Electronic Supporting Information

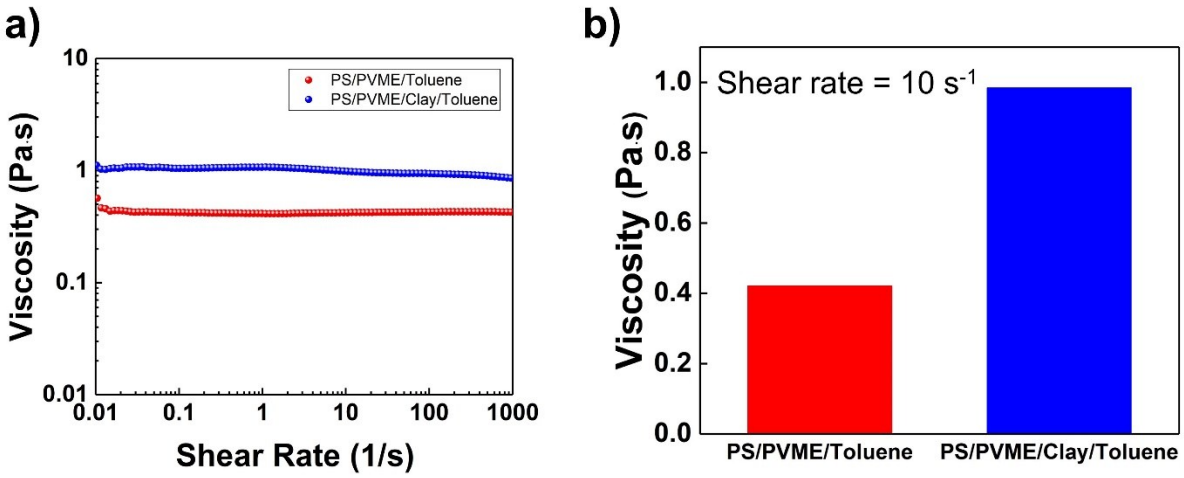

Fig. S1 (a) Viscosity of PS/PVME/Toluene sample with and without 5 vol% clay fillers and (b) Viscosity at 10 s^{-1} shear rate.

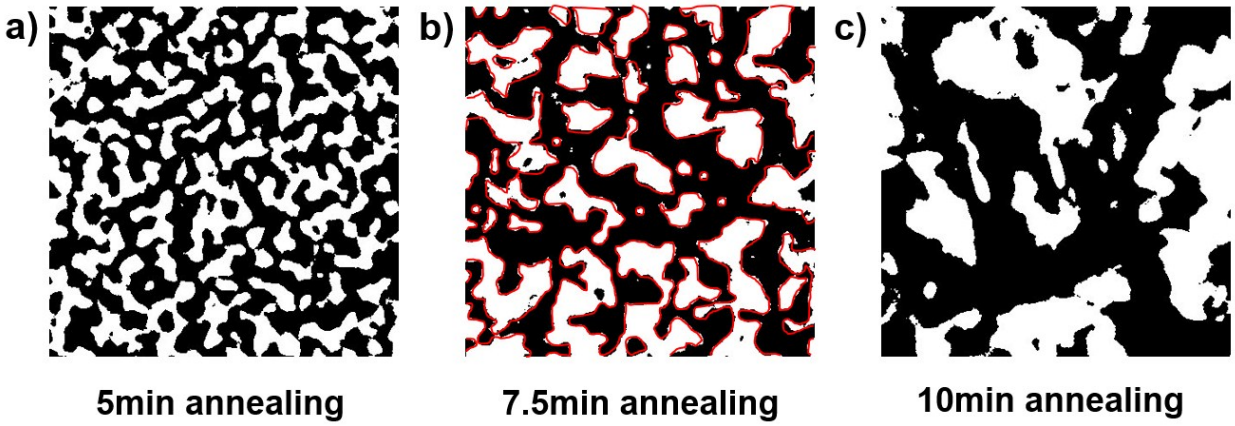

Fig. S2 Characteristic domains size (ξ) of continuous PS and PVME domains.

