Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Folding of Polymer Chains in Early Stage of Crystallization[1]
SHICHEN YUAN, TOSHIKAZU MIYOSHI, Univ of Akron — Understanding the structural formation of long polymer chains in the early stage of crystallization is one of the long-standing problems in polymer science. Using solid state NMR, we investigated chain trajectory of *isotactic* polypropylene in the mesomorphic nanodomains formed via rapid and deep quenching. Comparison of experimental and simulated ^{13}C-^{13}C Double Quantum (DQ) buildup curves demonstrated that instead of random re-entry models and solidification models, individual chains in the mesomorphic form *i*PP adopt adjacent reentry sequences with an average folding number of <n>= 3-4 (assuming an adjacent re-entry fraction of <F>of 100%) during mesomorphic formation process via nucleation and growth in the early stage.

[1]This work was financially supported by the National Science Foundation (Grant DMR-1105829 and 1408855) and startup funds from the UA.

Shichen Yuan
Univ of Akron

Date submitted: 06 Nov 2015 Electronic form version 1.4