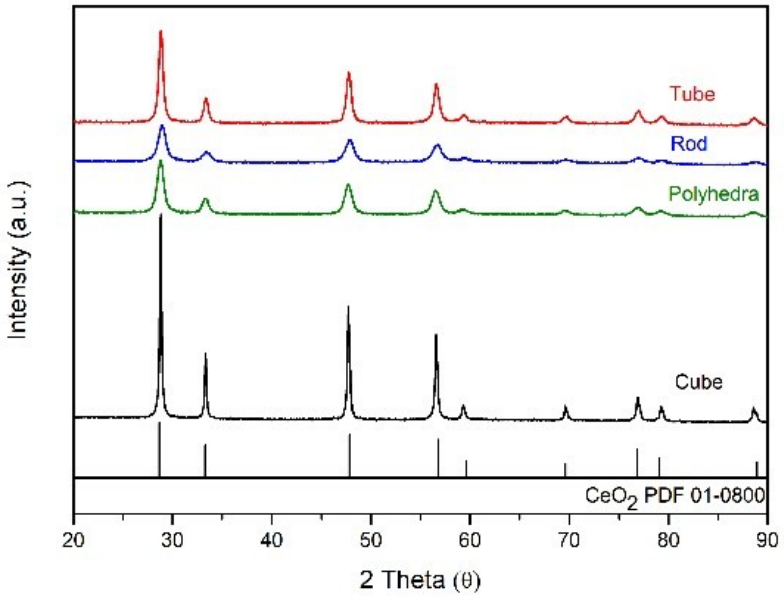

Fig. S1 X- Ray diffraction patterns of as prepared CeO_2 samples.

2. SEM images

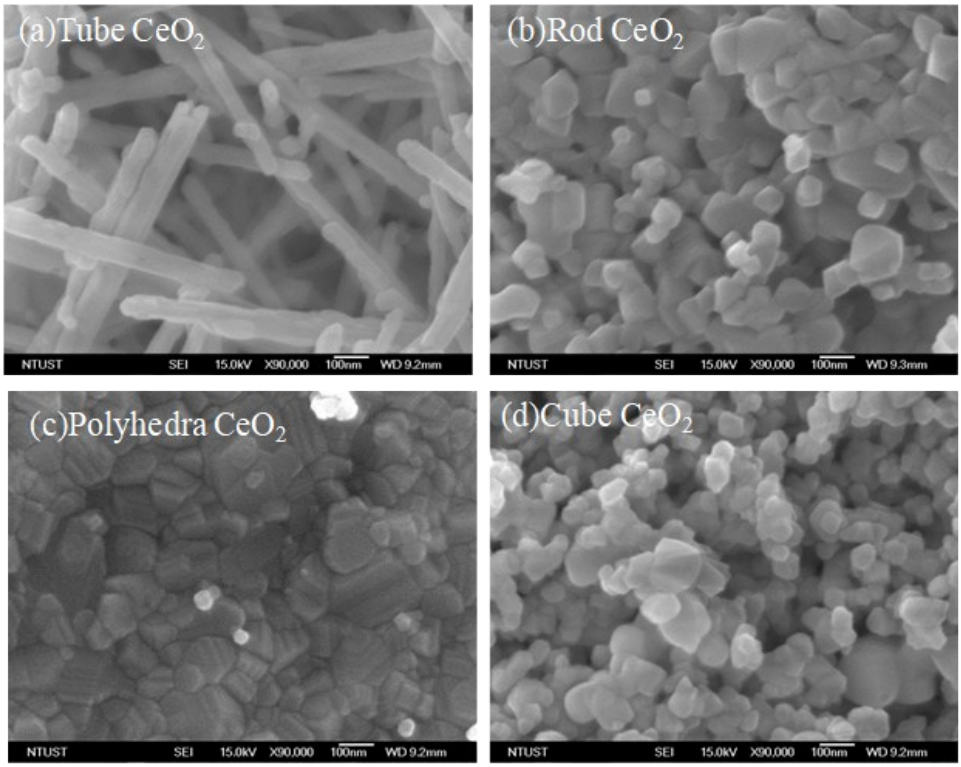

Fig. S2 SEM images of CeO_2 samples after TPR-CO_2-TPR-CO_2 test sequence.

