

Abstract Submitted
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Thermally Stimulated Impedance Spectroscopy: Setup And Analysis HANU ARAVA, WIM GEERTS, Physics Dept, Texas State University, San Marcos — Impedance Spectroscopy involves applying a sinusoidal AC voltage (usually) and observing the current response. It's been gaining momentum as a valuable electrical characterization technique for organic polymers lately due to its speed and reliability along with the extensive analysis that one can perform on the data to obtain vital information (e.g. electron mobility, double layer capacitance). Our setup has the HP4192A Impedance Analyzer as the base system which was connected to a Janis CCS-350S cryostat. The temperature sweeps are controlled by the Lakeshore 331 temperature controller. We wrote the code in Labview (National Instruments) to remotely control the instruments. Preliminary tests were conducted to attain optimal parameters for the instrumentation, e.g. PID loop values for temperature controller, OSC voltage level for the Impedance Analyzer etc. The non-invasive nature of Impedance Spectroscopy additionally helps make it a valuable tool when working with active materials. Our research primarily focuses on highly n-doped polymers and observing their defect behavior. We argue the need for a thermally stimulated set up and will present data from test samples including their equivalent circuit models.

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