Electronic Supplementary Material (ESI) for Soft Matter

Supporting information: Dynamic Structure of Unentangled Polymer Chains in the Vicinity of Non-attractive Nanoparticles

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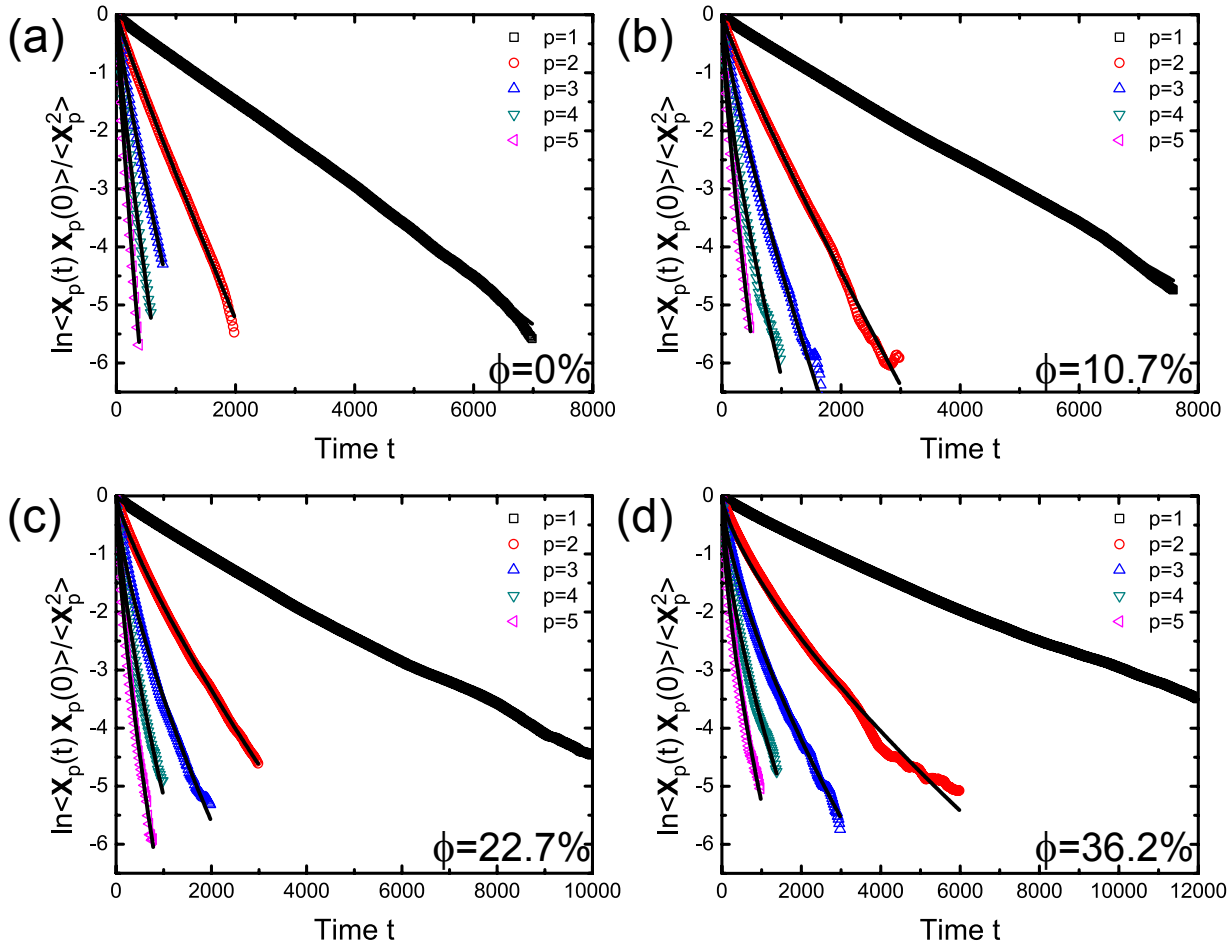

FIG. 1. Typical relaxation plots of the logarithm of the mode autocorrelation function for FENE chains with different NP volume fraction ϕ. The solid lines are fitted by Eq.5 in the main text.

