

## Investigating the microstructural and electrochemical performance of novel $\text{La}_{0.3}\text{Ba}_{0.7}\text{Zr}_{0.5}\text{X}_{0.3}\text{Y}_{0.2}$ (X = Gd, Mn, Ce) electrolytes at intermediate temperature SOFCs

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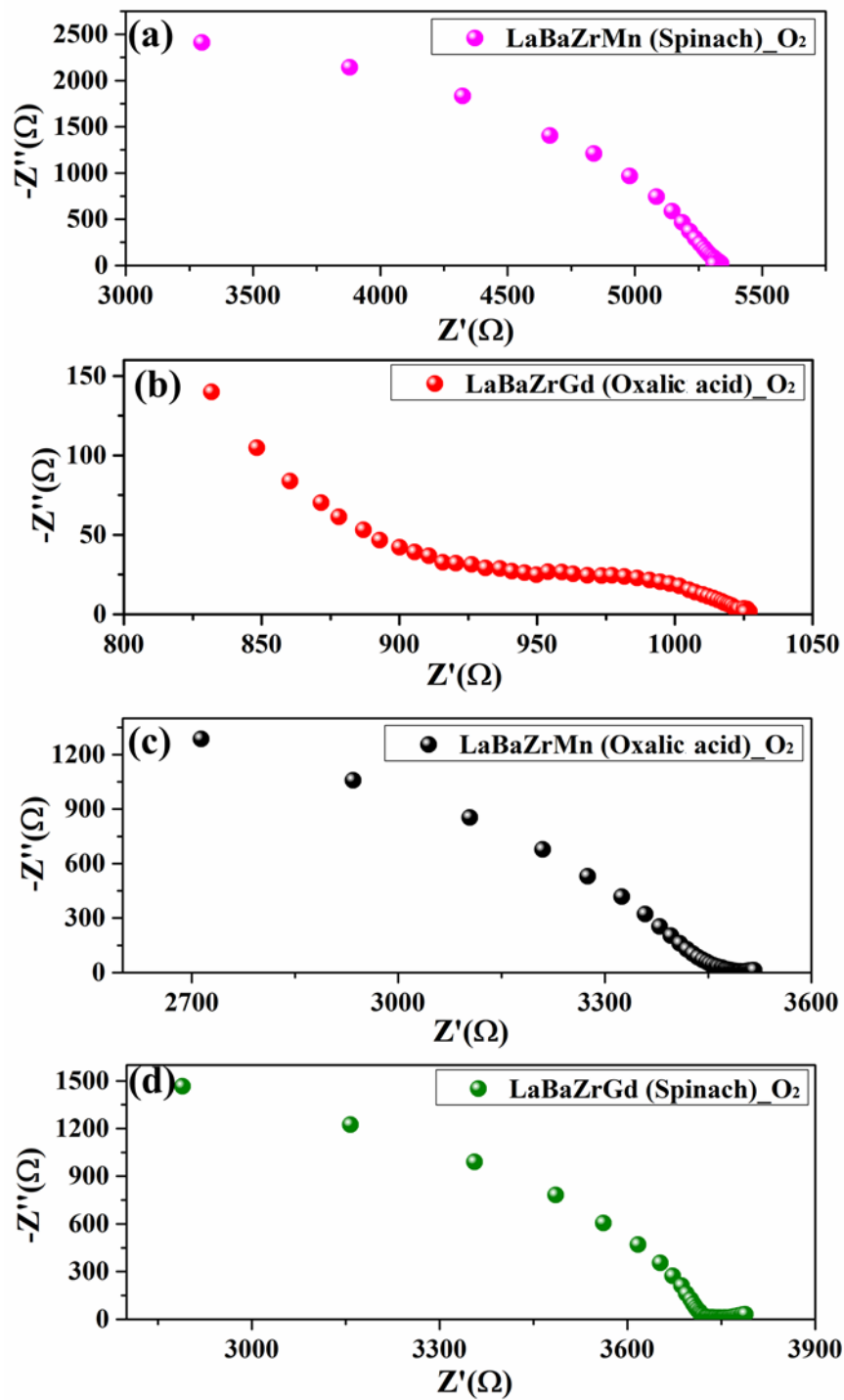
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**Figure S1:** The electrochemical impedance spectra  $\text{La}_{0.3}\text{Ba}_{0.7}\text{Zr}_{0.5}\text{X}_{0.3}\text{Y}_{0.2}$  (X = Gd, Mn, and Ce) using oxalic acid and spinach as a chelating agent at 600 °C (a-d).