Interaction of O_2 with reduced ceria nanoparticles at 100–400 K: Fast oxidation of Ce^{3+} ions and dissolved H_2

Kristina Chakarova, Nikola Drenchev, Mihail Mihaylov and Konstantin Hadjiivanov

SUPPORTING INFORMATION

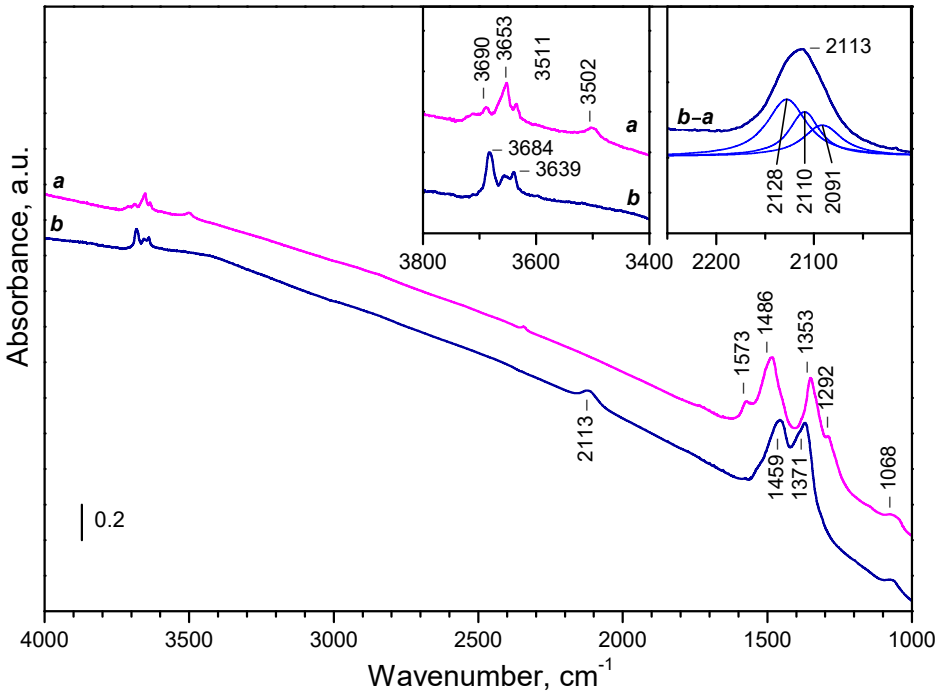

Figure S1. FTIR spectra of CeO_2-NR after activation (a) and reduction (b) at 773 K.

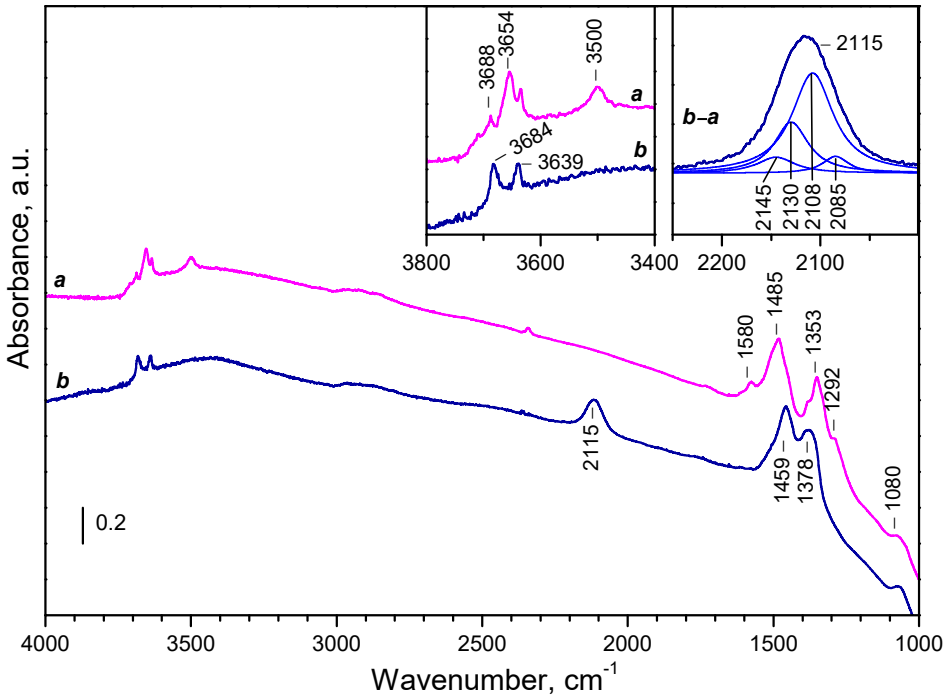

Figure S2. FTIR spectra of CeO_2-NP after activation (a) and reduction (b) at 773 K.

