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**Electric Energy Storage in P(VDF-HFP) Copolymers with Different Crystallinities** FANGXIAO GUAN, STEVEN BOGGS, LEI ZHU, Polym. Program, Inst. of Mater. Sci. and Dept. of Chem., Mater. and Biomolecular Eng., University of Connecticut, Storrs, CT 06269-3136 — Poly(vinylidene fluoride) (PVDF) is a well known ferroelectric polymer. It attracts much attention as a candidate material for electric energy storage in recent years because of its relatively high dielectric constant and high electric breakdown strength. By modifying PVDF with bulky comonomers such as hexafluoropropylene (HFP), P(VDF-HFP) random copolymers can achieve even higher electric energy density than PVDF. This is because bulky HFP comonomers disrupt the PVDF run length and thus reduce the average crystallite size. Additionally, bulky HFP comonomers at the crystal surface constrain the $\alpha- > \delta- > \beta$ phase transitions at elevated electric fields. Both the reduced crystallite size and constrained phase transition affect electric energy storage. For P(VDF-HFP) copolymers with different crystallinities, different crystal size and phase transition behaviors are studied, and their relationships with the electric energy storage capability is correlated.

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