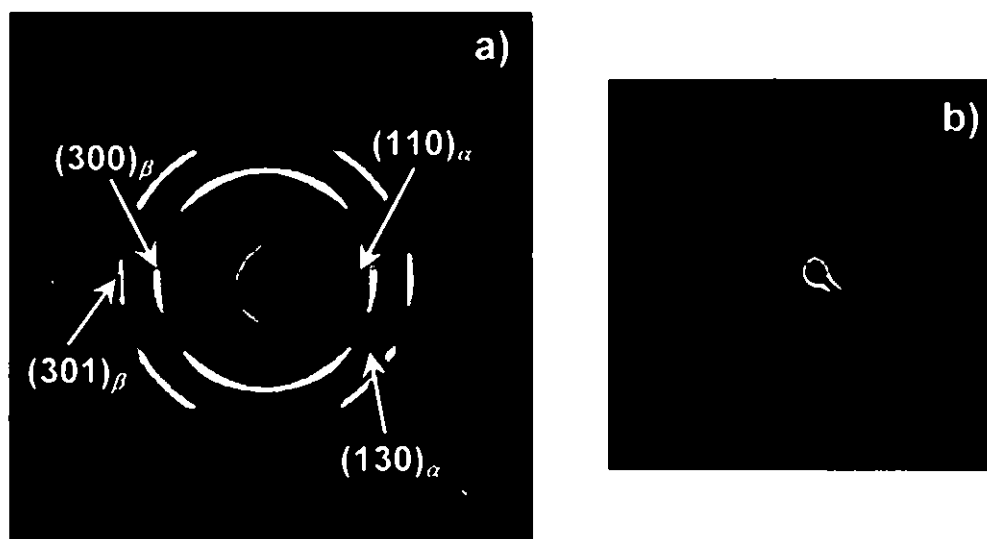


Supplemental Information.

Orientation of trans-crystallized sample

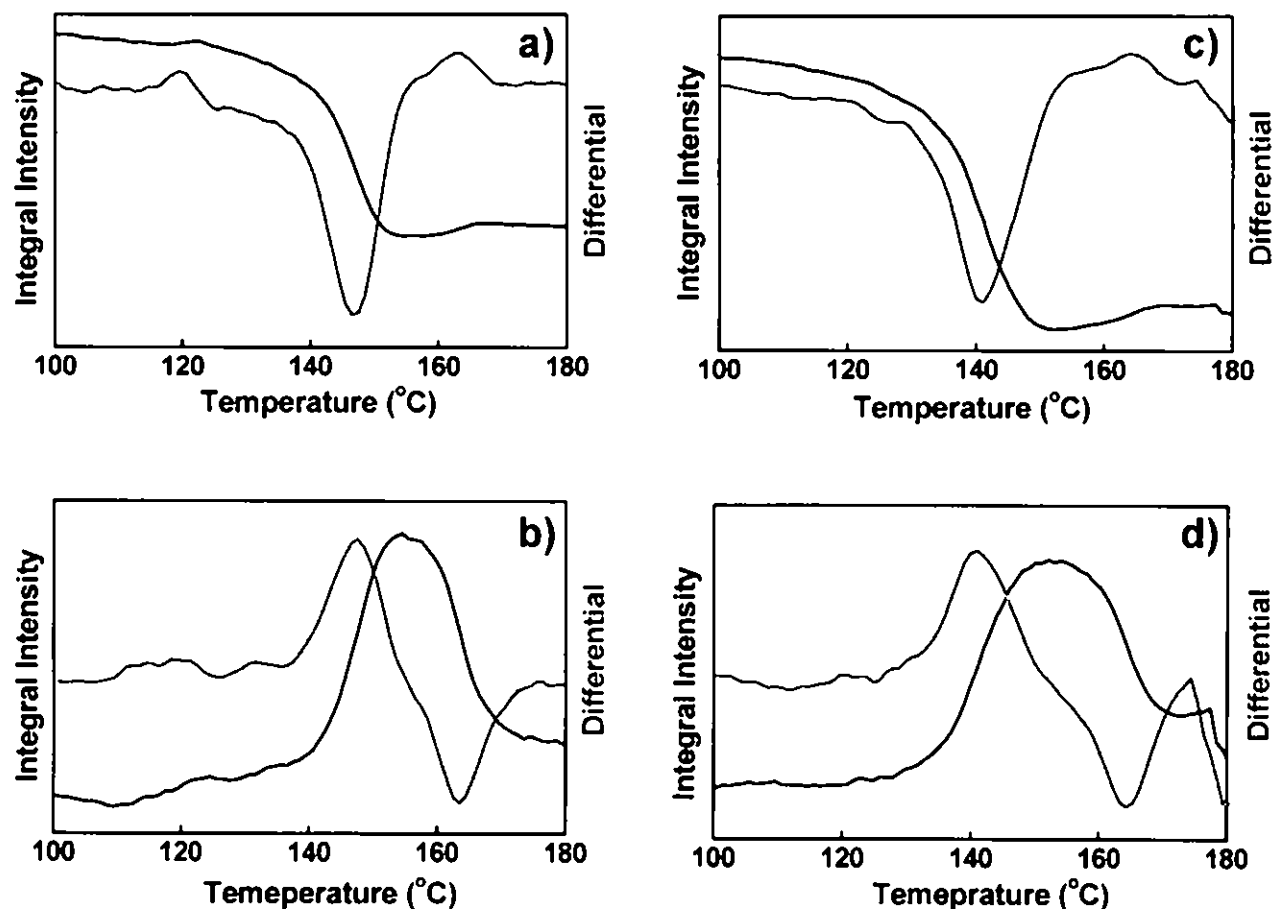
The nucleation-crystallized sample had a random chain and lamellar orientations, independent of the crystal transformation. However, the temperature gradient method for preparation of the trans-crystallized sample gave the parallel orientation of chains along the film surface, which was revealed by edge-viewed WAXD pattern (a). Also, the edge-viewed SAXS pattern (b) exhibited the perpendicular orientation of the lamellae to the film surface.



