

**The Anomalous Oxidation Behavior of Oxidation
Resistant Alloys under the SOFC Interconnect Dual
Exposure Conditions**

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Abstract

The oxidation behavior of oxidation resistant alloys under varied environments has been widely investigated for a number of traditional applications, and recently several works have also focused on SOFC interconnect applications. These studies, however, were carried out using single atmosphere exposure conditions and were presumably based on the implicit assumption that the oxidation behavior of an alloy as measured in either an oxidizing or reducing environment will be essentially identical to that occurring at the air or fuel side of the alloy when it experiences the dual atmosphere exposure conditions characteristic of the SOFC interconnect environment. However, our recent investigation clearly indicates that under dual exposures, the oxidation behavior at the airside of the alloy samples that are exposed to a fuel (e.g. hydrogen) at the other side can differ significantly from the behavior observed when the oxidation alloys are exposed to air at both sides. This paper will present details of this finding and discuss the results from our study on a number of selected alloys under the SOFC operating conditions.