

# MaMaSELF



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## **Exploring oxygen ion conductor ceramics: synthesis, structure and ion conductivity**

Potential ionic oxygen conductors with unit formula  $\text{Sr}_2\text{TiO}_4$  and Fe-, V-, Nb- and Mo-doped  $\text{Sr}_2\text{TiO}_4$  were synthesized through solid state reaction technique. The effect of doping at Ti-site of  $\text{Sr}_2\text{TiO}_4$  with  $\text{Fe}^{3+}$ ,  $\text{Nb}^{4+}$ ,  $\text{V}^{5+}$  and  $\text{Mo}^{5+}$  on oxygen ionic and mixed ionic-electronic conductivity have been investigated. The crystalline structures of these specimens were studied with X-ray diffraction (XRD) for phase determination and the cell parameters were calculated. Surface morphology and composition were studied by SEM-EDS technique. The mixed ionic-electronic conductivity of all prepared compositions of  $\text{Sr}_2\text{TiO}_4$  and Fe-, V-, Nb- and Mo-doped  $\text{Sr}_2\text{TiO}_4$  were measured by complex impedance spectroscopy (CIS) as a function of frequency and temperature in the ranges of 0.1Hz-1MHz and 25-600 °C respectively.

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