

Abstract Submitted
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Chain Packing and Trajectory of Isotactic Polypropylene α Crystals studied by Solid-State NMR¹ ZHEN LI, YAN CAO, TOSHIKAZU MIYOSHI, STEPHEN CHENG, The University of Akron — Isotactic polypropylene (ipp) is one of the simplest polyolefins and the crystalline structures, have been extensively studied. Ipp crystallizes as α form via isothermal crystallization from the melt state. Packing structures of α form has been used as structural markers of crystallization process. With the development of high resolution solid-state NMR (SS-NMR) technique, it becomes a powerful tool to investigate order-disorder of chain packing in the crystalline regions. We performed a series of experiments on different samples crystallized at different temperatures and studied the formation of α crystals influenced by different parameters, such as molecular weight, catalyst type and stereo, region regularity. Using selectively ¹³C enriched ipp samples we detect inter-nuclear correlations between the neighboring stems. This information provides chain reentry information. We figure out relationship between the chain reentry and chain packing of ipp α crystals. The recent discovery of the ipp α_2 single crystal offers a great opportunity to understand this topic also.

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