

## Effect of calcination temperature on the structural characteristics and catalytic activity for propene combustion of sol–gel derived lanthanum chromite perovskite

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Description

The perovskite type lanthanum chromite  $\text{LaCrO}_3$  has been synthesized by a sol–gel method. Its bulk structural and surface characteristics have been examined by X-ray diffraction (XRD), SEM, SBET measurements, Fourier Transform Infrared (FTIR) and X-ray photoelectron spectroscopy (XPS) as a function of the calcination treatment performed between 200 and 1000 °C over the precursor powder and in correlation with information achieved from TG-DTA thermal analysis. The characterization results are employed to rationalize the catalytic behaviour of the system towards propene complete oxidation. It is shown that the catalytic activity becomes optimized when a single perovskite  $\text{LaCrO}_3$  phase is achieved upon calcination at  $T > \text{ca. } 700 \text{ }^\circ\text{C}$ . In contrast, coexistence of perovskite  $\text{LaCrO}_3$  and monazite  $\text{LaCrO}_4$  at lower calcination temperatures appears detrimental to the combustion activity of the system. # 2007 ...