

## **E1-11: Effect of Co and Ni doping on the conductivity of $\text{LiFeO}_2$**

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Life time of the state-of-the-art lithiated NiO cathode material of molten carbonate fuel cells was limited due to the dissolution of Ni in the molten carbonate electrolyte.  $\text{LiFeO}_2$  was a possible replacement of lithiated NiO owing to its good chemical stability and reduced solubility. But,  $\text{LiFeO}_2$  did not possess the required electronic conductivity of 1 S/cm at 650°C.

In the attempt to increase the conductivity of  $\text{LiFeO}_2$ , it was simultaneously doped with 10 mole% Co and 10 mole% Ni using Pechini powder preparation technique. Impedance spectroscopy was employed on uniaxially pressed pellets to investigate the variation of conductivity in the temperature range 200 - 700°C. Unlike the exponential increase of conductivity against temperature, which was the typical behaviour for pure and Co doped  $\text{LiFeO}_2$ , a peak was observed in the first heating cycle for Co and Ni doped material. This behaviour could be attributed to a change of microstructure in the first heating. Conductivity at heating cycles thereafter were comparable with the conductivity of pure  $\text{LiFeO}_2$ .