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## A comparative study of copper-cermet anode material synthesized by different technique

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The present work is focused on the comparative analysis of electrochemical and structural properties of anode materials for solid oxide fuel cells (SOFCs) and the influence of factors affected on electrode performance. The  $\text{Cu}_{0.5}\text{Ce}_{0.5}\text{O}_{2-x}$  was prepared by CitrateNitrate route (CNP) and its formation is confirmed by XRD. The crystallite size of anode materials decreases with change of synthesis route. The highest conductivity is found to be  $3.7 \times 10^2$  and  $5.2 \times 10^2$  S  $\text{cm}^{-2}$  at  $660^\circ\text{C}$  before and after reduction for CNP with suitable mechanical strength. The electrochemical performance of anode/electrolyte/anode interface of  $\text{Cu}_{0.5}\text{Ce}_{0.5}\text{O}_{2-x}$  is studied after reduction in presence of gas mixture ( $10\%\text{H}_2+90\%\text{N}_2$ ) using electrochemical impedance spectroscopy. The conductivity for the Cell-800 prepared by CNP in presence of gas ( $10\%\text{H}_2+90\%\text{N}_2$ ) shows lowest activation energy 1.28 eV. Thus, CNP is most promising method for obtaining the suitable anode material for the application of SOFC than UreaNitrate Process (UNP) and GlycineNitrate Process (GNP).

### Biography

Shabana P S Shaikh has completed her PhD from RTM Nagpur University Nagpur, and she has completed her Post-doctoral studies from National University of Malaysia, Malaysia. She has published her work in several high impact international journals. She is currently doing her second Post-doctoral research at SBP Pune University, Pune India With Prof Dr.Kiran Adhi. She is the reviewer for few international good impact journal such as *Hydrogen energy and Renewable and Sustainable Energy Reviews*. She is a regular member of International Academy of Electrochemical Science.

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