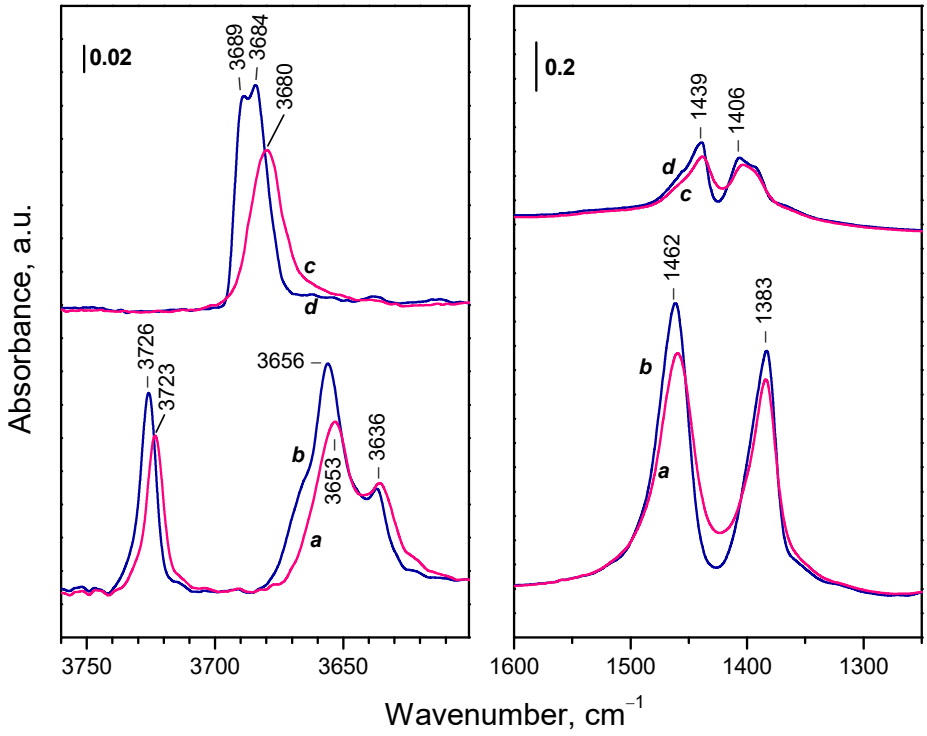

Figure S3. FTIR spectra of activated (a, b) and reduced CeO_2-NP (c, d). Spectra registered at ambient temperature (a, c) and at 100 K (b, d).

