Abstract Submitted
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**Nanoscale Mapping of Polymer Dielectric Performance** THOMAS MORAN, University of Connecticut — We have studied electronic charge injection in polymeric dielectric coatings widely employed for power transmission applications. This is achieved with Electrostatic Force Microcopy (EFM), a variant of atomic force microscopy, specifically by tracking the magnitude of charge injection and dissipation as a function of time following direct biasing with a conducting AFM probe. Specimens include biaxially-oriented polypropylene (BOPP), a dielectric commonly used in radio frequency (RF) applications, with and without nanoclay sodium montmorillonite (MMT) coatings. With MMT, the magnitude of charge injection is reduced and charge dissipation is correspondingly faster than for conventional, uncoated BOPP specimens. For heterogeneous coatings such as a nanoclay, spatially quantifying the local charge magnitude and dissipation is especially critical, to enable improved performance of conventional polymer dielectrics and future multilayered systems.

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