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**Electric Field Induced Hopping Conductivity: An Investigation of Electric Field-Dependent Resistivity in Polymers** S.R. HART, J. BRUNSON, J.R. DENNISON, PHYSICS DEPARTMENT, UTAH STATE UNIVERSITY TEAM — The resistivity of highly insulating materials exhibits a dependence on electric field strength. Mott and Davis as well as Poole and Frankle describe theoretically the resistivity of disordered semiconductors, when subject to a changing electric field, in terms of hopping conductivity models. While these models have often been applied to polymers, there is little direct experimental evidence to confirm the validity of the theories for polymers. We present such results for a newly-developed block co-polymer Hytrel, a highly insulating material similar to Teflon. The constant voltage resistivity test method has been used to study Hytrel for a range of electric fields up to electrostatic breakdown. We consider whether the Hytrel results are consistent with existing models of electric-field induced hopping conductivity.

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