Abstract Submitted
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Paraelectric Crystalline Polymers for High Energy Density and Low Loss Dielectrics[1] LEI ZHU, Department of Macromolecular Science and Engineering, Case Western Reserve University, Cleveland, Ohio 44106-7202, RUN SU, College of Polymer Science and Engineering, Sichuan University, Chengdu, Sichuan 610065, JUNG-KAI TSENG, MAO-SHENG LU, Department of Macromolecular Science and Engineering, Case Western Reserve University, Cleveland, Ohio 44106-7202 — It is known that the high temperature phase above the Curie temperature (Tc) in poly(vinylidene fluoride-*co*-trifluoroethylene) [P(VDF-TrFE)] is a typical paraelectric phase. Frequency-dependent electric displacement-electric field (D-E) loop tests are used to study the dielectric/ferroelectric properties of this paraelectric phase. It is observed that normal ferroelectric hysteresis loops are observed at a poling frequency of 1 Hz, while narrow paraelectric loops are observed at a high poling frequency of 1000 Hz. The poling mechanism is revealed by an in-situ electric field-dependent Fourier transform infrared study. From this study, we consider that paraelectric crystalline polymers are good candidates for high energy density and low loss dielectrics.

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