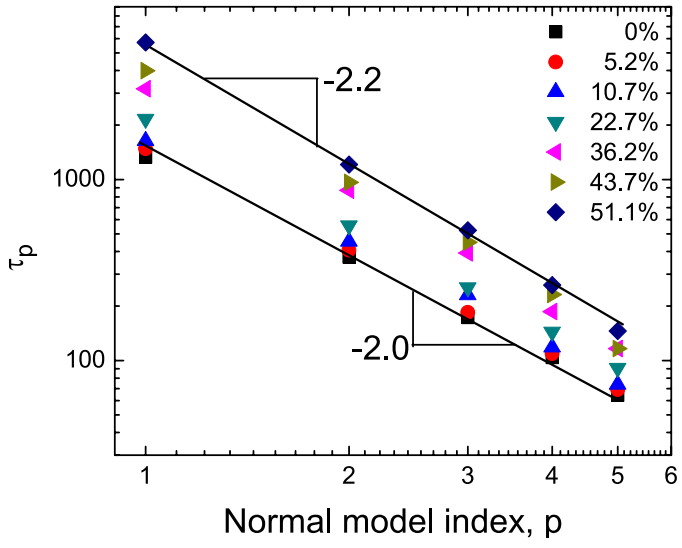

FIG. 2. Scaling relationship between relaxation time τ_p and normal model index p.

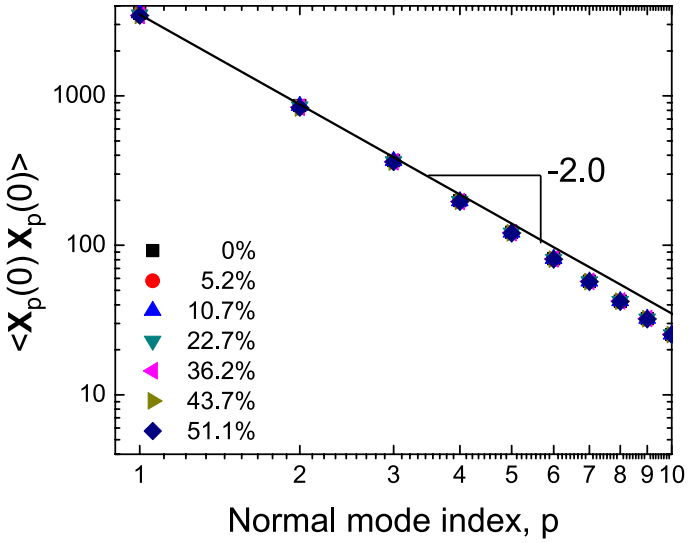

FIG. 3. Scaling relationship between self-correlation function $\langle \mathbf{X}_p(0) \cdot \mathbf{X}_p(0) \rangle$ and normal model index p.

