

Poster Presentation

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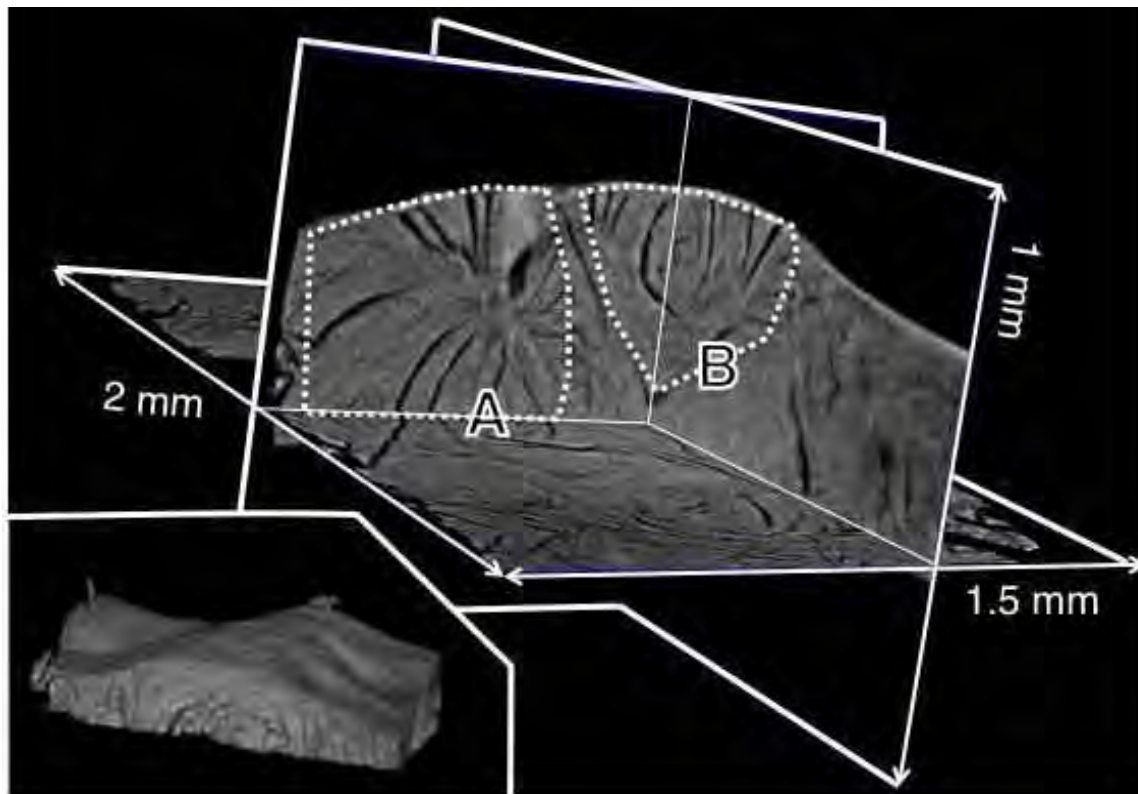
Three-Dimensional Analyses of Morphology of Polymer Spherulites by X-ray Computerized Tomography

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We report 3-dimensional structural analyses of huge spherulites of poly(oxyethylene) (PEG) by the X-ray computerized tomographic (CT) observation in blends of PEG and amorphous poly(lactide). The formation of the huge spherulites is characteristic of PEG and its direct observation by the X-ray CT is reported here for the first time. Slit-shaped cracks were clearly observed by the X-ray CT. Not only the straight cracks but also curved ones were found and it seemed that they overall formed a set of spokes. Furthermore, the scanning electron microscopic observation revealed that the cracks were parallel to bundles of lamellar crystallites. From those observations, we conclude that a set of radial cracks observed under the X-ray CT is a signature of a huge spherulite. Several aspects of an axialite structure are presented and a good agreement with the intuitively proposed structural model is obtained.

[1] F. Khoury; E. Passaglia, *The Morphology of Crystalline Synthetic Polymers*. In *Treatise on Solid State Chemistry*, Hannay, N. B., Ed. Springer US: 1976; 335-496., [2] A. Keller; J. R. S. Waring, *Journal of Polymer Science* 1955, 17, (86), 447-472., [3] Y. Nishikawa et al., *Polymer* 2012, 53, (19), 4287-4292



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