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Defect relaxation probed by thermally stimulated depolarization currents

Measurement of the thermally stimulated depolarization current (TSDC) is a powerful technique that enables the study of inorganic dielectric concerning defect-dipoles, trapped charges, their concentration and activation energy.

Prior to the measurement the defects are oriented and aligned by the application of an external electric field at elevated temperatures. After this first step of field cooling the sample is zero field heated and the TSD current is measured.

Variation of the strength of the applied external field and the heating rate reveal information on the activation energy and concentration. Information of overlapping peaks can be separated by various peak cleaning methods.

This methods proves further more to be suitable to asses degradation phenomena and can be seen as a complementary method to impedance spectroscopy.