Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Chain Trajectory of Polymer Chains in Bulk and Single Crystals: Molecular Weight Effect[1] TOSHIKAZU MIYOSHI, YOULEE HONG, The University of Akron, THE UNIVERSITY OF AKRON TEAM — Semicrystalline polymers are crystallized as folded chains in thin lamellae of ca. 5-20 nm from random coils in the melt and solution states. Recently, we developed a novel strategy to access chain trajectory of semi-crystalline polymers using ^{13}C -^{13}C double Quantum (DQ) NMR combined with selectively isotopic labeling This approach does not suffer from morphology (bulk vs single crystals), molecular weight distribution, and crystallization temperatures. Thereby, DQ NMR has been successfully applied to determination of chain trajectory of semi-crystalline polymer with a relatively low molecular weight in bulk as well as single crystals in wide crystallization temperatures. In this work, we will report chain-folding structure of a semicrystalline polymer with a high molecular weight in bulk as well as single crystals. Molecular weight effects on chain trajectory in different morphology will be demonstrated.

[1]NSF DMR1105829

Toshikazu Miyoshi
The University of Akron

Date submitted: 14 Nov 2014 Electronic form version 1.4