

# Project Information

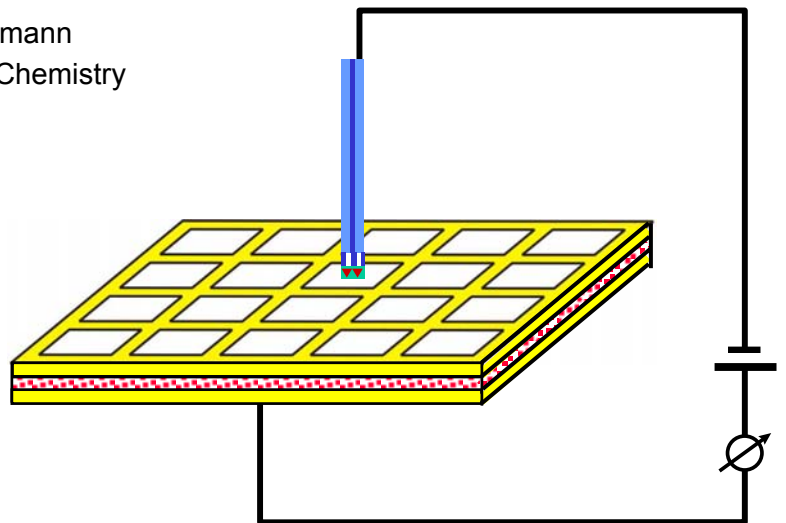


**Subject**            **Construction of a micro PEM fuel cell**

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## Project description:

The characterization of the MEA resp. the single membranes becomes more and more demanding by the optimization of PEM fuel cells. A newly developed testing apparatus serves to measure the electrochemical as well as the catalytic activity with high local resolution. Financial help for the building of the instrument has been granted.

A high resolution electrochemical scanning microscope and a quadrupole mass spectrometer with capillary inlet is combined with a positioning unit in the micrometer range. The local resolution for the characterization of the electrochemical activity is achieved by ultramicroelectrodes. A special capillary inlet system guarantees the same for the characterization of the gas phase activity. The automated apparatus is equipped with a gas feed system, which enables the local feed of the fuel cell gases.

For the purpose of local testing a micro PEM fuel cell is generated within the testing apparatus. With the in-situ analytical system the micro- and nanostructure of membranes coated with precious metals can be investigated. The newly combination of locally resolved SECM/QMS promises a deeper insight into the relationship between coating quality and fuel cell activity. Further the testing apparatus enables a rapid screening of fuel cell catalysts that are arranged in libraries.