

# Crystallization Kinetics of Isotactic Polystyrene from Molten and Glassy States

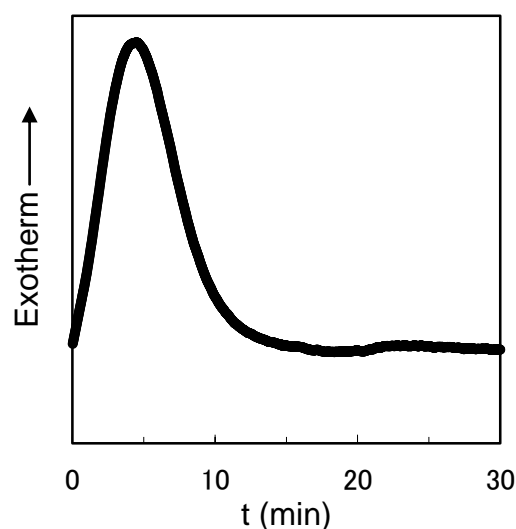
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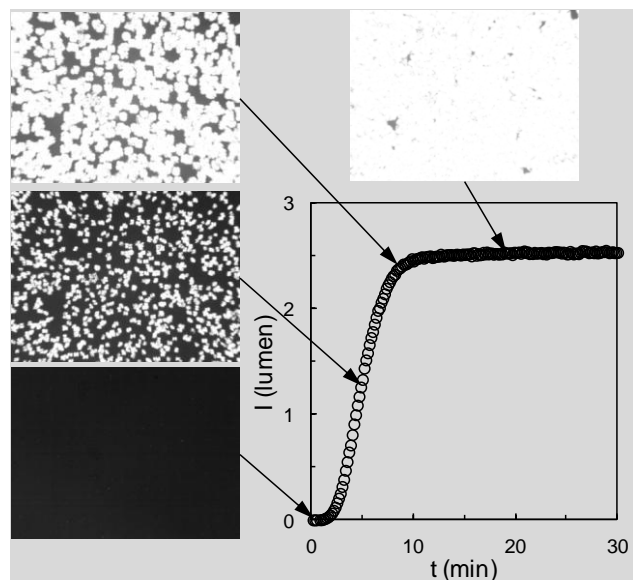
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**Supporting information:** In Avrami equation, the crystallization rate constant  $k$ , Avrami exponent  $n$  and crystallization half-time ( $t_{1/2}$ ) depends on the values of crystallinity with time. The crystallinity with time can be determined by various methods like DSC, X-ray, IR and LIM. Among them, in conventional DSC method (Figure S1), the crystallization exothermic peak area is measured with time and the relative crystallinity is obtained by normalizing the total area.

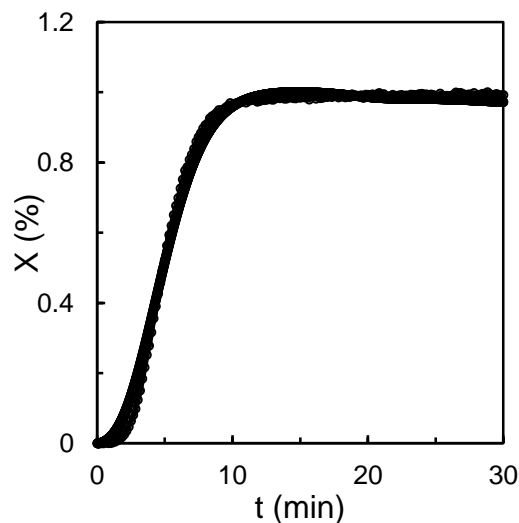


**Figure S1:** DSC exothermic peak for iPS crystallized at 160°C after melt from 230°C.



**Figure S2:** Plots of intensity with crystallization time for iPS crystallized at 160°C after melt from 230°C. The images are related with corresponding crystallization time as indicate in figure.

In LIM method, during crystallization process the images are taken, the light intensity of the images increases with time (Figure S2) due to the growth of spherulites, converted into equivalent Lux intensity using calibration parameter and the relative crystallinity is calculated by normalizing the maximum image intensity. The calibration process was done by changing the angle between polarizer and analyzer, changes the transmitted light intensity through the microscope. The intensities with angle were measured using software for images, and a Lux meter. Both shows a bell shaped dependence (data are not shown) having a maximum intensity, plotted them against each other, shows a linear correlation giving an equation. Using the equation we converted the transmitted image intensity to equivalent Lux intensity.



**Figure S3:** Plots of relative crystallinity versus crystallization time at  $160^{\circ}\text{C}$  after melt from  $230^{\circ}\text{C}$ : measured by conventional DSC exothermic peak of figure S1 (solid circle), and by LIM experiment using the converted intensity of figure S2 (open circle).

Figure S3 shows a plot of relative crystallinity with crystallization time using DSC and LIM method crystallized at  $160^{\circ}\text{C}$  after melt from  $230^{\circ}\text{C}$ . The relative crystallinity shows identical, is an evidence to use any of the method for relative crystallinity with time. We checked for many other crystallization temperatures as a function of melting temperatures for both molten and glassy states and found identical curve.