3. XANES data analysis

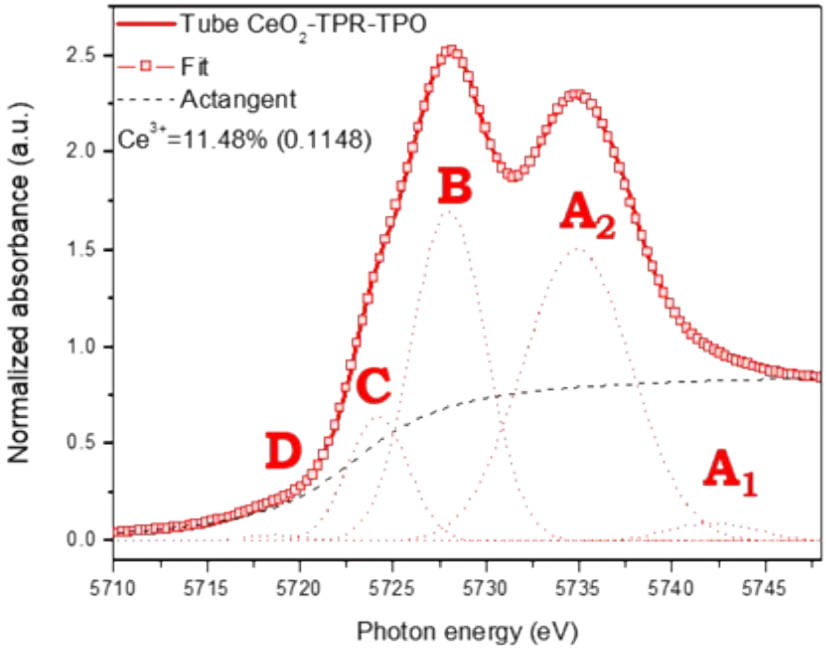

Fig. S3 Ce L3-edge XANES Spectra of Tube CeO_2 sample: collected data and

analysis (see text for details)

4. HRTEM images

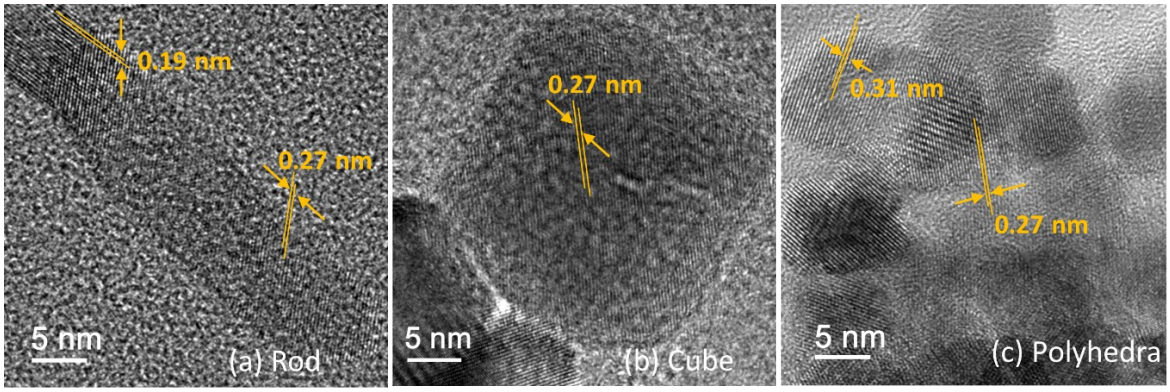

Fig. S4 HRTEM images of as-prepared CeO_2 samples: (a) Rod, (b) Cube, and (c) Polyhedra. The observed d-spacing of crystal planes includes 0.19, 0.27 and 0.31 nm, which can be attributed to (022), (001), and (111) of CeO_2.

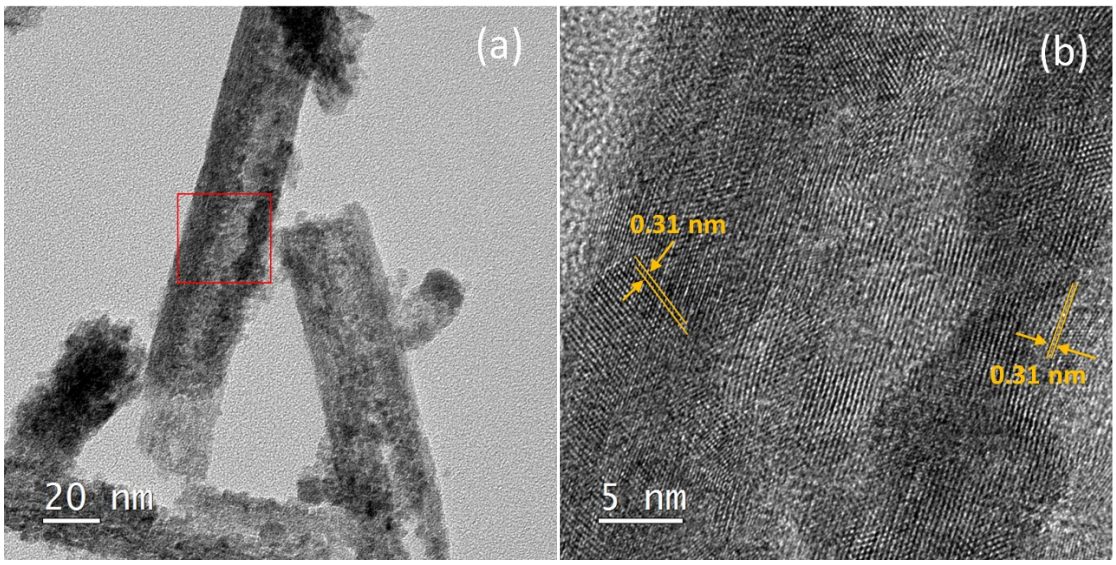

Fig. S5 HRTEM images of as-prepared Tube CeO_2 sample, where (b) is the enlarged image of the rectangle area of (a).

