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RARE EARTH DOPED SOLID ELECTROLYTES

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Solid electrolytes find use in a wide range of technological devices: Solid Oxide Fuel Cell (SOFC) for producing environmental clean electrical energy and oxygen sensors in steel industry, and in the control/ optimization of fuel consumption. The most common solid electrolytes are the high temperature oxides based on ZrO_2, ThO_2 and CeO_2. ZrO_2 and ThO_2 are O^{2-}-ion conducting electrolytes after doping with aliovalent oxides like MgO, CaO, Y_2O_3 or rare earth oxides. Several chemical techniques have been used for the preparation of fine and reactive powders, allowing for the design of well dense specimens to be used as electrochemical transducers. Here we deal with an overview the preparation by chemical methods, and the electrical characterization by electrochemical impedance spectroscopy of yttrium and rare earth-doped solid electrolytes.

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