Supplementary Material

For the purpose of comparison to previous literature reports,[13-19] we present here the results of a shifting procedure in which data from both smectic and isotropic phases, as well as the corresponding biphase, are simultaneously shifted within a single master plot in which superposition is attempted at high frequencies (Figure S1). As discussed in the paper, this procedure is based on a notion that rheology at high frequencies will probe sufficiently local dynamics that larger-scale ordering becomes inconsequential, and has been frequently and successfully applied to both block copolymers[30] and SGLCPs in the nematic phase.[6,13] In the present case, we do not believe this type of shifting to be warranted. While G' data may be shifted in a way in which reasonable superposition is achieved (Figure S1(a)), this does not result in good superposition in G" (this is not surprising, given the imperfect superposition of high data from the three regimes in the Cole-Cole plot, Figure 7). Figure S2 presents the temperature dependent shift factors derived from this procedure. Although the shifting procedure itself is *ad hoc*, the resulting shift factors do succinctly convey the information about the relative temperature dependences in the smectic, isotropic and biphase regimes. The biphasic region is manifested as a regime of extremely high apparent activation energy; intersections of the Arrhenius fits in each regime allow facile determination of the extent of the biphase region, as in Figure 6.

Figure S1. (a) Storage modulus and (b) loss modulus master curves for 518 kg/mol PBSiCB5, obtained by attempting to superimpose high frequency data from all temperatures. Reference temperature, T_o= 60 °C.

Figure S2. Time-temperature shift factors (a_T) obtained from shifting the data from Figure 8. The points show the experimental values and the lines show Arrhenius fits. The x-ray peak intensity ratio data for 518 kg/mol PBSiCB5 are also shown (*open triangles*).

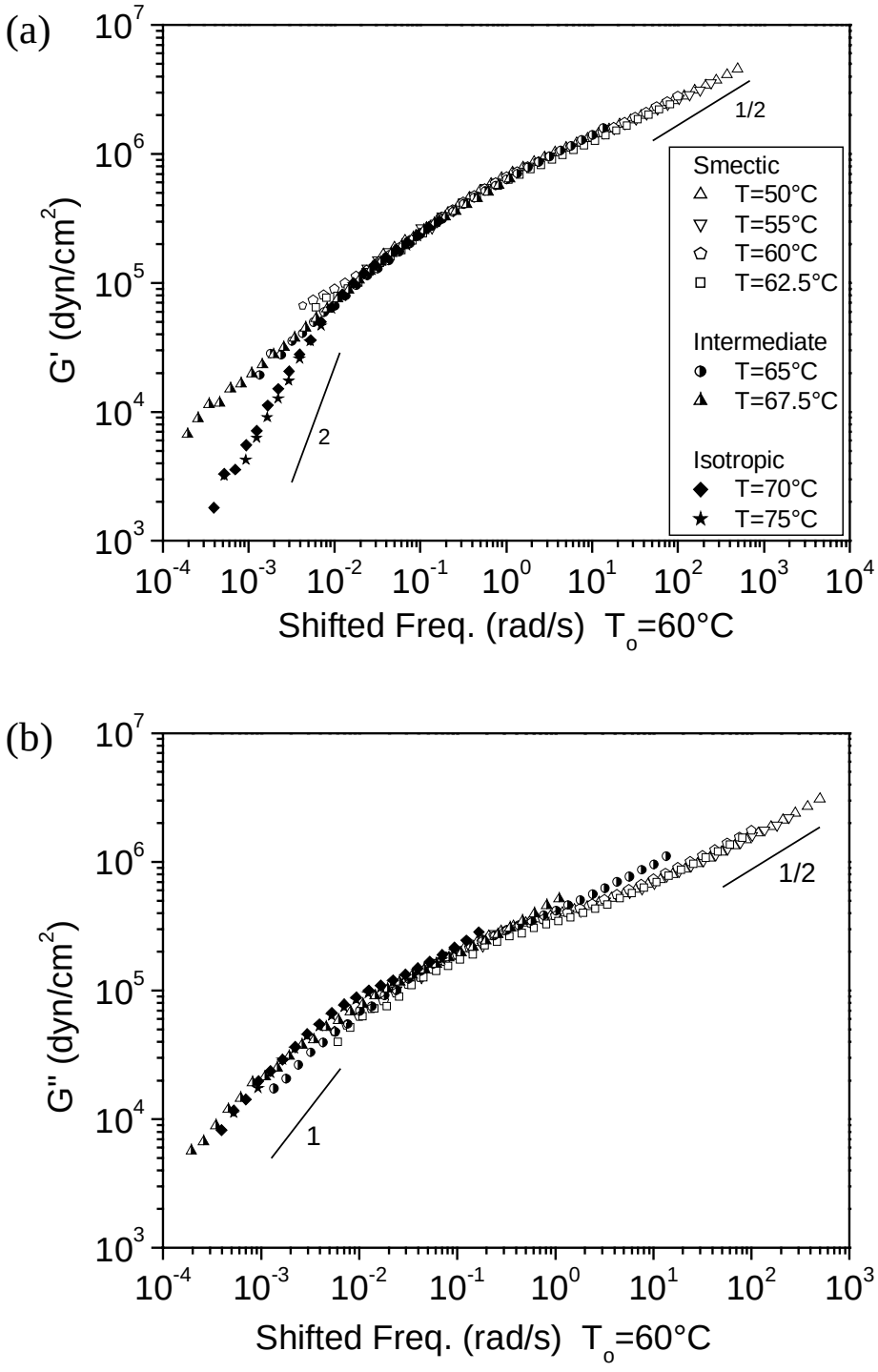
(a)
G' (dyn/cm^2)
Shifted Freq. (rad/s) T_o=60°C
1/2
2
Smectic
T=50°C
T=55°C
T=60°C
T=62.5°C
Intermediate
T=65°C
T=67.5°C
Isotropic
T=70°C
T=75°C
(b)
G'' (dyn/cm^2)
Shifted Freq. (rad/s) T_o=60°C
1/2
1

