



SOLID OXIDES FOR FUEL CELLS

SYNTHESIS, CHARACTERIZATION AND PROCESSING

Keywords: solid oxides, sol-gel, co-precipitation, thin films, dip-coating

Fuel cells are often described as highly efficient and pollution-free power sources. Among them, Solid Oxide Fuel Cells (SOFCs) are the most efficient and have the advantage of fuel flexibility due to their high operation temperature (800 °C - 1000 °C)¹. Nevertheless, the high operation temperature impose severe constrains on the fuel cell components, increasing the manufacture cost.

Current research in the field of SOFC technology aims to lower the operation temperature by developing new materials and new processing technologies for SOFC components².

In this project, nanostructured materials for SOFC electrode/electrolyte will be synthesized using “wet chemistry” procedures (sol-gel, co-precipitation...). Ceramic powders and their sinters will be characterized by XRD, FT-IR and Raman spectroscopy, TG/DTA analysis.... Electrical properties of the materials will be investigated by EIS. Thin film deposition for the compositions of interest will be also performed by dip-coating.

Duration of the project: 2 - 5 months.

1. A.J. Jacobson, Chem. Mater. 22 (2010) 660-674.
2. N. Cioatera, V. Parvulescu, A. Rolle, R.N. Vannier, Ceram. Int. 38 (2012) 5461-5468.

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