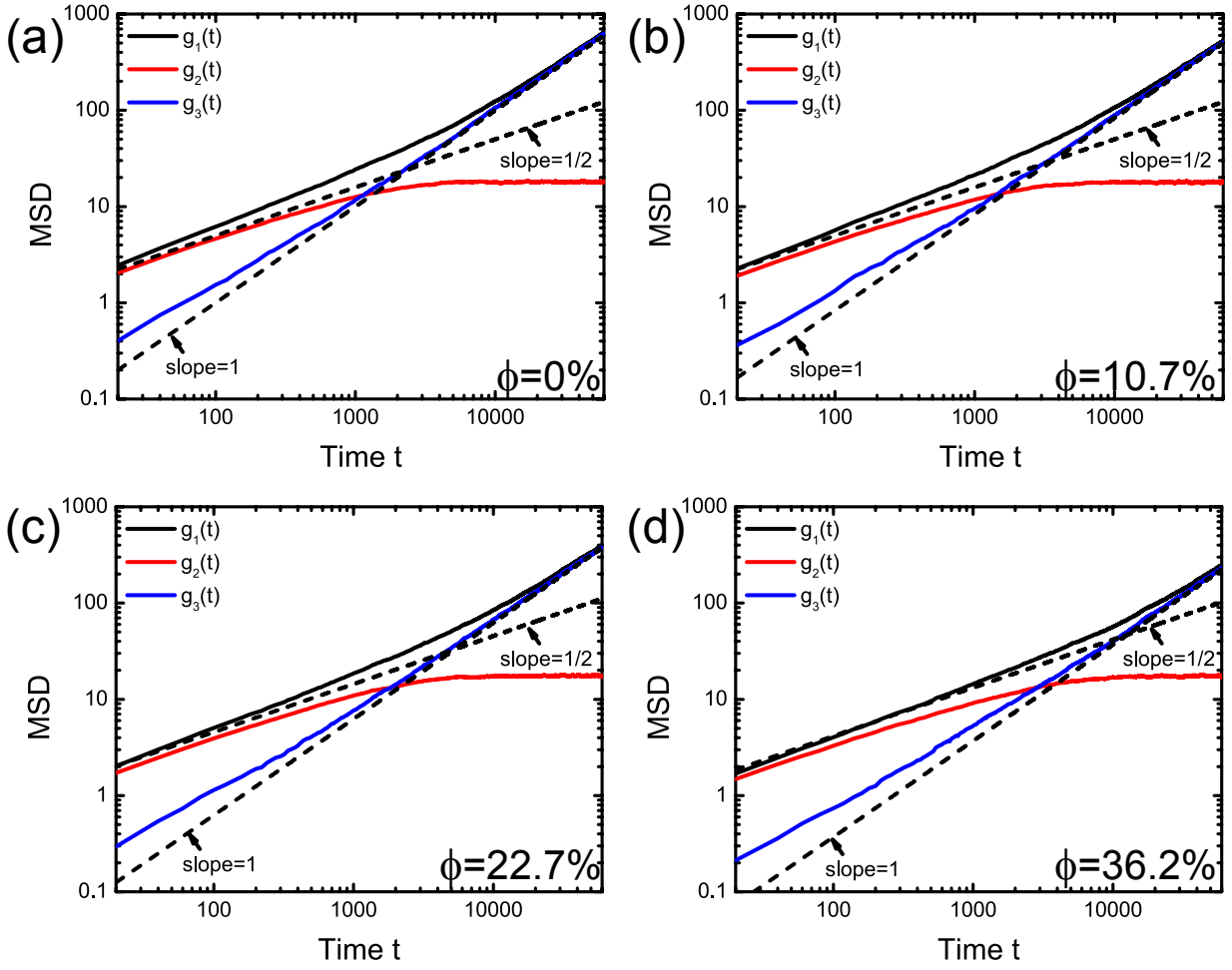

FIG. 4. MSD $g_1(t)$, $g_2(t)$ and $g_3(t)$ for FENE chains with different NP volume fraction ϕ.

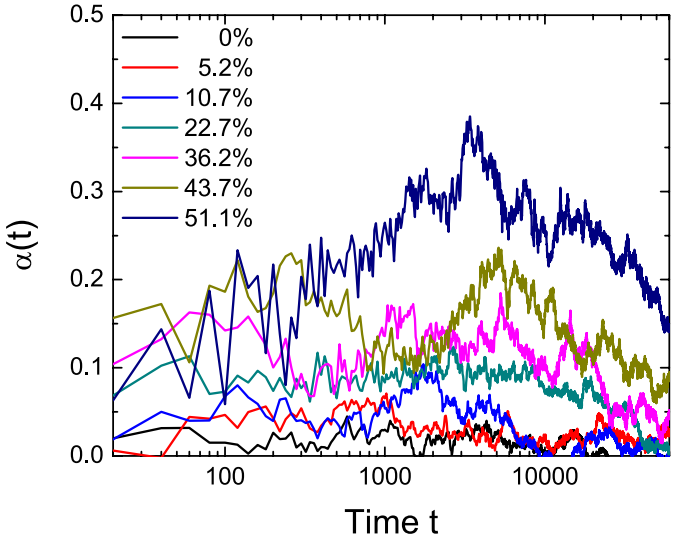

FIG. 5. Non-Gaussian parameter $\alpha(t)$ for FENE chains with different NP volume fraction ϕ.

