

## High Temperature Oxidation of Cr-Steel Interconnects in Solid Oxide Fuel Cells

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**Abstract :** Solid Oxide Fuel Cell (SOFC) is a promising solution for the energy resources leakage. Ferritic stainless steel becomes a suitable candidate for the SOFCs interconnects due to the recent advancements. Different steel alloys were designed to satisfy the needed characteristics in SOFCs interconnect as conductivity, thermal expansion and corrosion resistance. Refractory elements were used as alloying elements to satisfy the needed properties. The oxidation behaviour of the developed alloys was studied where the samples were heated for long time period at the maximum operating temperature to simulate the real working conditions. The formed scale and oxidized surface were investigated by SEM. Microstructure examination was carried out for some selected steel grades. The effect of alloying elements on the behaviour of the proposed interconnects material and the performance during the working conditions of the cells are explored and discussed. Refractory metals alloying of chromium steel seems to satisfy the needed characteristics in metallic interconnects.

**Keywords :** SOFCs, Cr-steel, interconnects, oxidation

**Conference Title :** ICEMC 2017 : International Conference on Electrochemical Methods in Corrosion

**Conference Location :** Paris, France

**Conference Dates :** February 23-24, 2017