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Chain Trajectory of Poly (l-Lactic Acid) in Solution- and Melt-Grown Crystals As Studied by ^{13}C - ^{13}C Double-Quantum NMR SHIJUN WANG, SHICHEN YUAN, TOSHIKAZU MIYOSHI, Univ of Akron — Crystallization of long polymer chains induces drastically structural change from random coils to folded chains in thin crystals. Various factors including kinetics, polymer concentration, entanglements of polymers, etc. in complexity influence crystallization process and folded chain structures. However, chain-folding structures and mechanisms of polymer chains have been debated in the past decades. Very recently, our group developed a novel strategy using ^{13}C – ^{13}C double-quantum (DQ) NMR in combination with selective isotope labeling, to investigate the chain-folding structures in the crystallization. In this presentation, we investigate chain-folding structure of poly (l-lactide) (PLLA) solution-grown single crystals and melt-grown crystals formed in a wide crystallization temperature range. It will be demonstrated that how kinetics, polymer concentration and entanglements influence chain-folding structures of PLLA in solution and melt-grown crystals.

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