



Supplementary Materials: In Situ Raman Characterization of SOFC Materials in Operational Conditions: A Doped Ceria Study

Cecilia Solís ^{1,2}, María Balaguer ¹ and José M. Serra ^{1,*}

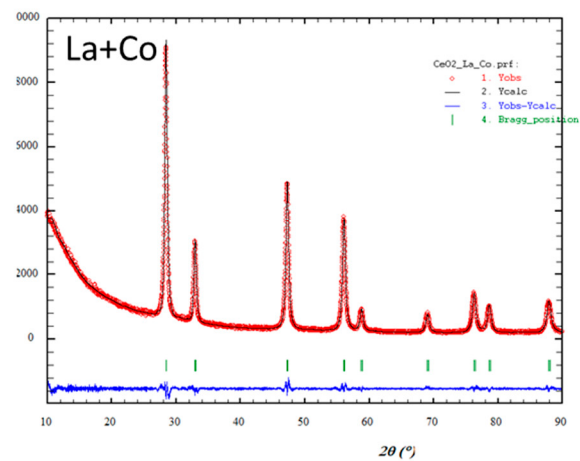
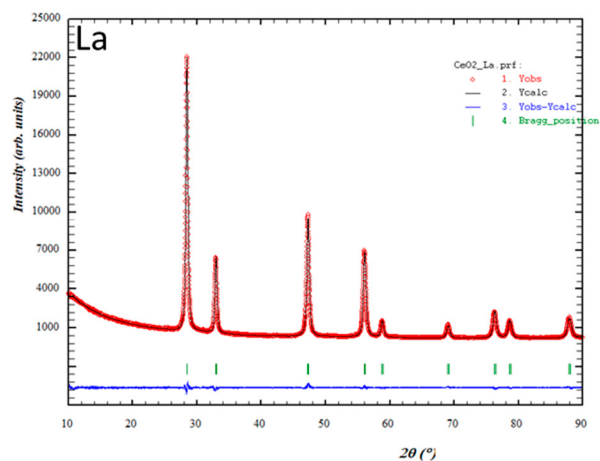
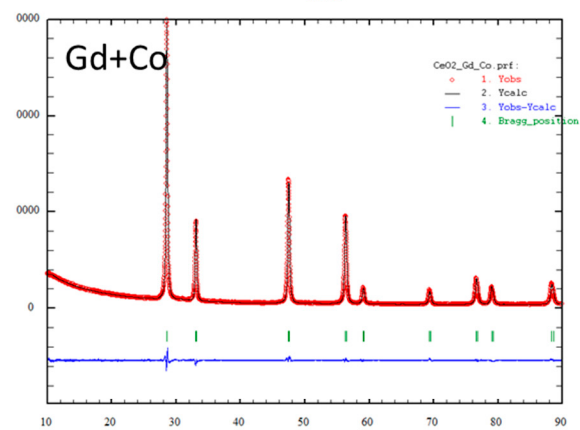
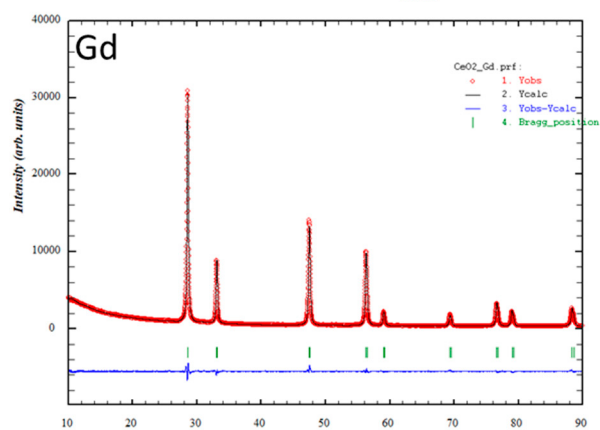
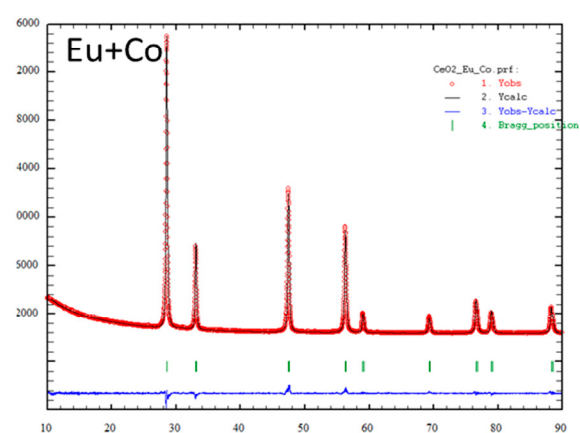