Characteristic domains size (ξ) of the phase separated morphology was calculated by dividing the total area (A) by the total interfacial length (L). For example, the areas of figure 2b is 10,000 μm^2 (100 μm x 100 μm) and the total interfacial length (total length of red lines) is 6700 μm. The Characteristic domains size (ξ) of image 2b is 1.49 μm.

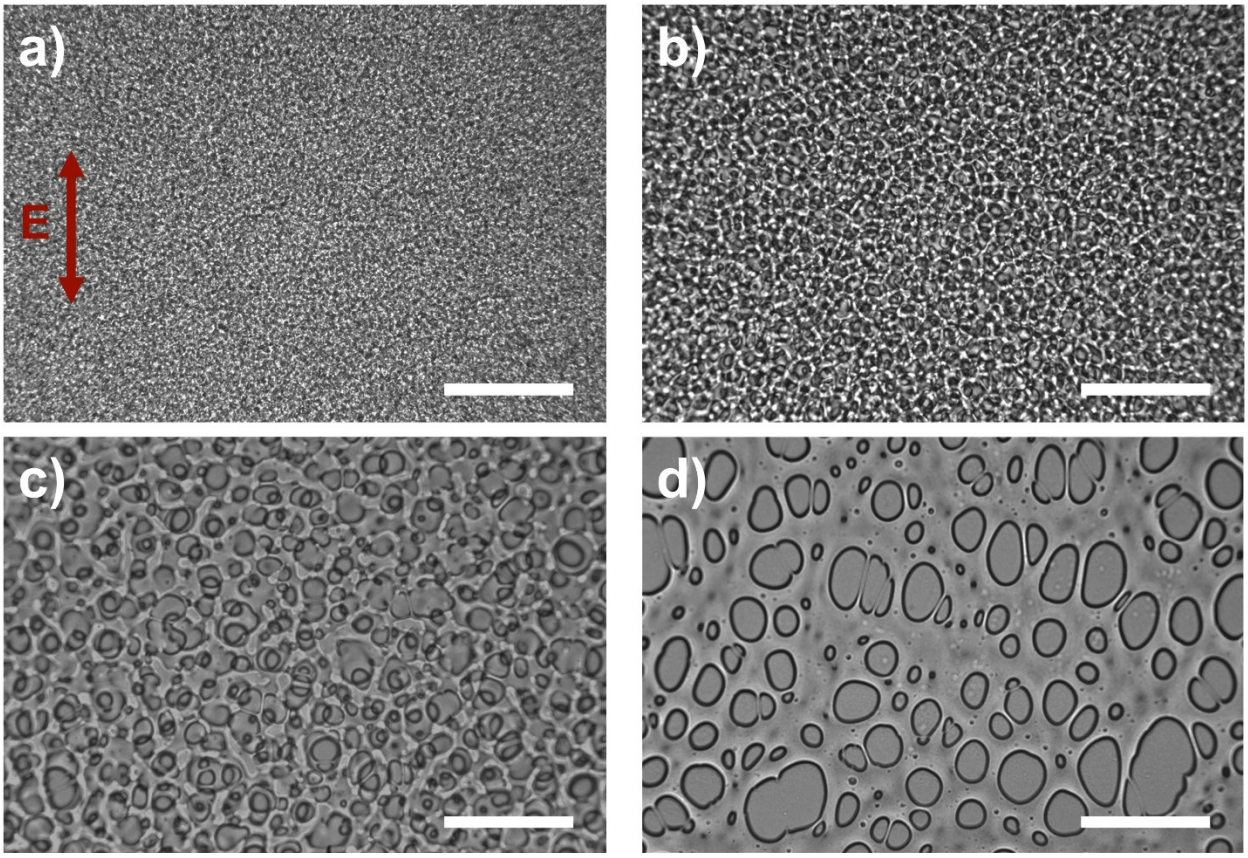

Fig. S3 Optical microscope images (Top view) of the PS/PVME (50/50) blend morphology with an AC electric (500 V/mm, 100Hz) at 128 °C. The sample were annealed for (a) 10 min, (b) 15 min, (c) 17.5 min, and (c) 20mins. (Scale bar : 100μm)

