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Effects of configurational defects on structural evolution in Poly(vinylidene fluoride-hexafluoropropylene) copolymers SURIYAKALA RAMALINGAM, SHAW L. HSU, University of Massachusetts, Amherst — Crystallization kinetics of various crystallizable segments in Poly(vinylidene fluoride-hexafluoropropylene) [P(VDF-HFP)] copolymers have been analyzed using thermal techniques. These analyses are supported by spectroscopic and diffraction techniques, which directly measure the presence or absence of specific chain conformations or crystalline forms. Crystallization is constrained due to random distribution of the noncrystallizable bulky comonomer (HFP) along the crystallizable linear PVDF chains. Since the crystallites of different size/VDF chain lengths have different melting temperatures, it is possible to obtain a fraction of each crystallizable segment by selecting the crystallization temperature at various points below melting temperature. This fractionation has been accomplished by following the Successive Self-Nucleation/Annealing (SSA) method. The chain distribution and configurational defects, introduced by HFP, have been evaluated and correlated to the multiple thermal transitions in P(VDF-HFP) copolymers. In addition, it is interesting to find that the thermal fractionation can induce the β-conformation in highly constrained P(VDF-HFP) copolymers.

Suriyakala Ramalingam
University of Massachusetts, Amherst

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