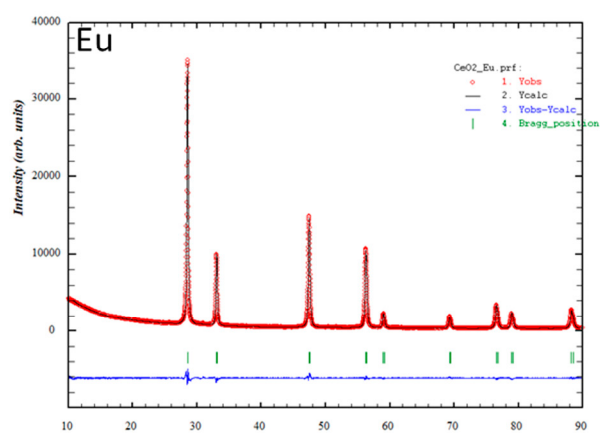
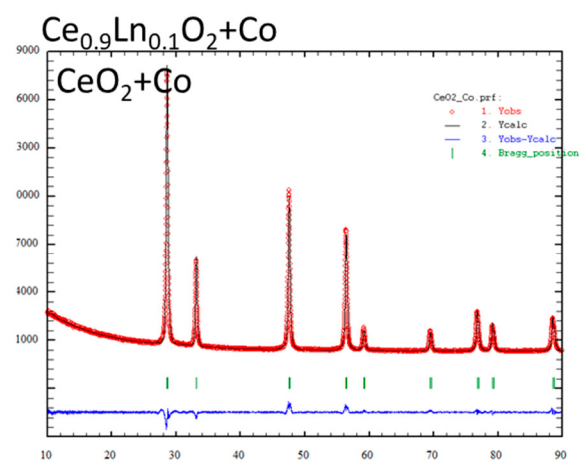
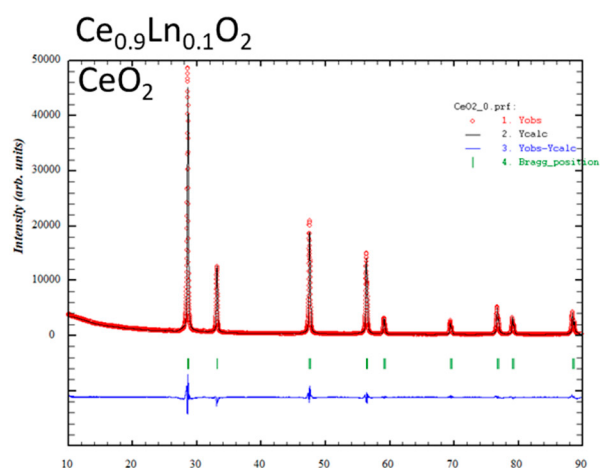
¹ Instituto de Tecnología Química (Universitat Politècnica de València–Consejo Superior de Investigaciones Científicas), Avenida de los Naranjos s/n. 46022 Valencia, Spain, Cecilia.Solis@frm2.tum.de (C.S.); mabara@itq.upv.es (M.B.)

