

Electronic Supplementary Information (ESI)

A facile synthesis for hierarchical porous CeO₂ nanobundles and their superior catalytic performance for CO oxidation

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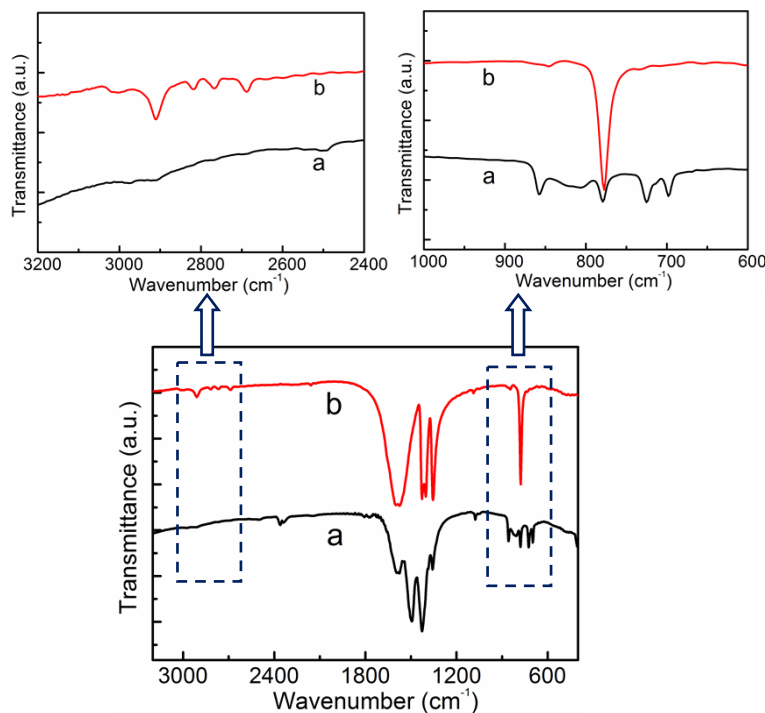


Fig.S1 FT-IR spectra of CeO₂ precursors. (a) Nanobundles, (b) Cerium formate.

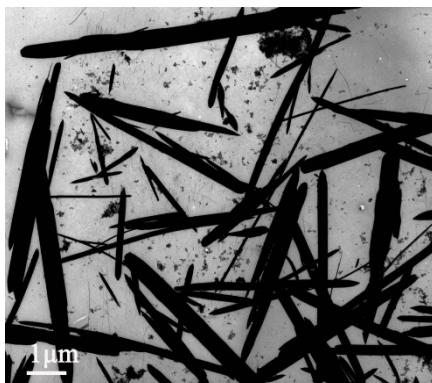


Fig.S2 TEM image of CeO₂ precursor samples in a formaldehyde-assisted hydrothermal system without carbonate.

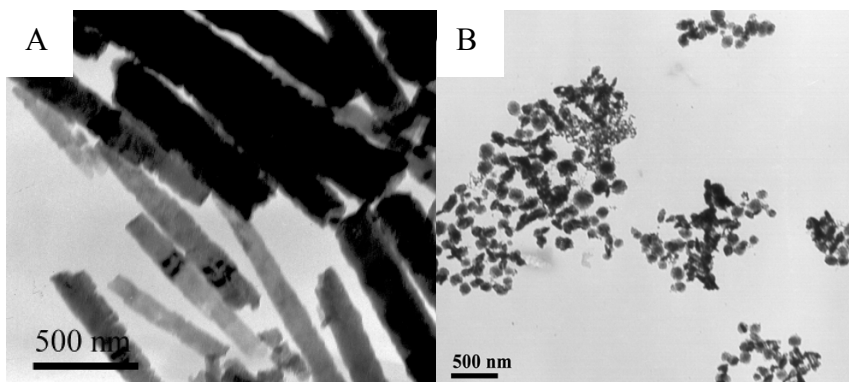


Fig.S3 TEM images of CeO₂ precursor samples prepared by controlling different cation type in a formaldehyde-assisted hydrothermal system with carbonate. (A) Sodium ions, (B) Potassium ions.