Figure S1

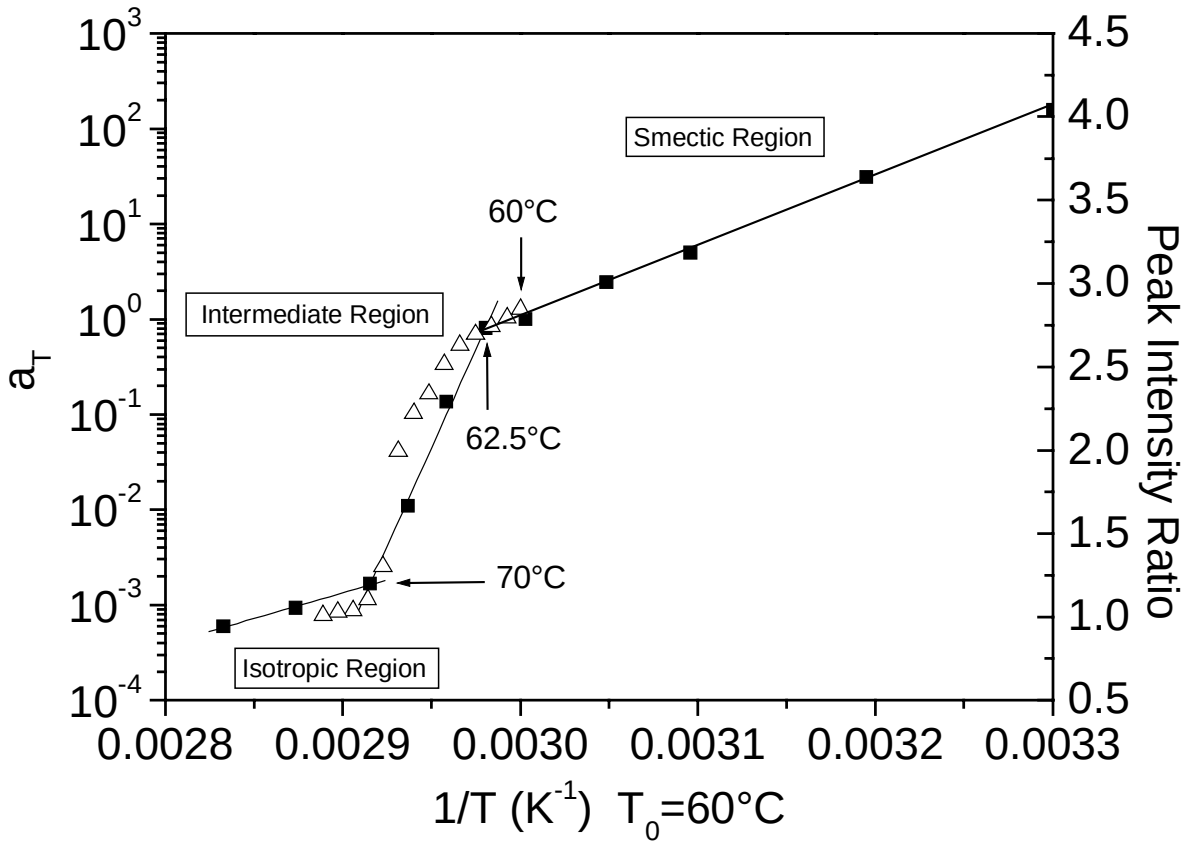
Smectic Region
60°C
Intermediate Region
62.5°C
70°C
Isotropic Region
a_T
Peak Intensity Ratio
1/T (K^{-1}) T_0=60°C
10^3
10^2
10^1
10^0
10^{-1}
10^{-2}
10^{-3}
10^{-4}
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0028
0.0029
0.0030
0.0031
0.0032
0.0033

Figure S2