² Heinz Maier-Leibnitz Zentrum (MLZ), TU München, Lichtenbergstr. 1, 85748, Garching, Germany,

* Correspondence: jmserra@itq.upv.es

Rietveld refinement patterns of all the $\text{Ce}_{0.9}\text{Ln}_{0.1}\text{O}_{2-y}$ samples as prepared (left column) and with Co addition (right column) and from top to the bottom CeO_2 and Ln= Eu, Gd, La, Pr, Tb, Yb.

Patterns show XRD patterns from 10 to 90°, observed data (red circles), calculated data (black line) and difference plot (blue line) together with the position of the Bragg reflections (green lines).



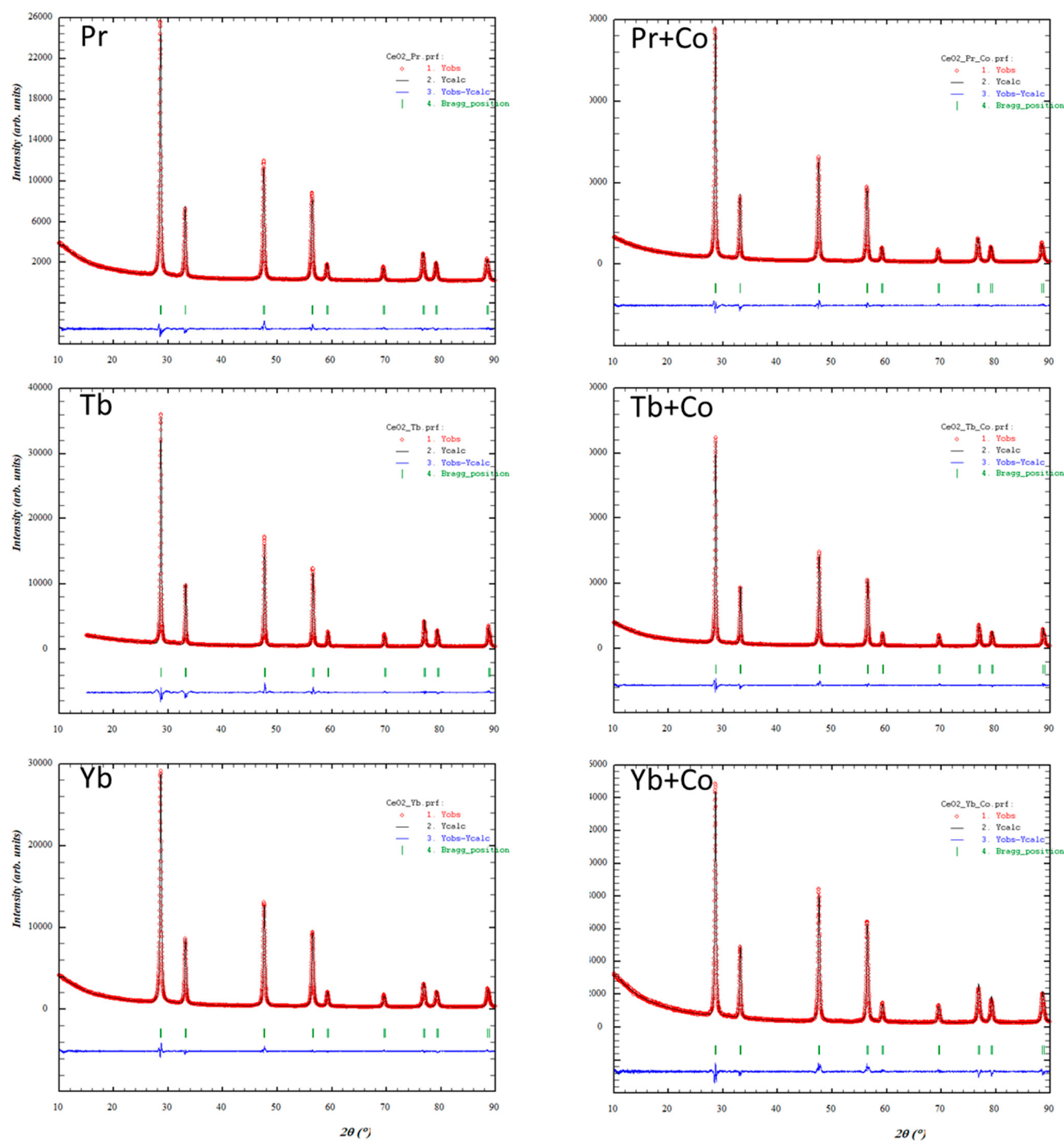


Figure S1. Rietveld refinement patterns of all the $\text{CeO}_2\text{Ln}_{0.1}\text{O}_{2-\delta}$ and $\text{CeO}_2\text{Ln}_{0.1}\text{O}_{2-\delta}+\text{Co}$, with $\text{Ln} = \text{Eu, Gd, La, Pr, Tb, Yb}$.

