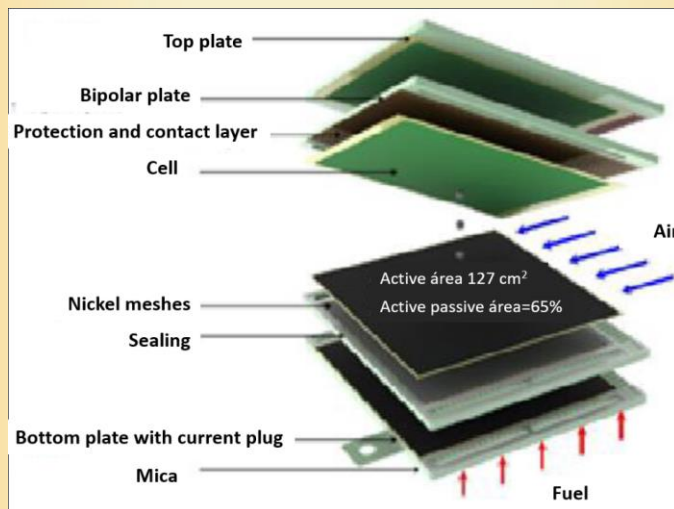


Quinta-Feira, 28 de Junho às 10:00h
12-2.28 (EC2.13) Escola de Ciências, Campus de
Azurém

Thin film barriers in Solid Oxygen Fuel Cells (SOFC) operating at high temperatures

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Resumo: Solid Oxygen Fuel Cells (SOFC) transform fuel and an oxidant directly into electrical energy and heat. They are since 20 y in the focus of numerous research activities due their high effectiveness. Typical applications range from mobile applications to small (5kW) and large (200kW) stationary applications for the production of electricity and heat.

Typical operation temperatures range from 50oC ... 850oC. This presentation is directed to the degradation of a metallic interconnector called “bipolar plate” operated up to 850oC. The metallic bipolar plate conducts the current produced within the cell to the electrical connection. The oxidation of the cell, unavoidable during high temperature operation, reduces the electrical conductivity of the plate and such its functioning during an expected lifetime > 40 000 h. Additional, Cr evaporates from the plate and is deposited on the cathode of the fuel cell which causes poisoning and again loss of power.

Thin film coatings can reduce the oxidation of the bipolar plate and control the Cr evaporation. Within the presentation, some of thin film concepts based on PVD techniques and experimental results are presented and discussed.