Electronic Supplementary Material (ESI) for Journal of Materials Chemistry A.

Electronic Supplementary Information (ESI)

(100) surface exposed CeO_2 Nanocube as Efficient Heterogeneous Catalyst in Tandem Oxidation of Benzyl Alcohol, *para*-Chlorobenzyl Alcohol and Toluene to Corresponding Aldehydes Selectively

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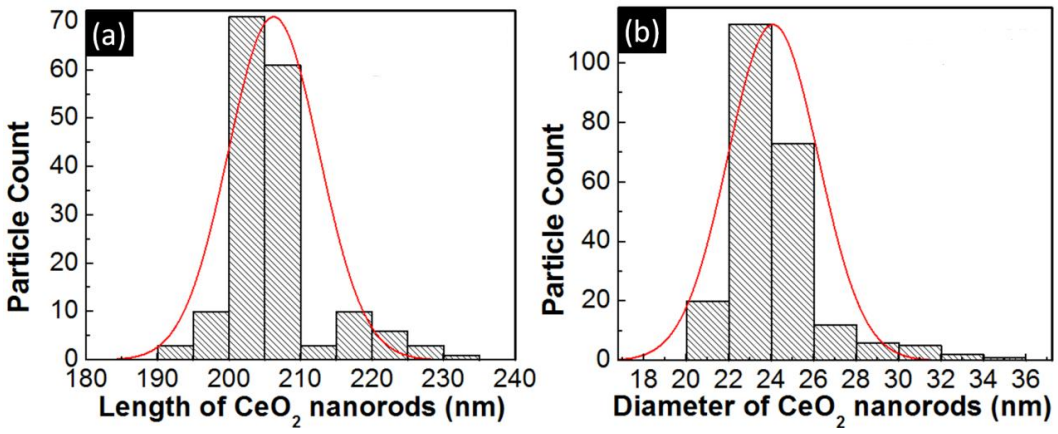

Figure S1. Particle size distribution histogram of as synthesized CeO_2 nanorods. (a) Length and (b) diameter distribution of nanorods

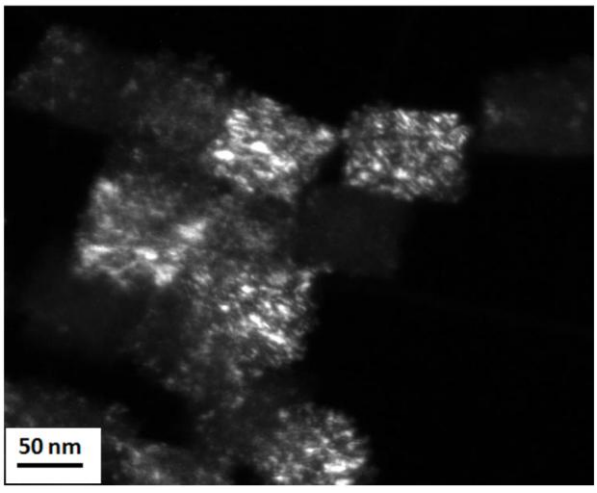

Figure S2. Dark field TEM image of ceria nanocube sample.

