

Supporting Information

For

Revisiting the Flow-driven Translocation of Flexible Linear Chains through Cylindrical Nanopores: Is the Critical Flow Rate Really Independent of the Chain length?

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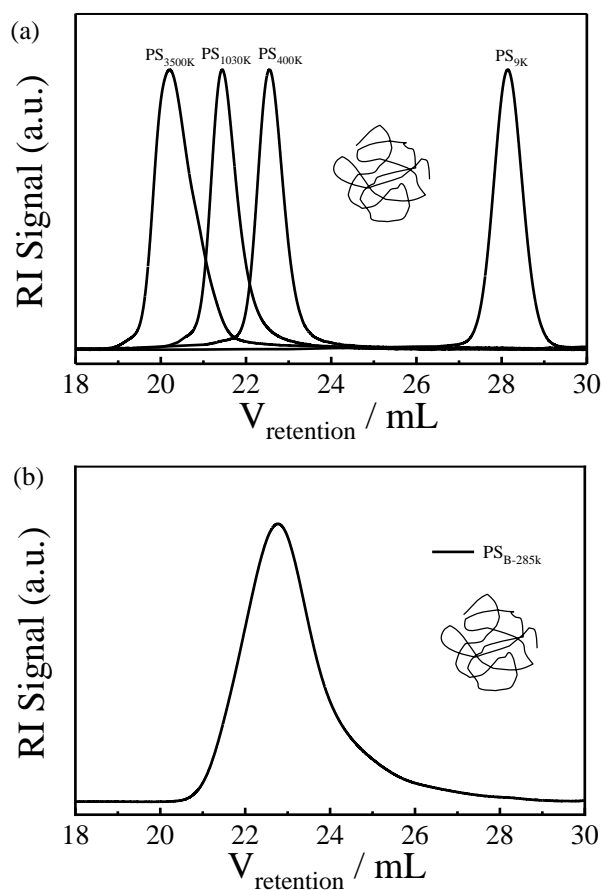


Figure S1. SEC characterization of PS samples used in ultrafiltration experiments.

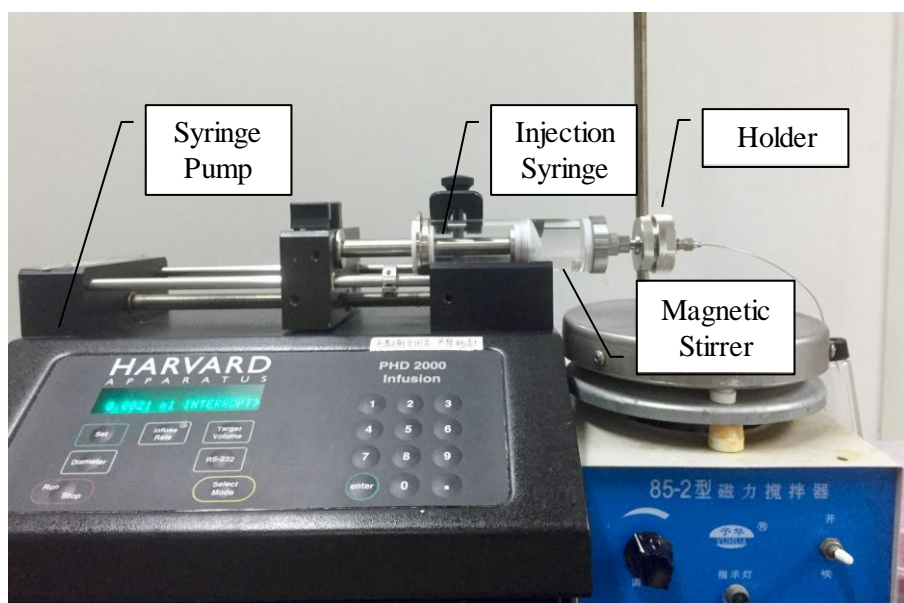


Figure S2. Photograph of experimental setup for ultrafiltration study in this work.

