

Author's Accepted Manuscript

Studies on cermet behavior of Ni doped YSZ

V. Mohanta, S. Otta, B.K. Roul



www.elsevier.com/locate/ceri

PII: S0272-8842(18)31760-7
DOI: <https://doi.org/10.1016/j.ceramint.2018.07.034>
Reference: CER118756

To appear in: *Ceramics International*

Received date: 3 December 2017
Revised date: 10 June 2018
Accepted date: 3 July 2018

Cite this article as: V. Mohanta, S. Otta and B.K. Roul, Studies on cermet behavior of Ni doped YSZ, *Ceramics International*, <https://doi.org/10.1016/j.ceramint.2018.07.034>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting galley proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Studies on cermet behavior of Ni doped YSZ

V. Mohanta, S. Otta, B. K. Roul*

*Institute of Materials Science, Planetarium Building, Acharya Vihar, Bhubaneswar-751013,
Odisha, India*

*Corresponding author. Tel.: +91-674-2567649; fax : +91-674-2300142. ims@iopb.res.in

Abstract

A simple and cost effective combustion process is employed to prepare Ni/YSZ cermet from an aqueous solution containing $\text{ZrO}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$, $\text{Y}(\text{NO}_3)_3 \cdot 6\text{H}_2\text{O}$, $\text{Ni}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$ and urea followed by H_2 reduction. As prepared cermet was characterized using X-ray diffraction (XRD), scanning electron microscopy (SEM), field emission scanning electron microscopy (FESEM), X-ray photoelectron spectroscopy (XPS), and Raman spectroscopy techniques. Processed powder of NiO-YSZ was found to be in crystalline form with homogeneous mixture of YSZ and NiO phases. On reduction, its mixed conductivity is suppressed partially. The impedance and dielectric properties of the cermet were studied over a frequency range 10 Hz to 2 MHz at different temperatures. $M \square H$ behavior at different temperature (down to 5 K) including ZFC and FC at 500 Oe were studied. To understand and corroborate the conductivity behavior and mechanism involved with the magnetic Ni ion mediated YSZ cermet, we have also studied the

Download English Version:

<https://daneshyari.com/en/article/8948509>

Download Persian Version:

<https://daneshyari.com/article/8948509>

[Daneshyari.com](https://daneshyari.com)