

Electrochemistry: UV/VIS ellipsometry coupling

Understanding structural changes at the electrode/electrolyte interface is vital for interfacial electrochemistry, e.g. in electrocatalysis and corrosion science. However, there is a lack of suitable characterization techniques which are sensitive, fast, and yield details about interfacial structures and processes. This experiment shows one such technique, the coupling of electrochemical cell to spectroscopic ellipsometry. This technique will be illustrated to understand the oxide growth mechanism on copper, including a detection of changes in the electronic structure of the oxide film. Ellipsometry is a sensitive optical method for the measurement of the optical constants and thickness of thin film. Ellipsometry can yield information about layers that are thinner than the wavelength of the probing light itself, even down to a single atomic layer through analysis of the change of polarization of light, which is reflected off a sample. In situ ellipsometry can be performed during the modification of surface which can be, e.g. the growth of a thin film, etching or cleaning of a sample.

Own samples (e.g. different metals, thin organic layers, ...) can be measured in this experiment, after consultation with the organizers.