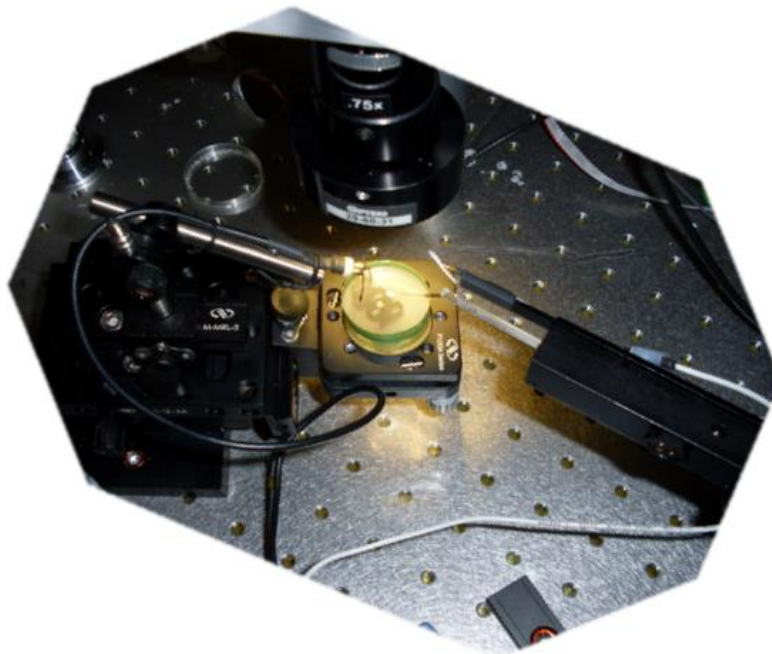


### Scanning Vibrating Electrode Technique - SVET

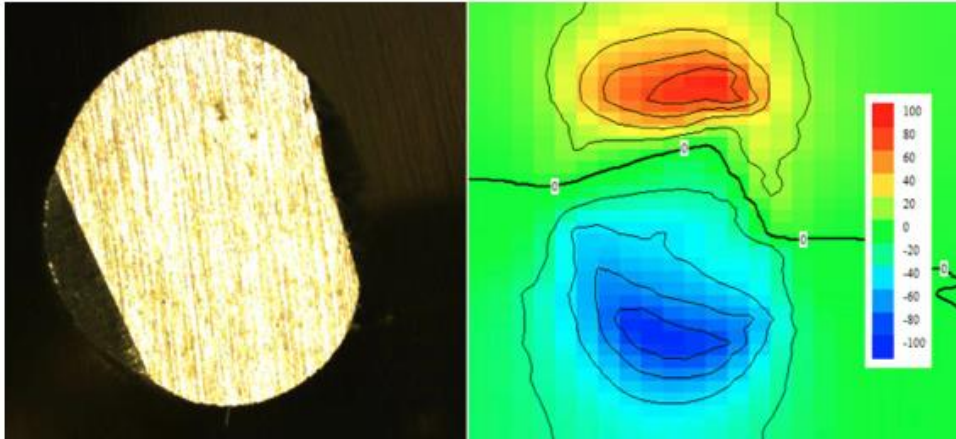
SVET is an electrochemical technique which can measure ionic fluxes in solution. This is done by taking a measurement at the extremes of the vibration of the probe. Because only one single electrode is used to determine the potential difference and the vibration frequency is known, all other frequencies which would result in noise can be subtracted. Therefore the noise level of this method is very low. By means of calibration the potential is usually transferred into an ionic current density map at a certain height above the surface.

Typically the scanned area is about 1-5mm<sup>2</sup> and the lateral resolution of this technique is about 10-20µm. Ionic currents usually are in the absolute range of 1-100 mA/cm<sup>2</sup>.

This technique is of great interest for biological and corrosion related analysis. Up to now work in this group is done only in the second field. The corrosive attack on local sites like defects in coatings, in pitting corrosion and grain boundary corrosion can be monitored. Our aim is to find new ways of corrosion prevention (e.g. new corrosion inhibitors, ...) by gaining a better understanding of the mechanisms.



*The sample stage for SVET from left to right: Reference and counter electrode holder (two platinum blackened wires), embedded sample with reservoir mounted on a sample holder, microscope above the sample, vibrating working electrode with vibration assembly.*



*Optical image and current density map of a metal sample. The high ionic currents are measurable before the corrosive attack is visible under the microscope.*