

Utilizing Synchrotron Based X-ray Scattering in Polyolefin Research

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High flux radiation sources, such as those at generation III synchrotrons like the Advanced Photon Source, allow for in situ characterization of dynamic processes. Understanding the microstructure and morphology of polymers and how they change under differing crystallization conditions and mechanical treatment allows for structure-property relationships to be elucidated and new materials and processes to be developed. Simultaneous collection of in situ SAXS and WAXS, carried out at DND-CAT, allows for a deeper understanding of why polyolefin materials perform in the ways they do as a result of thermal and mechanical processing. Herein we present two applications of how we have used DND-CAT to understand the structure-property relationships in polyolefins.