

Title	ポリマー材料の流動誘起結晶化を促進する新しい技術
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Abstract

The crystallization behavior of a crystalline polymer during/after flow is significantly important. Depending on the conditions including temperature, shear rate, and residence time, the growing structures varied from spherulite to orientation structures such as row-nucleated and shish-kebab structures. As known, precise morphology control is essential to the properties of final products. Shear flow influences crystallization, which significantly enhances the crystallization rate and generates orientated crystallites. The present study focused on polypropylene (PP), which is one of the most popular materials and proposes a technology to promote the flow-induced crystallization of PP. The enhanced crystallization rate and molecular orientation of PP have been achieved by the addition of a fibrous nucleating agent or long-chain branched polymers even an immiscible blend system with an applied shear history. Additionally, the crystallization behavior of bio-based polymers, such as poly(3-hydroxybutyrate-co-3-hydroxyhexanoate) (PHBH), produced from renewable resources and used in various applications, was also investigated. The investigation results are shown in the details.

Keywords: Polypropylene, Low-density polyethylene, Poly(3-hydroxybutyrate-co-3-hydroxyhexanoate), Fibrous nucleating agent, Flow-induced crystallization