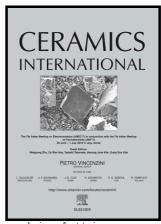
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## **ACCEPTED MANUSCRIPT**

Studies on cermet behavior of Ni doped YSZ

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**Abstract** 

A simple and cost effective combustion process is employed to prepare Ni/YSZ cermet from an

aqueous solution containing  $ZrO(NO_3)_2.6H_2O$ ,  $Y(NO_3)_3.6H_2O$ ,  $Ni(NO_3)_2.6H_2O$  and urea

followed by H<sub>2</sub> 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

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