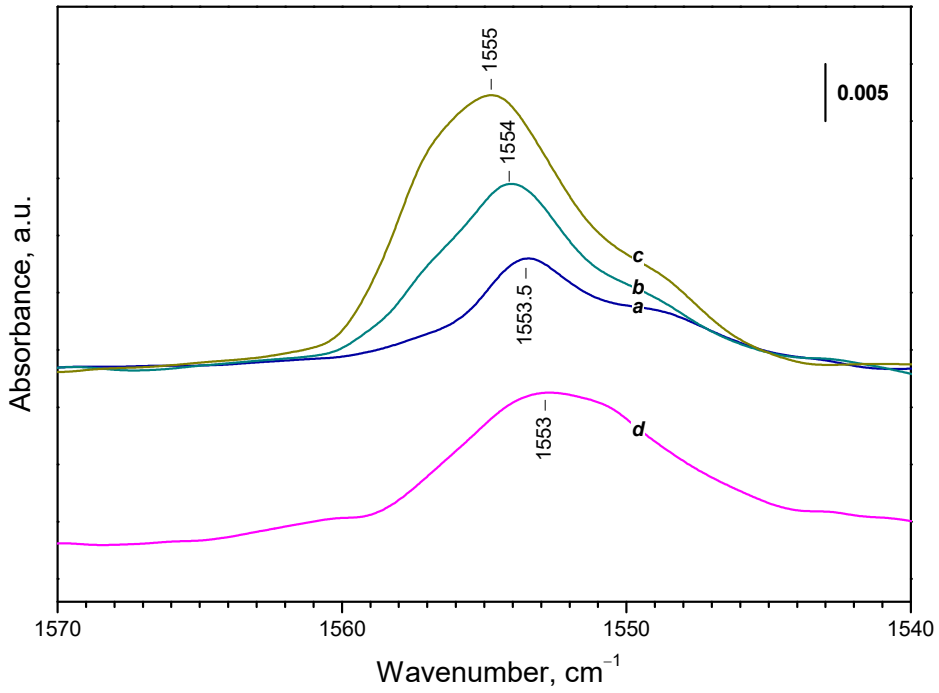

Figure S4. FTIR spectra of O_2 adsorbed at 100 K on CeO_2-NC evacuated at 573 K (a), 673 K (b) and 773 K (c) and on reduced CeO_2-NC evacuated at 773 K (d).

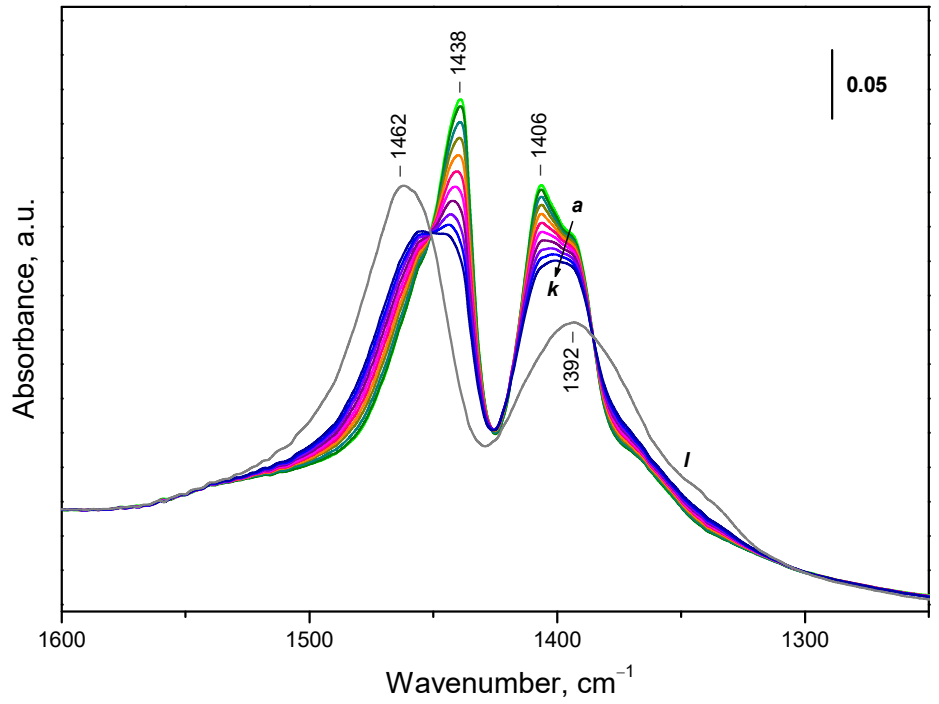

Figure S5. FTIR spectra of reduced CeO_2-NP sample (carbonate region, 100 K) (a), after successive introduction of small doses of $^{18}O_2$ (b-k) and in the presence of 2 mbar $^{18}O_2$ (l).