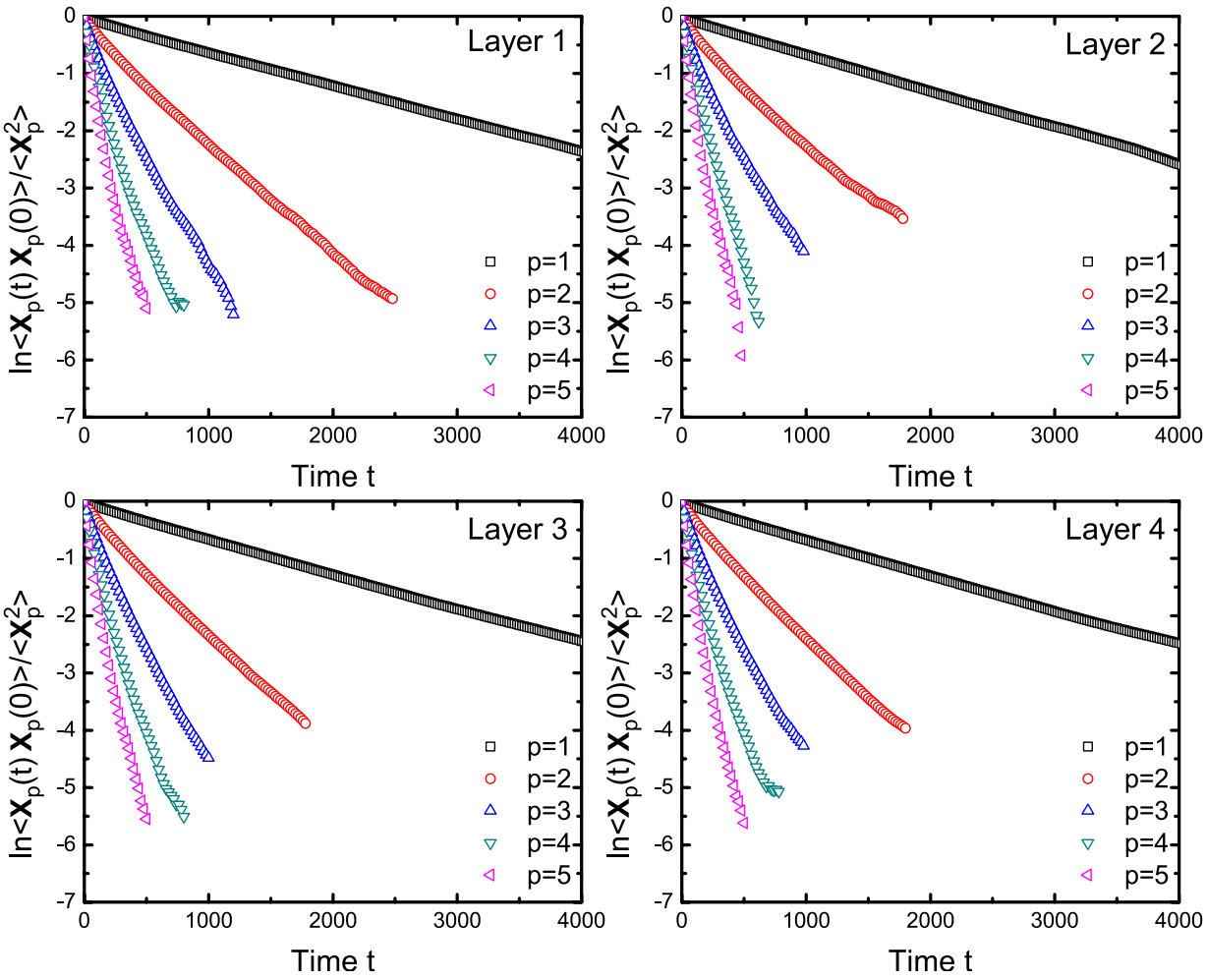

FIG. 6. Normal mode relaxations for different layered polymers in PNCs with NP volume fraction 10.7%.

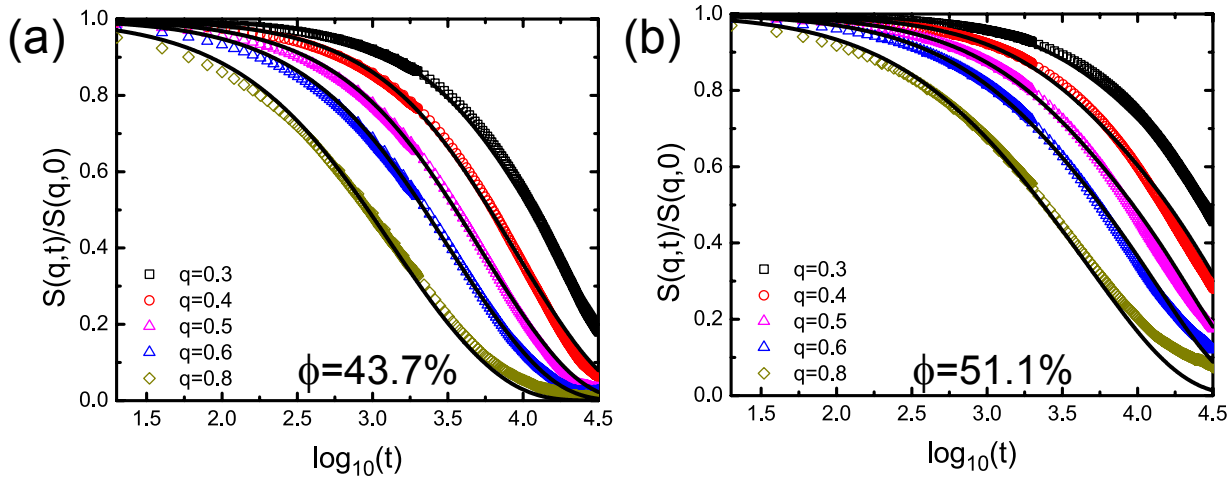

FIG. 7. Dynamic structure factor $S(q,t)$ of chains in PNCs with different NP volume fractions. The solid lines are fitted by Eq. 14 in the main text.

