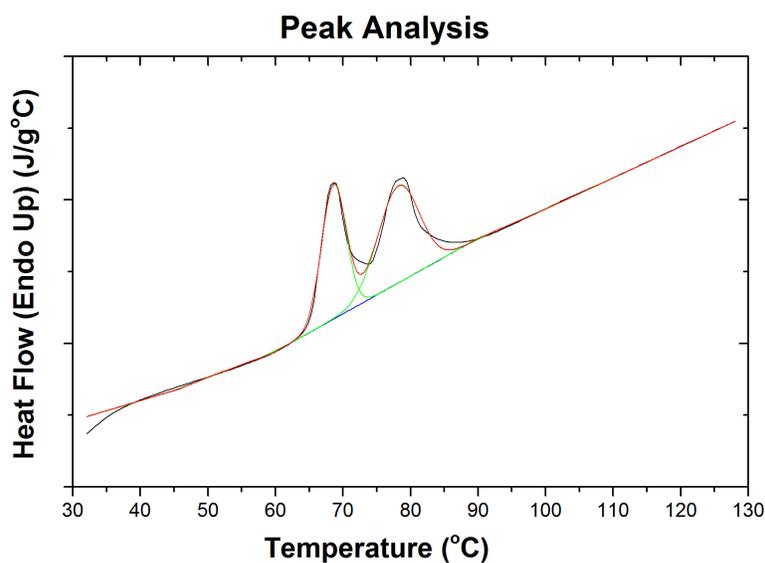


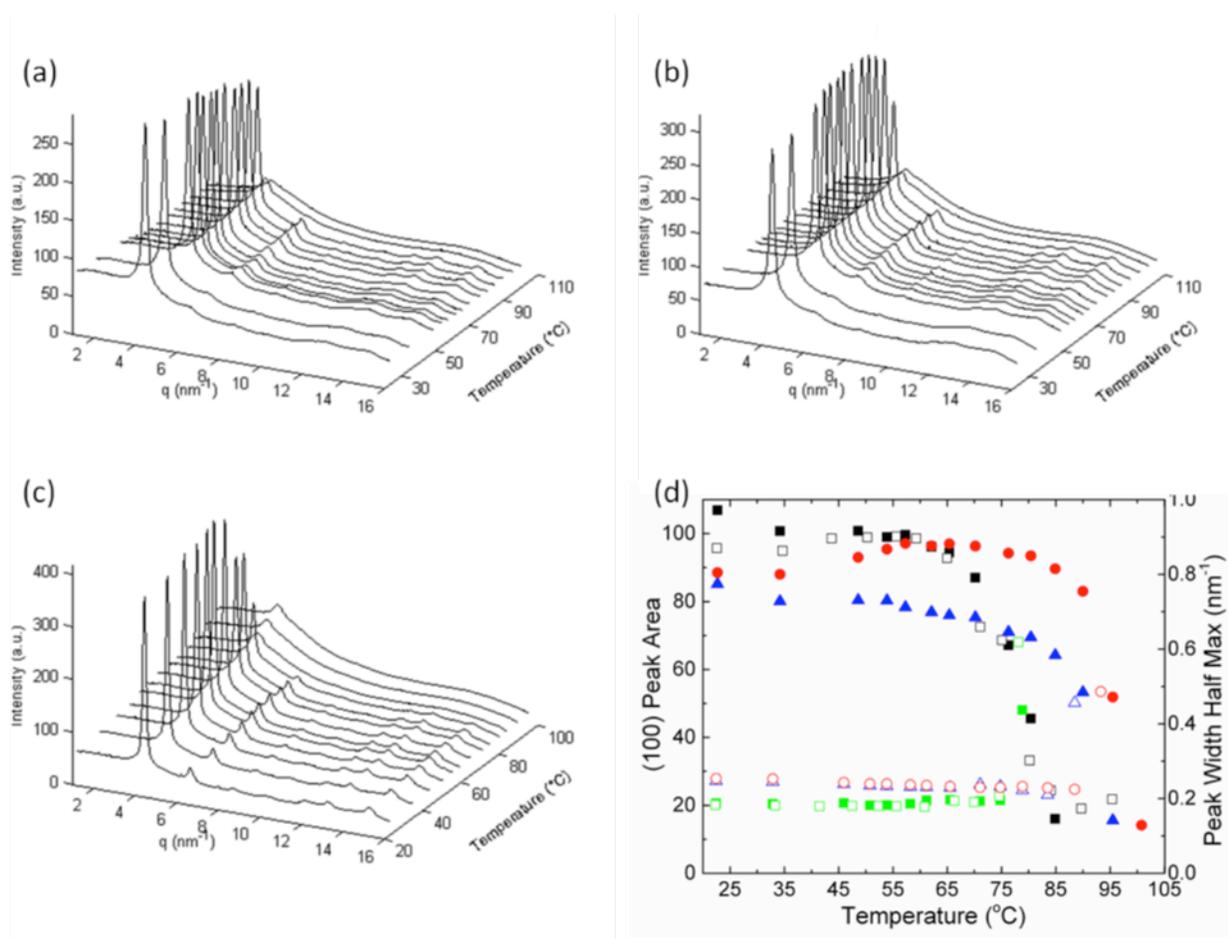
**Supporting Information for “Melting Behavior of Poly(3-(2'-ethyl)hexylthiophene”**  
**(Bryan S. Beckingham, Victor Ho and Rachel A. Segalman, submitted as an Article to**  
***Macromolecules*)**

**Gaussian Peak Analysis:**

To obtain relative peak areas, as well as peak positions, the DSC endotherms taken upon heating following isothermal crystallizations were fit with two Gaussians. Figure S1 reproduces the endotherm (black) taken following 60 minutes of isothermal crystallization at 25°C and displays the obtained Gaussian fits to the two peaks (green) as well as their composite endotherm (red). The representative Gaussian fitting shown in Figure S1 has an  $R^2$  of 0.982 and was obtained using Origin 9.1.



**Figure S1.** Example of Gaussian Fits used to determine the relative peak areas as the heating scan rate is varied. The original DSC endotherm (black) was fit with two discrete gaussians (bright green) yielding their combination fit to the data (red).



**Figure S2.** 1D WAXS patterns of (a) P3EHT-13 and (b) P3EHT-23 taken at various temperatures upon heating after isothermal crystallization at 25°C. (c) 1D WAXS patterns of P3EHT-8 taken at various temperatures upon heating after isothermal crystallization at 55°C. (d) (100) peak areas and peak-width at half maximum intensities obtained from the presented WAXS patterns. (■), (▲) and (●) represent the peak areas of P3EHT-8, P3EHT-13 and P3EHT-23 taken upon heating following isothermal crystallization at 25°C and (□) represents the peak areas of P3EHT-8 after isothermal crystallization at 55°C. Similarly, (■), (▲) and (●) represent the (100) peak-width at half max for P3EHT-8, P3EHT-13 and P3EHT-23 after isothermal crystallization at 25°C and (□) those of P3EHT-8 after isothermal crystallization at 55°C. (e)