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Impedance Spectroscopy I

Impedance Spectroscopy is a versatile tool to characterize electric and dielectric properties of materials and interfaces as a function of frequency. With comparably low experimental effort a lot of information can be gained. The method provides information on the capacitive and resistive components of the impedance by detecting the reaction of a material to a small AC voltage. Therefore, dielectric relaxation processes can be detected. There is also the possibility to distinguish between grain boundary and bulk effects in solid materials.

This talk will give an overview of microstructural processes which can be detected with impedance spectroscopy. Furthermore, the theoretical basis used for evaluating the results will be introduced. More examples for possible applications of the method and fitting of the results will be presented in the talk “Impedance Spectroscopy II” by Thorsten Bayer.