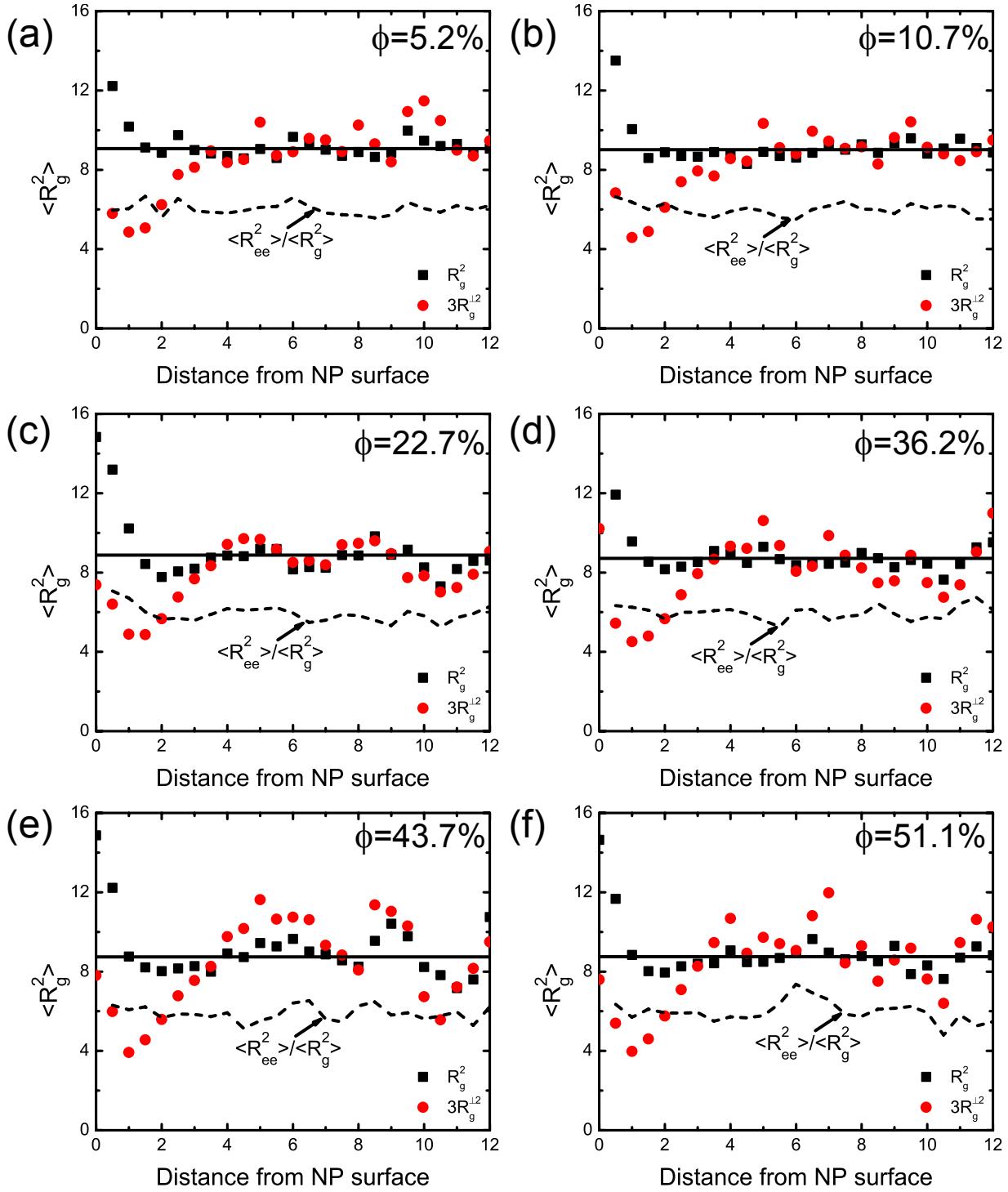

FIG. 8. Radius of gyration $\langle R_g^2 \rangle$ of the polymer chains as a function of distance of a polymer chain's center-of-mass from the nearest NP surface. The perpendicular component of R_g to the NP surface is labeled as $R_g^{\perp}$. The solid line represents $\langle R_g^2 \rangle$ for the whole system, as given in Tab.1 in the main text. The dash line denotes the ratio $\langle R_{ee}^2 \rangle / \langle R_g^2 \rangle$. The increase of R_g, coupled with the decrease of $R_g^{\perp}$, indicates that the chains become increasingly elongated and flattened as they are approaching the surface of NP. At the same time, the polymer chain's dynamics will be perturbed by the NP.