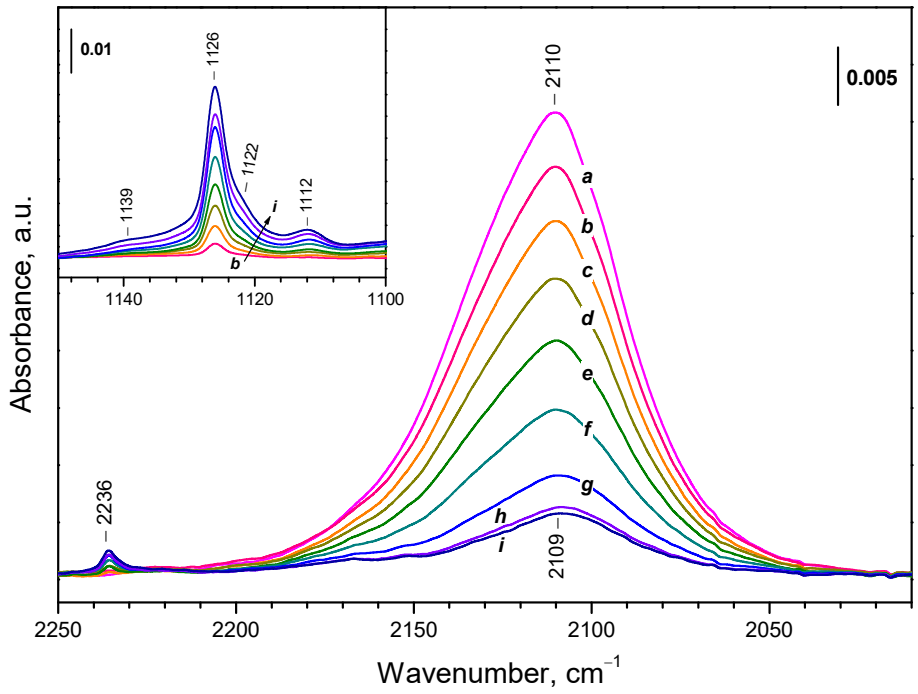

Figure S6. FTIR spectra of reduced CeO_2-NC (a), changes in the spectra after successive addition of small doses of oxygen (b-h) and in presence of 8 mbar O_2. The spectra are background corrected.

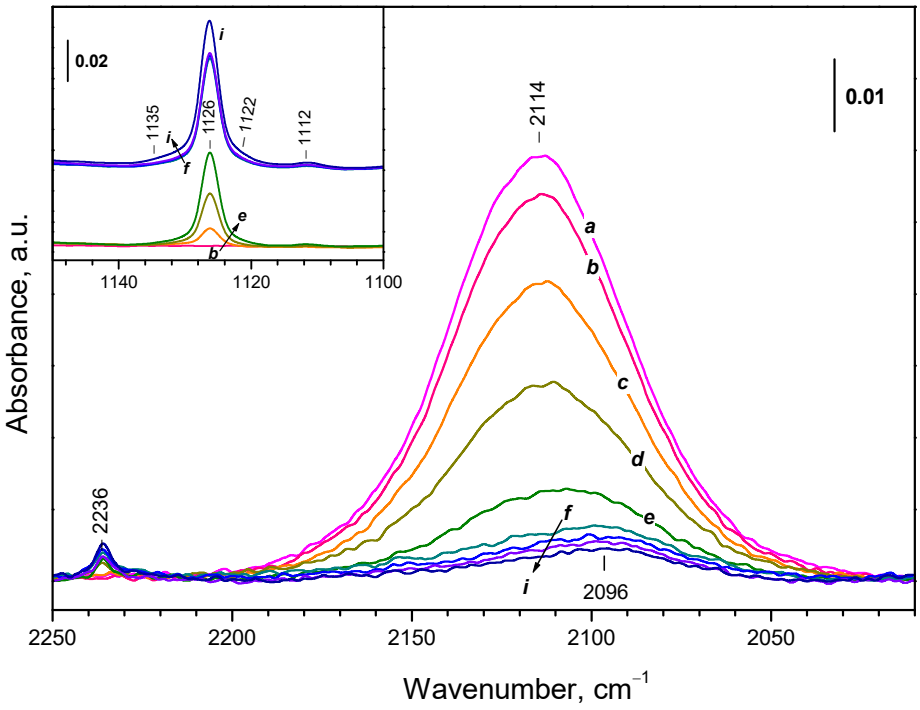

Figure S7. FTIR spectra of reduced CeO_2-NR (a), changes in the spectra after successive addition of small doses of oxygen (b-h) and in presence of 8 mbar O_2. The spectra in the inset are background corrected.