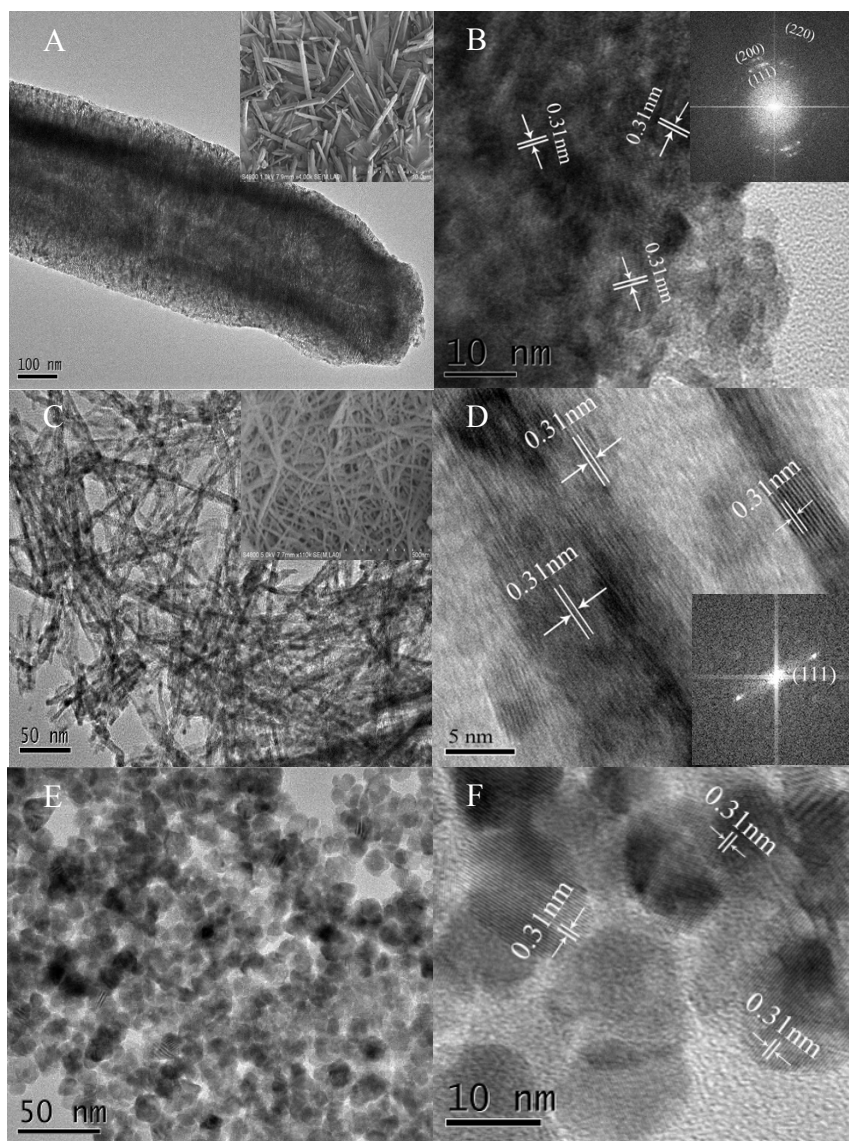


Fig.S4 TEM images and high-resolution TEM images of CeO₂ nanostructure materials. (A,B) Nanorods, (C,D) Nanowires, (E,F) Nanoparticles.

Table S1 Summary of d-spacing, interatomic distance a, BET surface area, pore volume of CeO₂ materials and CO conversion rate and T₅₀ for CO oxidation

Morphology	d (nm)	a (nm)	D (nm) ^a	BET (m ² g ⁻¹)	Pore volume (cm ³ g ⁻¹) ^b	CO conversion rate at 240°C (μmol m ⁻² s ⁻¹)	T ₅₀ (°C) ^c
Nanobundles	3.125	5.413	9.2	130.4	0.096412	0.162	213
Nanorods	3.123	5.410	9.9	98.3	0.135062	0.125	223
Nanoparticles	3.124	5.411	10.9	77.4	0.127599	0.064	261
Nanowires	3.113	5.392	8.1	76.9	0.102127	0.023	272

^aThe mean grain size is calculated using Scherrer's equation. ^bThe pore volume, measured at P/P₀ = 0.975. ^cthe light-off temperature T₅₀, corresponding to 50% conversion of CO.

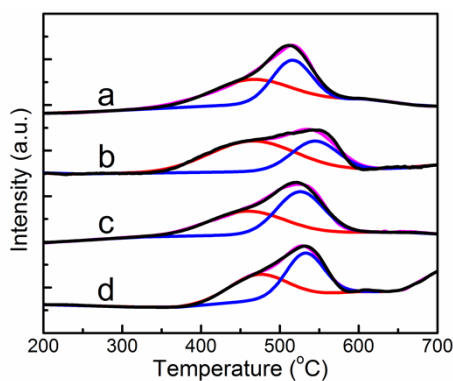


Fig.S5 H₂-TPR profiles of CeO₂ materials. (a) Nanobundles, (b) Nanorods, (c) Nanoparticles, (d) Nanowires.