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Simulation of UV Radiation Degradation of Polymers on MISSE-6 in the Low Earth Orbit Environment

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Utah State University's

Student Showcase

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Various Conductivity Measurements of Highly Disordered Materials

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Abstract

Using a high-Voltage Battery power Supply, we measured the time dependent conductivity for highly disorganized materials, and were able to model the complete conductivity curve for said materials. Previous methods were utilized and improved upon to decrease the error found in conductivity measurements through an "extremely resistive" materials. The data was subsequently analyzed using various curve fitting techniques to measure time taken for a sample to reach conductive equilibrium. The fittings were also used to predict the amount of time required for a sample to completely discharge after it had been fully charged. The objective of this study was to predict the amount of time required for a sample to reach equilibrium a factor which is vital in spacecraft design. In this specific study, we were able to estimate the amount of time it would take for a sample to reach equilibrium. Additional studies will assess the the different conductive properties of various materials.