Supplemental figure 1. WAXD (a) and SAXS (b) patterns for the trans-crystallized sample recorded with the incident X-ray beam parallel to the film surface (edge-viewed). The film surface is vertical for both patterns. Conventional $\text{Cu-K}\alpha$ radiation monochromatized with a Ni-filter was generated at 40 kV and 120 mA by a conventional Rigaku RU-200B rotating anode X-ray generator.

Effect of intensity correlation for WAXD profiles.

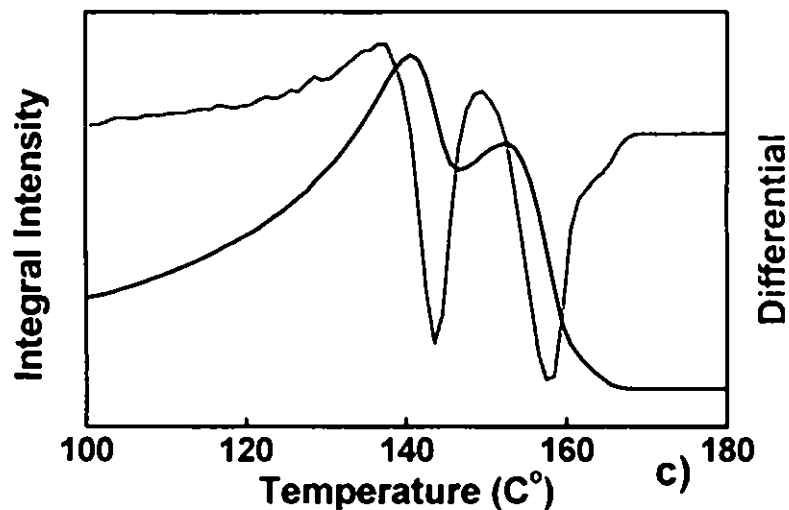
In the estimation of the integral intensity of WAXD profiles, the intensity correlations were not introduced in Figures 4 and 5. The figure sets shown below were the results obtained using the intensity $\times S$ for the trans-crystallized sample (left) and the intensity $\times S^2$ for the nucleation-crystallized sample (right). These figures are very similar to Figures 4 and 5 obtained using the uncorrected intensity.



Supplemental figure 2. Changes in the WAXD integral intensities (thick lines) and their differential curves (gray lines) of β -form (a, c) and α -form (b, d) during heating for the trans-crystallized (left) and nucleation-crystallized samples (right). The intensity corrections by S and S^2 were introduced for the trans-crystallized and nucleation-crystallized samples.

Effect of lamellar orientation change for SAXS analyses.

In the case of the integral intensity estimation of the SAXS profiles for the trans-crystallized sample, the correlation by S was introduced to obtain the results in Figure 8 (a). The figure shown below was the results obtained using the intensity $\times S^2$. There is not a distinct difference from the trend in Figure 8 (a).



Supplemental figure 3. Changes in the SAXS integral intensity (thick lines) and their differential curves (gray lines) for the trans-crystallized sample during heating. The intensity correction by S^2 was introduced for a comparison to the results in Figure 8 (a).