Scanning Electron Microscopy image of a CGO powder calcined at 600 °C in air, using a JEOL JSM6300 scanning electron microscope.

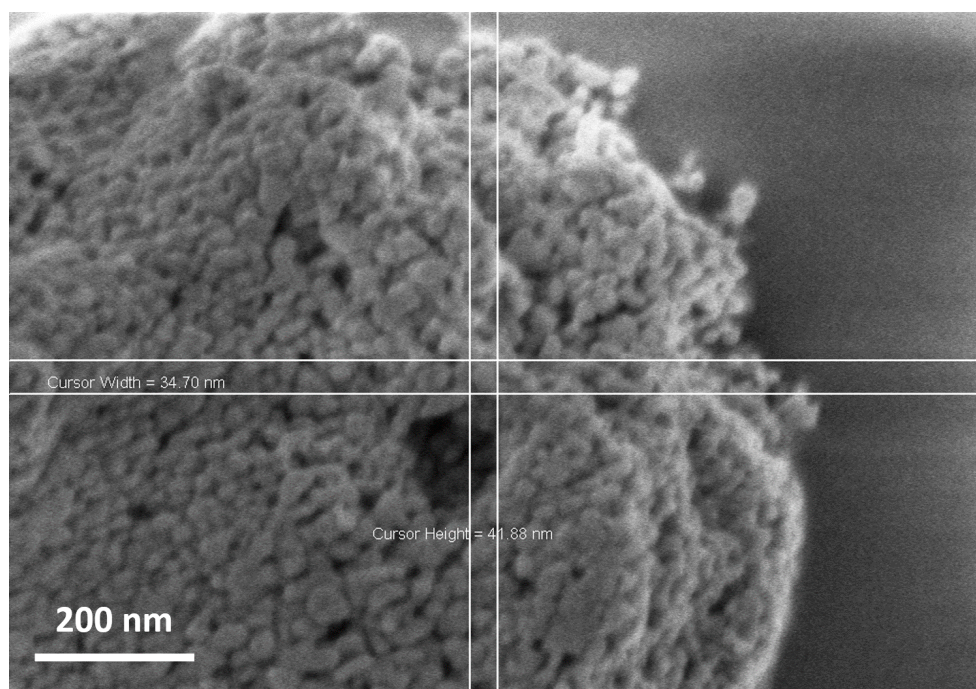


Figure S2. SEM image of CGO powder.

Evolution of lattice volume of $\text{Ce}_{0.9}\text{Pr}_{0.1}\text{O}_{2-\delta}$ calculated from lattice parameters extracted from high temperature XRD patterns in air. A change in the slope is due to the change on the oxidation state of the Pr with temperature.

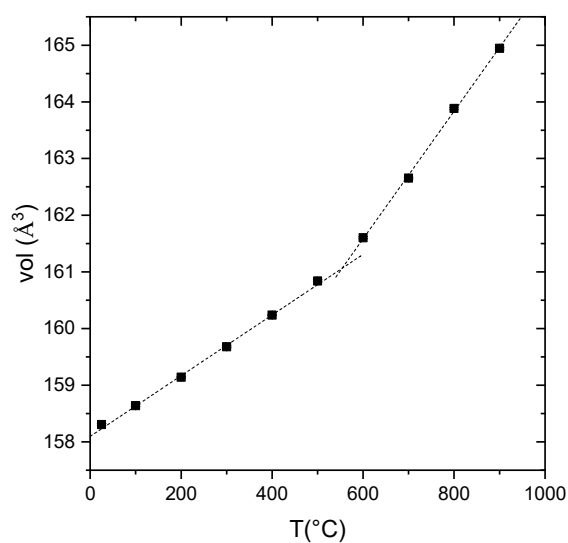


Figure S3. Evolution of lattice volume of $\text{Ce}_{0.9}\text{Pr}_{0.1}\text{O}_{2-\delta}$ with temperature.