

Electronic supplementary information

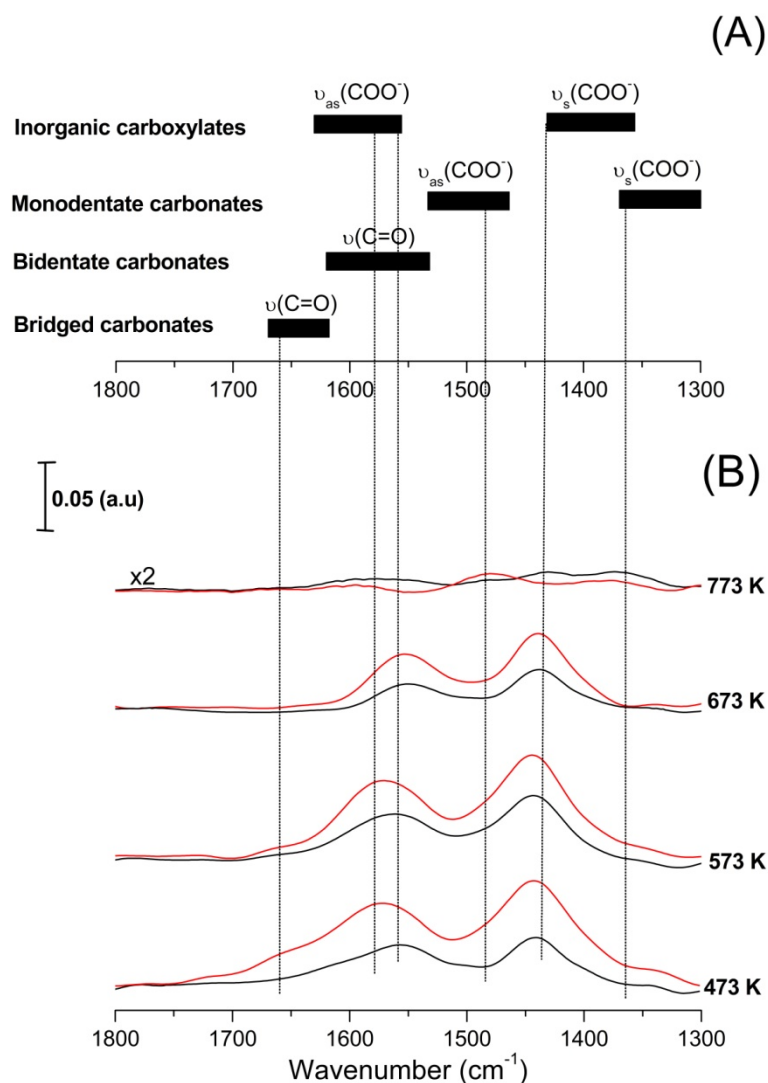


Figure S1. (A) Schematic representation of the FTIR bands position of monodentate, bidentate and bridged carbonates as well as carboxylates on the surface of metal oxides after Davidov^{S1}. (B) *In-situ* FTIR spectra of the adsorbed species after CO reduction (black color) and CO_2 regeneration (red color). In each case a fresh 20 mg catalyst sample in the form of a disc (13 mm in diameter) was pretreated at 773 K in N_2 flow for 30 min. After that the sample was reduced with CO/He mixture (5 vol.% of CO) at 773 K for 30 min. Next, the reduced sample was cooled down to set temperature (473, 573, 673 and 773 K) in the reducing CO/He stream and the spectra were recorded after temperature stabilization. Spectra of the samples regenerated with CO_2 were recorded after 120 min of CO_2 treatment at each temperature. The FTIR spectra obtained in He stream at set temperatures were used as the background to which the spectra measured after CO and CO_2 treatment were normalized. In the experiments, Nicolet iS10 spectrophotometer (50 scans, resolution = 4 cm^{-1}) equipped with Harrick high temperature chamber was applied.

References

[S1] A.A. Davidov, Infrared spectroscopy of adsorbed species on the surface of transition metal oxides, ed. C.H. Roschester, John Wiley & Sons, 1984.