**Synthesis of Strontium doped Cerium Oxide for Intermediate Temperature Solid Oxide Fuel Cell applications**

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**Abstract**. Doped Ceria (CeO2) is known to be a good electrolyte for intermediate temperature solid oxide fuel cell (ITSOFC). Although pure ceria has very low ionic conductivity, but it can be increased by the addition of low valence cations such as gadolinium, samarium, calcium, strontium. In this work, strontium doped ceria (Ce1-xSrxO2-δ, x = 0.25, and 0.05) are synthesized using sol-gel auto combustion method. The powders are calcined at 500 °C for 2 hours followed by sintering at 1450 °C for 4 hours. X-ray diffraction (XRD) studies of the calcined powders confirm the presence of the cubic fluorite phase and crystallinity of the powders. The density of the sintered pellets is found to be ≥ 90 % of the theoretical density. The microstructure of the sintered pellets is studied using the scanning electron microscopy (SEM).

Keywords: Fuel cell, Doped Ceria, SEM, XRD, sol-gel method.