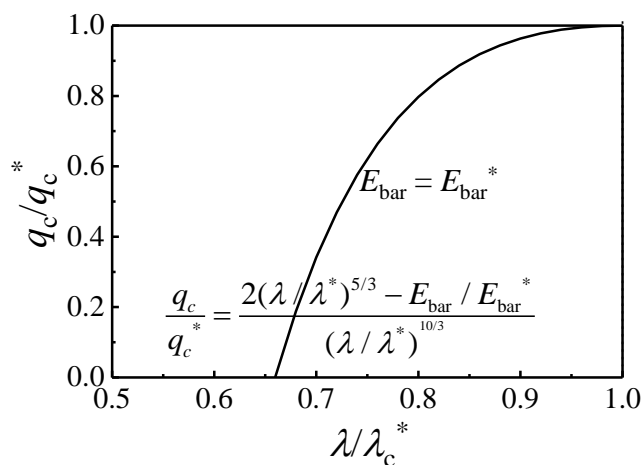


Figure 3. The normalized chain size (λ/λ_c^*) dependence of normalized critical flow rate (q_c/q_c^*) for polymer chains in the short-chain regime.

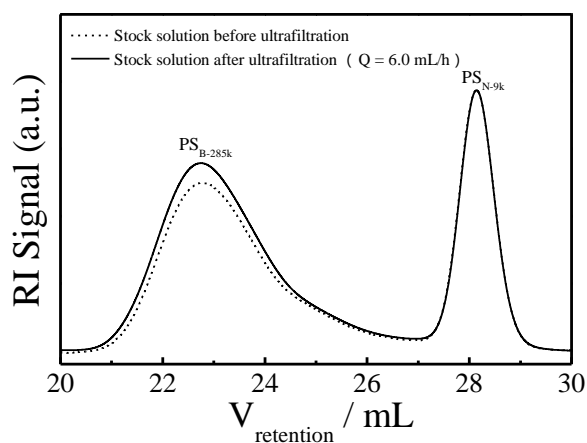


Figure S4. SEC curves of stock solutions of one broadly distributed PS sample ($\text{PS}_{\text{B-285k}}$) before and after passing through the AAO membrane.

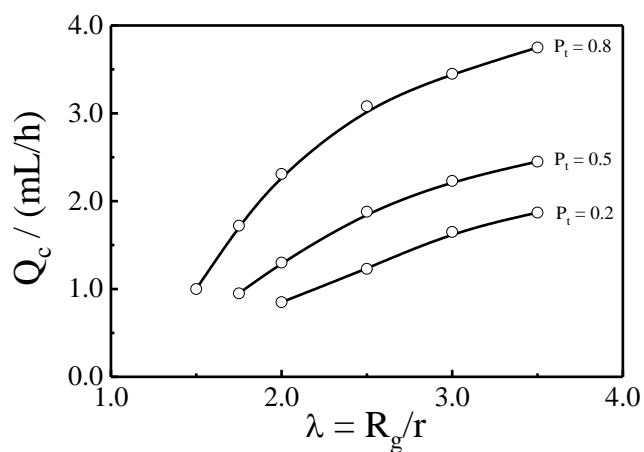


Figure S5. Relative chain size ($\lambda = R_g/r$) dependence of the experimentally determined Q_c at different P_t values.

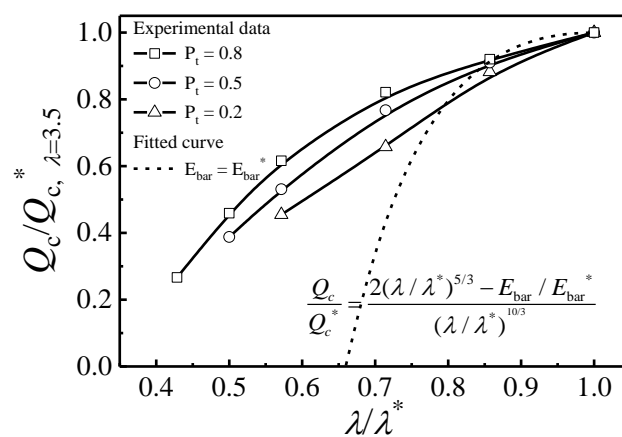


Figure S6. Normalized relative chain size (λ/λ^*) dependence of the normalized macroscopic critical flow rate (Q_c/Q_c^*), where Q_c at $\lambda = 3.5$ was used as Q_c^* and $\lambda^* = 3.5$.

