

Cite this: DOI: 10.1039/xxxxxxxxxx

Supporting Information: Disentangling of Complex Polymer Dynamics under Nanoscopic Confinement

Björn Kuttich,^{*a,b} Ingo Hoffmann^c and Bernd Stühn^a

Received Date

Accepted Date

DOI: 10.1039/xxxxxxxxxx

www.rsc.org/journalname

1 Comparison of the restricted diffusion model and its exponential approximation

In figure 1 the intermediate scattering functions from both calculation methods are shown for several selected q -values investigated in the experiment. The intermediate scattering functions are calculated for the full dynamics of the system, thus including droplet translation and rotation, only differing in the method of calculating the pure polymer MSD.

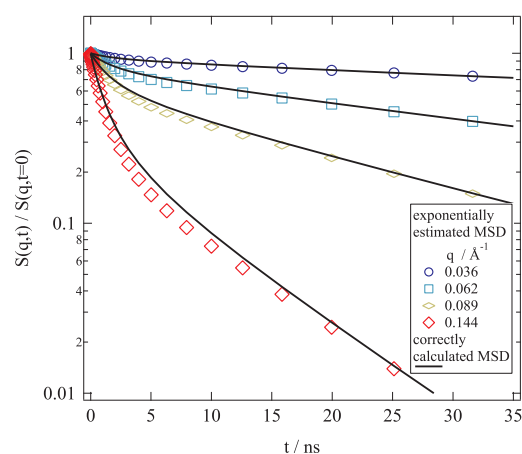


Fig. 1 Calculated intermediate scattering functions for several selected q -values from the experiment. The functions represent the full dynamics of the system composed of droplet translation, droplet rotation and polymer rotation. The open data points approximate the polymer MSD by an exponential build-up, while the solid lines use the correct calculation of the restricted polymer MSD.

For small q -values a good agreement of both calculation methods over the entire investigated time scale is found. At higher q -values small deviations at intermediate times are present, as al-

2 Intermediate scattering functions for smallest and largest confinement size

In the following two figures experimental data and results of the fitting procedure for the smallest (see fig. 2) and largest (see fig. 3) ready discussed for the MSD. In comparison to the experimental uncertainties indicated by the error bars in figure 1 of the main manuscript these deviations are small and thus using the exponential approximation seems reasonable.

3) confinement size are shown. Data description by the model discussed in the main article is very good, supporting further the reliability of resulting fitting parameters.

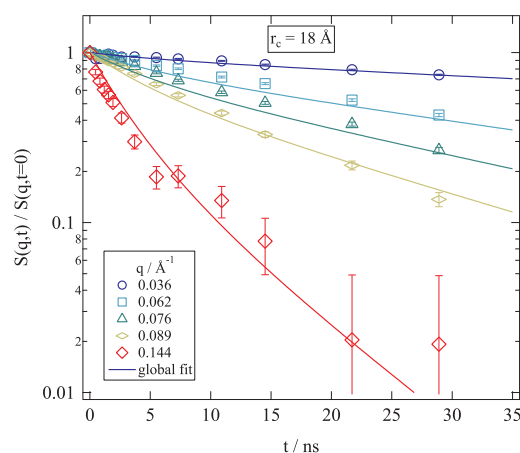


Fig. 2 Intermediate scattering functions for the smallest confinement size ($r_c = 18 \text{ Å}$). Solid lines are fit of the global model discussed in the main manuscript.

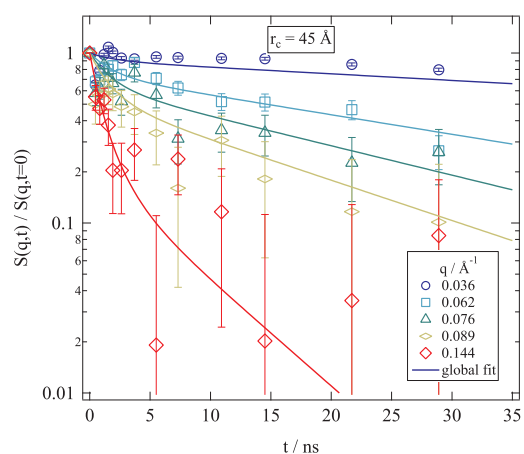


Fig. 3 Intermediate scattering functions for the largest confinement size ($r_c = 45 \text{ \AA}$). Solid lines are fit of the global model discussed in the main manuscript.