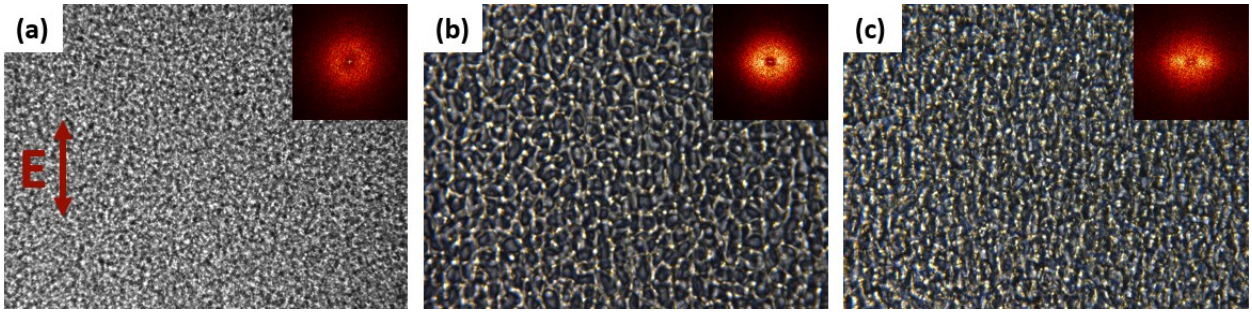

Fig. S4 Optical microscope images (Top view) of the PS/PVME (50/50) blend morphology with pre-oriented clay platelets at different clay concentrations. (a) 1 vol% annealed for 10 mins, (b) 2 vol% annealed for 30 mins, and (c) 5 vol% annealed for 30 mins at 128°C. AC electric field (500V/mm, 100Hz) was applied for all the samples. (Scale bar : 50 μm).

