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**Effect of crystal isomorphism on novel ferroelectric behaviors of P(VDF-TrFE)-based copolymers** LIANYUN YANG, Case Western Reserve University, XINYU LI, QIMING ZHANG, Pennsylvania State University, LEI ZHU, Case Western Reserve University — Novel ferroelectric behaviors of poly(vinylidene fluoride-*co*-trifluoroethylene) [P(VDF-TrFE)]-based copolymers, including relaxor ferroelectric and double hysteresis loop behaviors, have drawn great attention in research. Despite of a great amount of work have been done over the last two decades, the fundamental understanding of these behaviors is still lacking. In this work, the physics behind these novel ferroelectric behaviors are discussed based on the studies of P(VDF-TrFE)-based terpolymers and e-beam irradiated P(VDF-TrFE). We find that crystal isomorphism in P(VDF-TrFE)-based copolymers has a significant effect on the dielectric properties. This is achieved by pinning the polymer chains with structural defects. Consequently, nanodomains and easy dipole switching are responsible for the novel ferroelectric behaviors. This understanding will help us to further design new polymers with better dielectric/ferroelectric properties.

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