nancosites without impairing their functional characteristics are promising for design of IT SOFC and oxygen separation membranes.

16:30  Electrochemical properties of La0.6Sr0.4FeO3-d thin film electrodes upon polarization
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Resume: La0.6Sr0.4FeO3-d (LSF) is a very attractive electrode material for solid oxide fuel cells (SOFCs), due to its high ionic and electronic conductivity and the catalytic activity for oxygen exchange. In this study, electrochemical impedance spectroscopy (EIS) was used to investigate the electrochemical properties of LSF thin film model electrodes under polarization and in different atmospheres to gain information on the oxygen exchange kinetics and defect chemistry. Well defined thin film electrodes of 200 nm thickness were prepared on yttria stabilized zirconia single crystals (100) by pulsed laser deposition (PLD). EIS measurements, as well as the combination of oxygen partial pressure and overpotential variation were used to investigate the dependency of defect chemistry on polarization and oxygen partial pressure. Charge carrier concentrations were found to solely depend on the electrochemical potential of oxygen in the electrode, whether it is driven chemically (oxygen partial pressure) or electrically (polarization). Three point DC measurements on these electrodes showed different current voltage characteristics for oxygen incorporation and release (i.e. anodic and cathodic polarization). While the oxygen incorporation exhibits strong dependency on the oxygen partial pressure, the oxygen release was found to be mostly governed by the electrochemical potential of oxygen in the electrode.

16:30  Effect of powder particle surface clean-up on the electrical behavior of yttrium-doped barium zirconate sintered ceramics
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Resume: Yttrium-doped barium zirconate ceramic powders were synthesized by the oxidant peroxide method in air and under controlled atmosphere (Argon). The powders were analyzed by thermogravimetry, X-ray diffraction, scanning electron microscopy (FEG-SEM) and transmission electron microscopy. Green pellets prepared with both powders were sintered at 1600 oC for 4 h. The densities were evaluated by the Archimedes method, the electrical behaviour by electrochemical impedance spectroscopy in the 5 Hz - 13 MHz frequency range from 300 to 600 oC, and the grain morphology by SEM images. Specimens prepared using powders synthesized under controlled atmosphere achieve higher density and enhanced electrical conductivity (two orders of magnitude higher) than specimens prepared in laboratory air. Chemical species attached to the particles play an important role in the sintering process as well as in the intergranular behavior of the proton conductivity by modifying the defect structure at the intergranular space charge region.