Supporting Information for

Towards the Sub-15nm CeO$_2$ Nanowires with Increased Oxygen Defects and Ce$^{3+}$ Sites for Selective Oxidation of Aniline at Room-temperature with a Non-Noble Metal Catalyst


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Figure S1. (A-C) TEM images of sub-15 nm CeO₂ nanomaterials obtained for a hydrothermal method as a function of the CeO₂ growth time: (A) 1 h, (B) 3 h, and (C) 6 h.
Figure S2. Isotherms for sub-15 nm CeO₂ nanowires and commercial CeO₂ materials generated from the N₂-adsorption-desorption curves.
Figure S3. HRTEM (A-B) images for a single sub-15 nm CeO$_2$ nanowire showing the presence of several 1-2 nm mesoporous at the nanostructure surface.
Scheme S1. Main pathways for the formation of nitrosobenzene, azoxybenzene and azobenzene as products during the aniline catalytic oxidation using H$_2$O$_2$ as oxidant.
Figure S4. (A) Aniline conversion (%) and (B-C) selectivity for oxidation products as a function of number of catalytic cycles employing sub-15 nm CeO$_2$ nanowires (B) and commercial CeO$_2$ (C).

Reaction conditions: 100 $\mu$L of aniline, 150 $\mu$L of H$_2$O$_2$, 10 mg of CeO$_2$ catalyst, 3 mL of acetonitrile as the solvent, 12 h of reaction and, room-temperature.
**Figure S5.** (A) SEM and (B) TEM images of sub-15 nm CeO$_2$ nanowires after the 5$^{th}$ catalytic cycle.
Figure S6. (A) XRD and (B-C) deconvoluted O 1s spectra for sub-15 nm CeO$_2$ nanowires (B) and commercial CeO$_2$ (C) after the stability catalytic studies.
Figure S7. (A-B) SEM and (C) STEM-HAADF, and (D) HRTEM images of CeO$_2$ nanocubes obtained by a hydrothermal method at 140 °C.
Figure S8. (A) XRD, (B) TPR, and (C-D) deconvoluted Ce 3d (C) and O 1s (D) core level XPS spectra for CeO$_2$ nanocubes obtained by a hydrothermal method at 140 °C.