

## E1-12: Electrical conductivity of Co doped LiFeO<sub>2</sub>

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Over the past few decades, there has been an increasing pressure to develop an efficient fuel cell as a reliable alternative energy source. The energy crisis has reinforced this pressure and one example is the molten carbonate fuel cell.

It is reported in literature, that LiFeO<sub>2</sub> meets many requirements except the necessary electrical conductivity, for use as an alternative cathode material in molten carbonate fuel cells. In an attempt to increase the conductivity of LiFeO<sub>2</sub>, it was doped with Co to the general formula LiFe<sub>1-x</sub>Co<sub>x</sub>O<sub>2</sub> where  $x = 0.01, 0.02, 0.06, 0.10, 0.15$  and  $0.20$  using the Pechini powder preparation technique. Electrical conductivity of uniaxially pressed pellets were measured using 4 probe technique in air and cathode gas (70% air and 30% CO<sub>2</sub>) in the temperature range 550 - 800°C.

Density of the doped powders were comparable with pure LiFeO<sub>2</sub>. At lower dopant concentrations (15 & 20 mol %) peaks corresponding to LiCoO<sub>2</sub> were also observed. The maximum conductivity of 0.228 S cm<sup>-1</sup> was found for 10% Co doped LiFeO<sub>2</sub> compared to 0.006 S cm<sup>-1</sup> of pure LiFeO<sub>2</sub>.