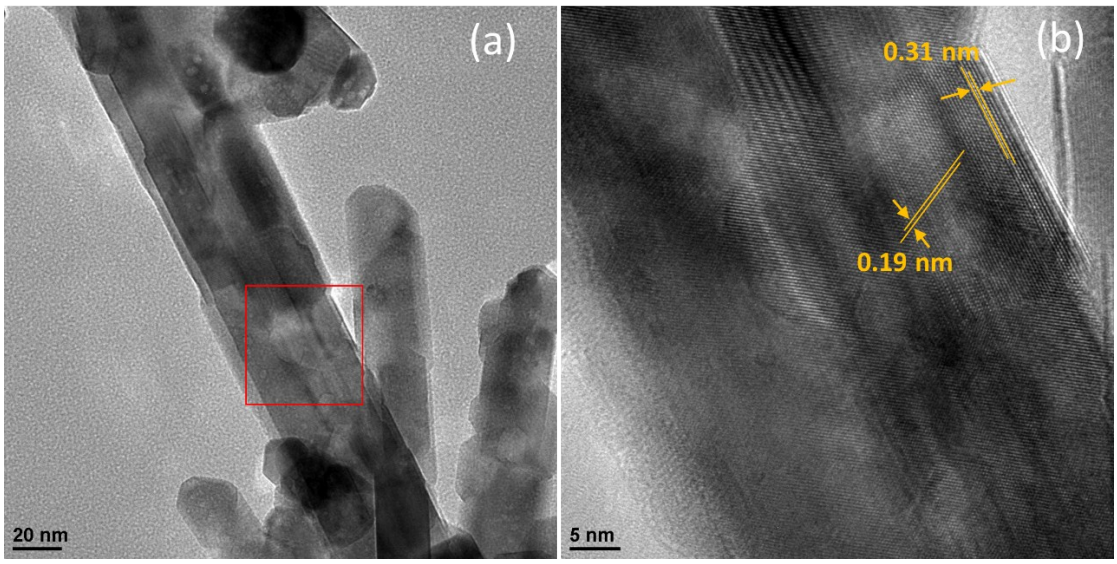

Fig. S6 HRTEM images of Tube CeO_2 sample after TPR, where (b) is the enlarged image of the rectangle area of (a).

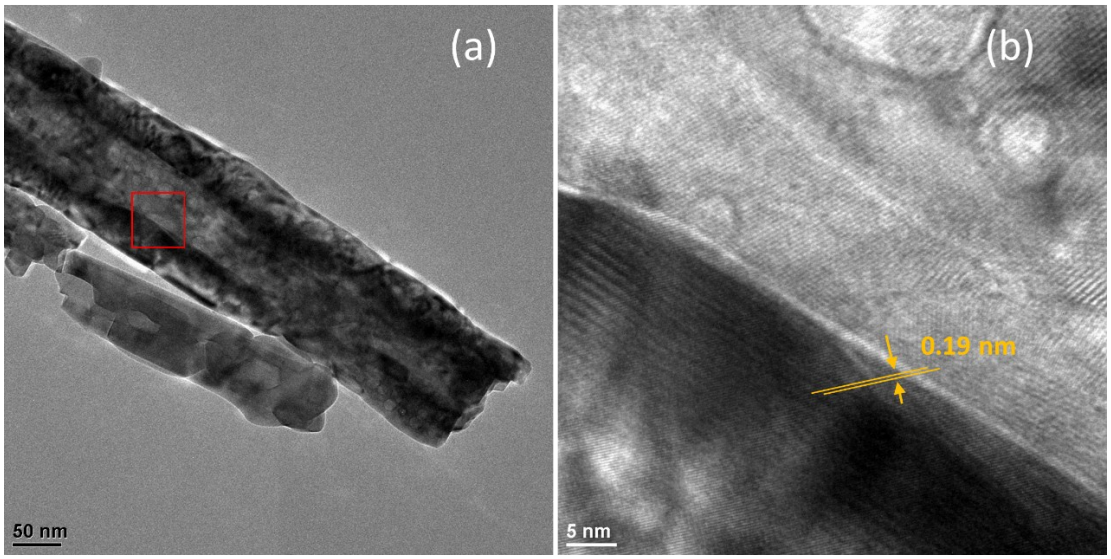

Fig. S7 HRTEM images of Tube CeO_2 sample after TPR-CO_2-TPR-CO_2 test, where (b) is the enlarged image of the rectangle area of (a).