

Supporting information.

SpaciMS: Spatial and temporal *operando* resolution of reactions within catalytic monoliths.

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Blank monolith experiment:

An Isothermal experiment with variable CO/CO₂/O₂ ratios was performed over a blank cordierite monolith. In this experiment the blank cordierite was exposed to gas mixtures of CO, O₂ and CO₂ with concentrations mimicking the CO/CO₂ ratio corresponding to CO conversion from 0 to 50%.

The aim of this experiment was investigate the possibility of the building up of concentration oscillations due to flow issues and composition of the gas feed within the channels of the monolith. In this experiment, 5%O₂+ 1%CO was admitted for the first 10 minutes then feed was altered to 5%O₂+ 0.75%CO + 0.25%CO₂for an additional 10 minutes and finally changed 5%O₂ + 0.5%CO + 0.5%CO₂ for the final 10 minutes.

This experiment was performed at a furnace temperature of 150 °C and argon was used as balance gas to maintain a constant flow of 200 cm³.min⁻¹ (similar to the flow used for the Pt/Rh/Alumina catalyst experiments).

Figure S1 reports the results obtained. No oscillation was observed at all the feed concentration explored.

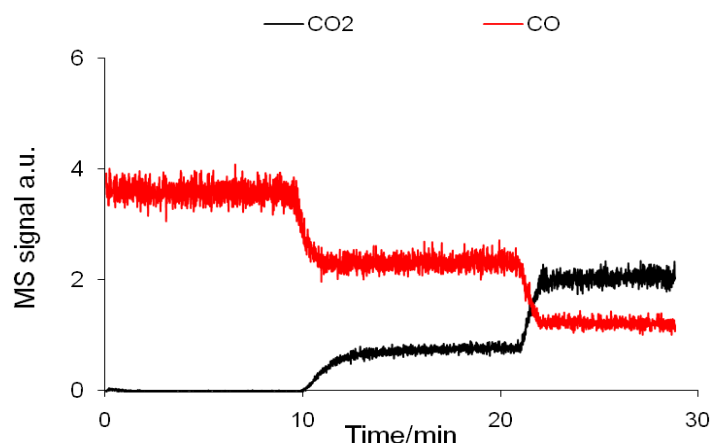


Figure S1: Mass spectrometer signals for CO (-) and CO₂ (-) obtained over a blank cordierite monolith at 150 °C with an inlet feed of 5%O₂+ 1%CO (0-10 min); 5%O₂+ 0.75%CO + 0.25%CO₂ (10-20 min) and 5%O₂ + 0.5%CO + 0.5%CO₂ (20-30 min)