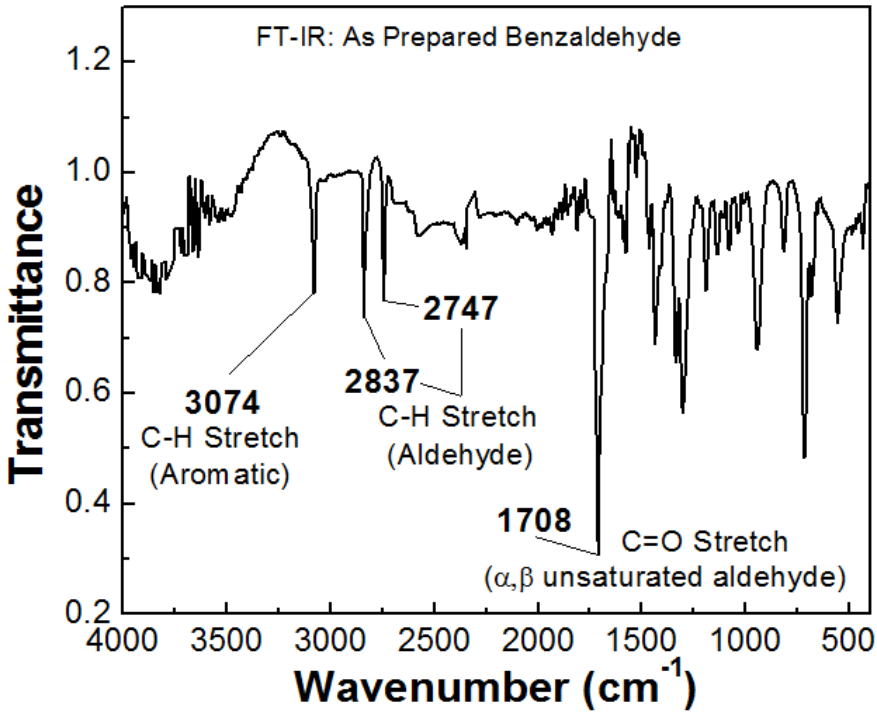

Figure S3. FT-IR spectrum of as prepared benzaldehyde in the reaction condition of 1 mmol benzyl alcohol, 10 mL water and 10 mg CNC in the presence of molecular oxygen at 35°C and 1 bar for 30 minutes.

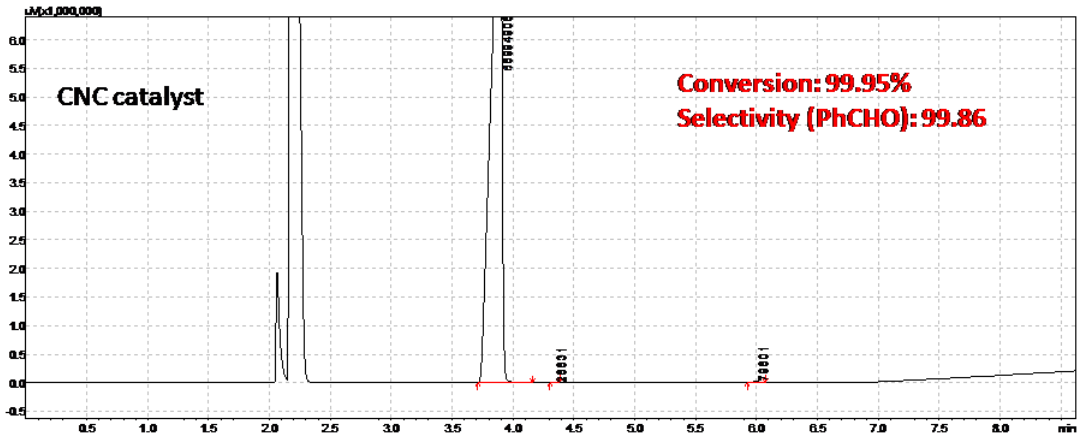

Figure S4. GC chromatograph of the reaction product obtained from benzyl alcohol oxidation with CNC catalyst at 35 °C for 30 minutes in the reaction condition of 1 mmol benzyl alcohol and 10 mL water in the presence of molecular oxygen at 35 °C.

