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Effects of Temperature and Radiation Dose on Radiation Induced Conductivity

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Radiation induced conductivity (RIC) is an important conduction mechanism in highly disordered insulating materials exposed to ionizing radiation. Measurements of RIC as a function of dose rate and exposure time of polymeric and glassy insulators will be presented. RIC results from excitation of carriers into conduction states by the ionizing radiation. The measurements will be discussed in terms of models for the distribution of localized disordered states. The effects of temperature and radiation damage from ionizing radiation on the density and occupation of trap states, and how this affects RIC, will also be discussed.