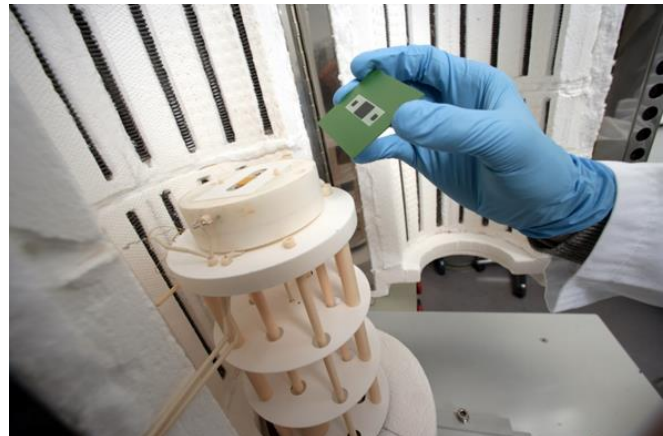
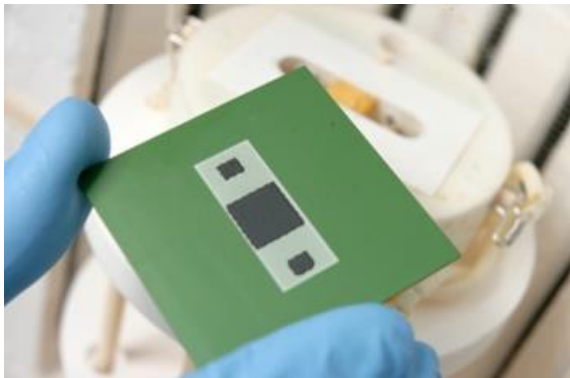


Electrochemical Characterization and Modeling of Solid Oxide Cells

In the urgent need of fulfilling the goals of the global climate protection the coupling of different energy sectors remains as a major challenge. This can be realized by the application of reversible solid oxide cells (SOCs). These cells have the ability to generate electrical energy in fuel cell mode and reversely produce hydrogen and valuable synthetic gases with the help of renewable gained energy.

Within the scope of different projects operated in the research group of “Fuel Cells and Electrolysis” at the Institute for Applied Materials – Electrochemical Technologies, cells developed and manufactured at partners from industry and science are investigated and modeled. These results contribute to further cell optimization and the derivation of business strategies. The characterization of a cell includes the development of a testing procedure, mounting the cell into the test bench and the operation of different series of measurement. This has to be done under various operating conditions regarding temperature and gas mixtures. Thus, cell performance can be analyzed by electrochemical impedance spectroscopy and the subsequent analysis of the distribution of relaxation times. In the following evaluation, appropriate software tools developed at the institute are available.



To fulfill the tasks during the internship, basic skills in laboratory work and programming are required as well as a save handling in MS excel. Additional skills in Matlab™ or comparable are generally favored.

During weekly meetings, the progress of the work will be discussed regularly. Finally, the results of the internship shall be presented in the frame of a seminar presentation to the research group.