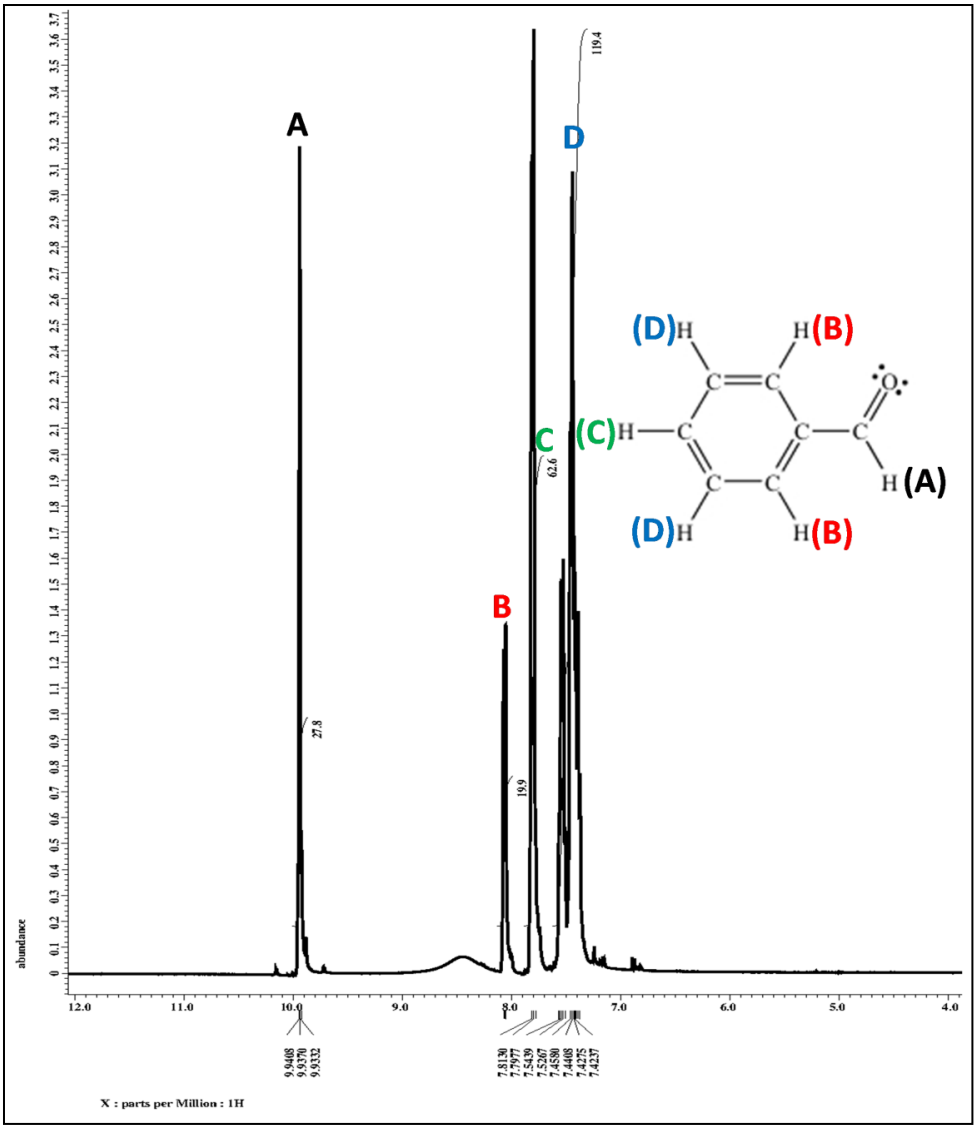

Figure S5. NMR spectrum of the reaction product obtained from benzyl alcohol oxidation with CNC catalyst at 35 ºC for 30 minutes in the reaction condition of 1 mmol benzyl alcohol and 10 mL water in the presence of molecular oxygen.

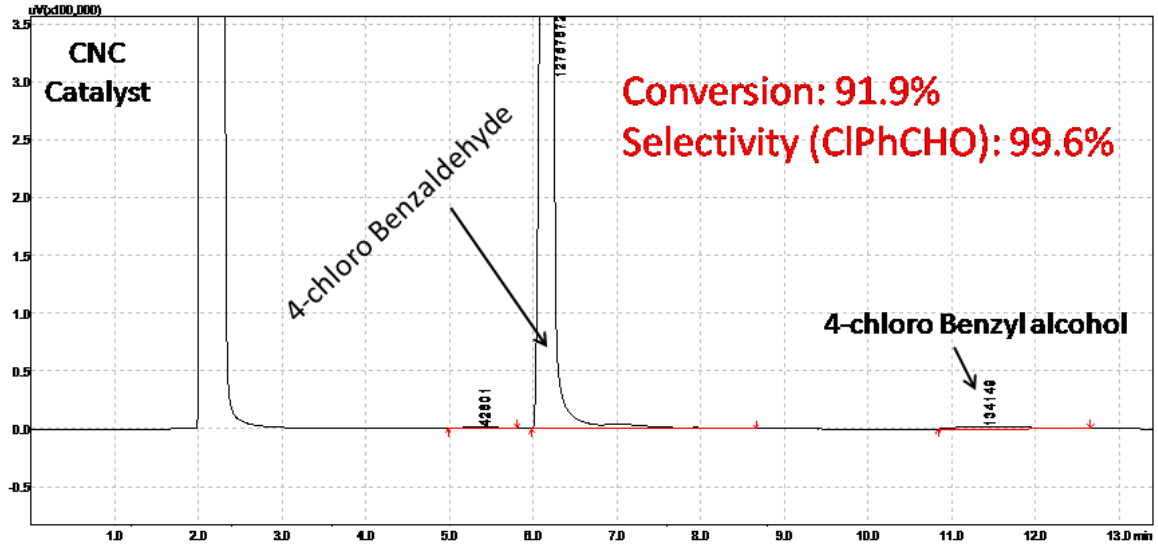

Figure S6. GC chromatograph of the reaction product obtained from *para*-chlorobenzyl alcohol oxidation with CNC catalyst at 35 ºC for 1 hour in an optimum reaction condition of 1 mmol PCBA and 10 mL chloroform in the presence of 0.05 mmol H_2O_2.