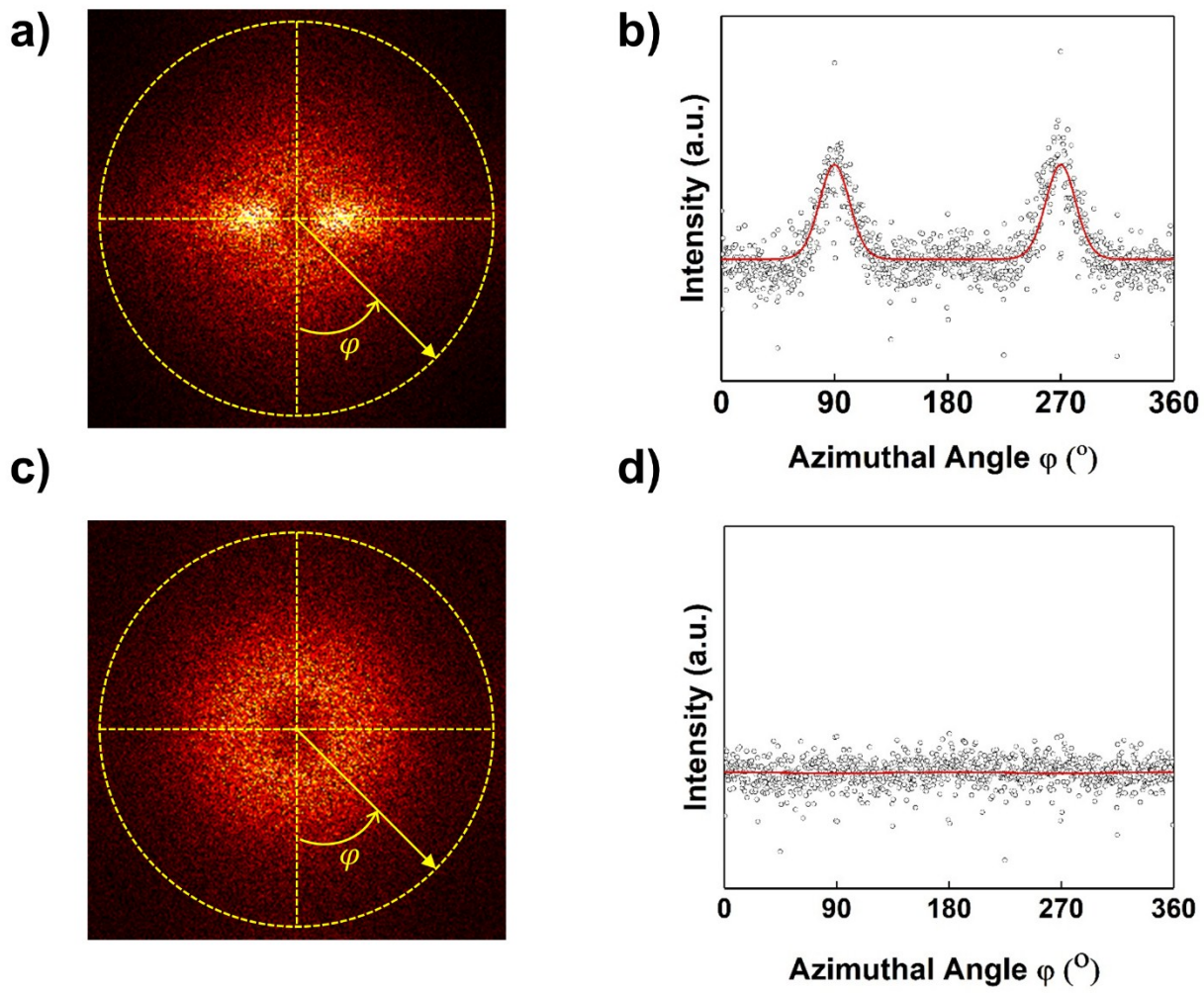

Fig. S5. (a) 2D-FFT pattern of the optical image (the sample containing 5 vol% clay nanofillers with a 500 V/mm electric field strength at 128 °C for 60mins). (b) The corresponding plot of the integrated intensity of the 2D-FFT pattern against the azimuthal angle (ϕ) (c) 2D-FFT pattern of the optical image (the sample containing 5 vol% clay nanofillers without AC field at 128° C for 15mins). (d) The corresponding plot of the integrated intensity of the 2D-FFT pattern against the azimuthal angle (ϕ).

The 2D-FFT patterns of the optical images were obtained by the image analysis software. The intensity of the obtained 2D-FFT pattern was integrated along the azimuthal angle (ϕ) and then the intensity was plotted against the azimuthal angle (ϕ). The plot was fitted to a Maier-Saupe distribution function[1,2]

$$I = I_0 + Ae^{\alpha\cos^2(\varphi - \varphi_0)}$$

, where I_0 is a free base line, α is a parameter determining a width between two peaks, and ϕ_0 is the azimuth angle at the maximum intensity. After α is obtained by fitting the distribution function to the data, the orientation order parameter $\langle P_2 \rangle$ is determined by the following equation.

$$\langle P_2 \rangle = \frac{\int_{-1}^{1} P_2(\cos\emptyset) e^{\alpha\cos^2\emptyset} d\cos\emptyset}{\int_{-1}^{1} e^{\alpha\cos^2\emptyset} d\cos\emptyset}$$

, where $P_2(\cos\phi)$ is the Hermans orientation function as shown below.

$$P_2(\cos\emptyset) = \frac{1}{2}(3\cos^2\emptyset - 1)$$

References

1 S. Feng, X. Xiong, G. Zhang, N. Xia, Y. Chen and W. Wang, *Macromolecules*, 2009, **42**, 281–287.

2 Y. Nie, G. Huang, L. Qu, X. Wang, G. Weng and J. Wu, *Polymer*, 2011, **52**, 3234–3242.