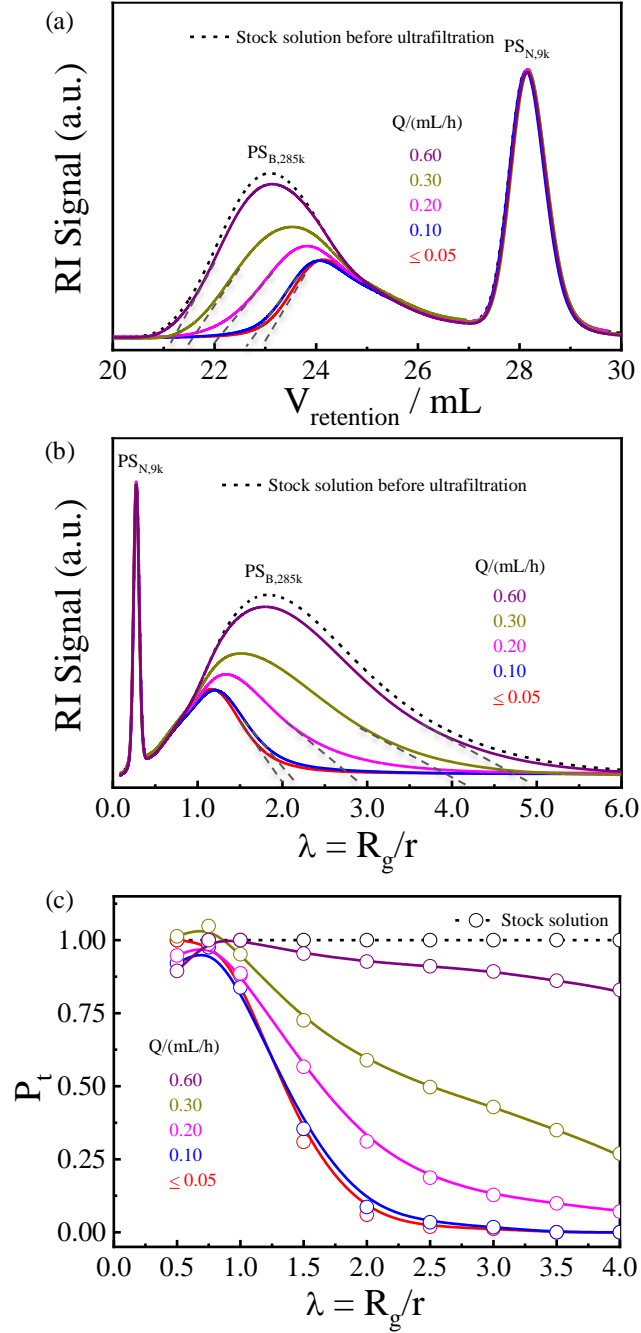


Figure S7. (a) and (b) SEC curves of polymer solutions of one broadly distributed PS sample (PS_{B-285k}) after passing through an AAO membrane with $D = 20$ nm from support layer to active layer in toluene at $T = 20$ °C under different macroscopic flow rates (Q), where the molar mass information can be converted in to the size information based on the equation $R_g = 1.23 \times 10^{-2} M^{0.594}$ (in toluene), and the dashed lines in Figure a and b represent the tangent lines for each curves. (c) Relative chain size ($\lambda = R_g/r$) dependence of the translocation probability (P_t) of PS linear chains (PS_{B-285k}) under different macroscopic flow rates.

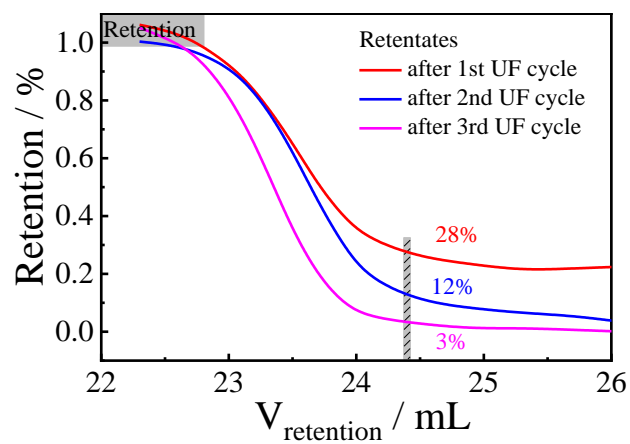


Figure S8. Ultrafiltration cycle number (N_u) dependence of the relative concentrations (C_r/C_s) for each polymer fraction in retentate solutions.