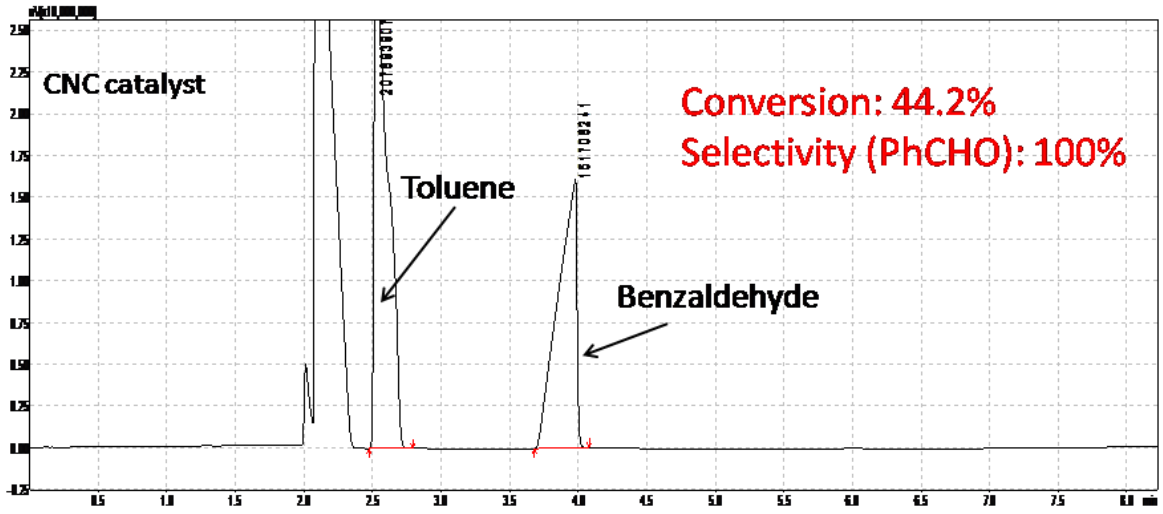

Figure S7. GC chromatograph of the reaction product obtained from toluene oxidation with CNC catalyst at 90 ºC for 12 hours in the reaction condition of 1 mmol toluene and 10 mL water in the presence of molecular oxygen.

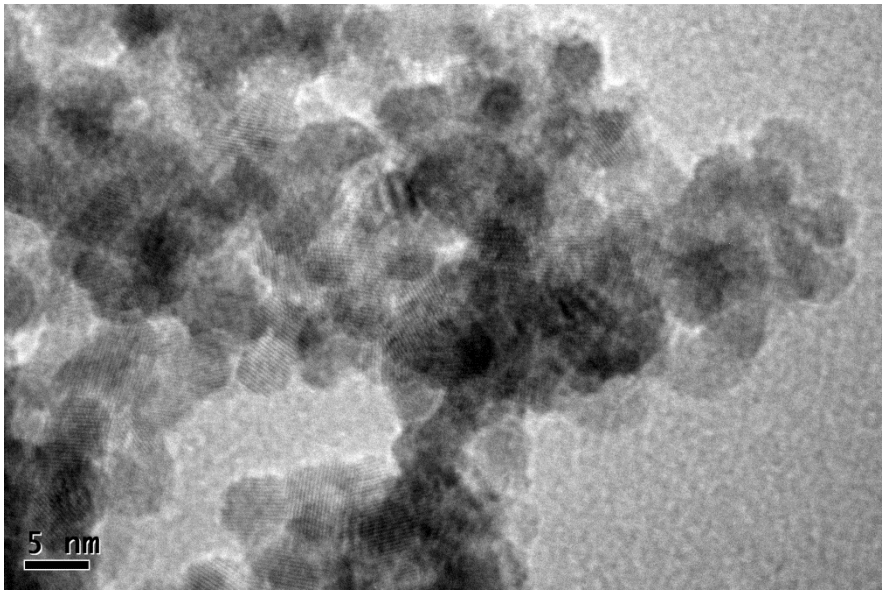

Figure S8. TEM image of as synthesized CeO_2 nanoparticles under the similar reaction condition as described in experimental section however without the use of oleic acid.