SUPPLEMENTAL INFORMATION

Temperature Dependence of Polymer Diffusion in MWCNT/PS Nanocomposites

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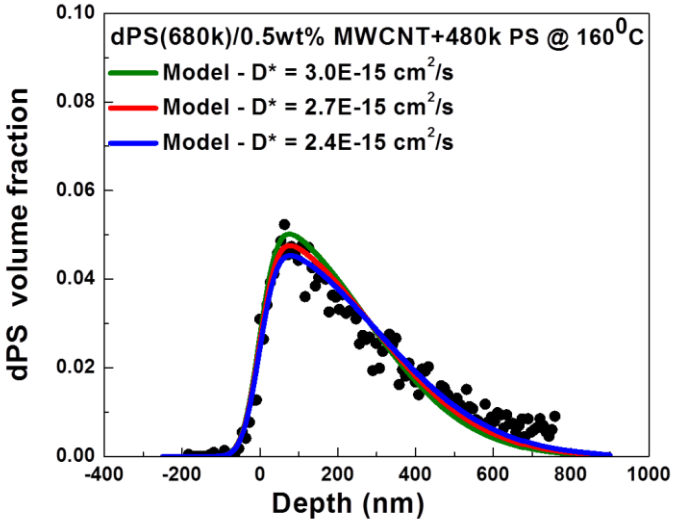

Figure S1. The depth profile of 680k dPS partially diffused into 0.5wt% MWCNT/PS nanocomposites after annealing at 160 °C for 40 hours. Lines correspond to the convolution of a Gaussian function and Eq. 3, where h = 18 nm and three different diffusion coefficients as given in the figure. This figure illustrates the uncertainty in fitting the diffusion coefficients using the depth profile with the convolution of Fick's second low and a Gaussian function. The uncertainty is about 10 %. The diffusion coefficients we obtained from the fitting is 2.7E-15 cm^2/s, and ± 10 % of that diffusion coefficient still provide relatively good fits.

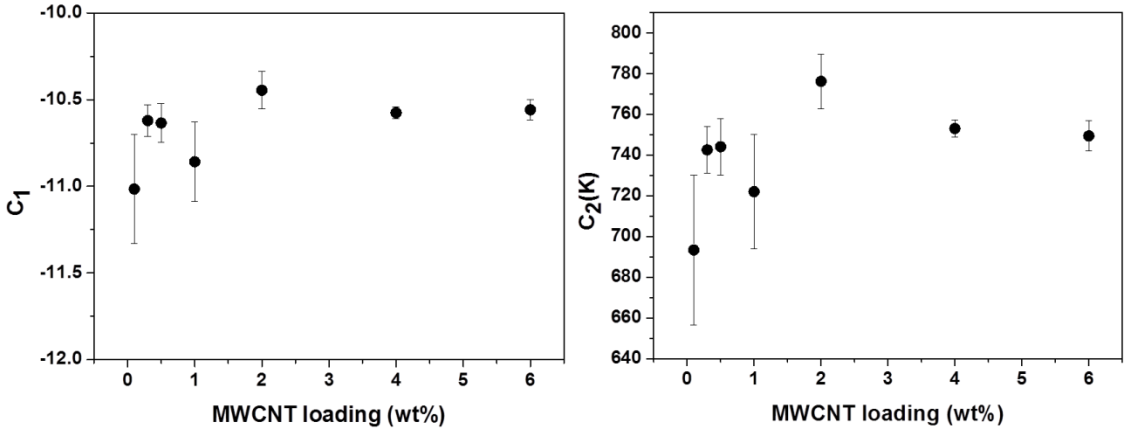

Figure S2. Fitting results for C_1 and C_2 for all MWCNT concentrations, except 0.7 wt%. We include results from samples with 0.1 and 1 wt % MWCNT although the temperature range studied is narrower and, consequently, the error bars are larger. At 0.7 wt%, the temperature range is too narrow (only ~ 20 $^{\circ}$C) to have reliable fitting results. As can be seen in the figure, C_1 is approximately constant across the whole concentration, and C_2 shows a slight maximum at 2wt%.