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Influence of polymer-pore interactions on translocation TAPIO

ALA-NISSILA, Helsinki University of Technology, KAIFU LUO, Helsinki University of Technology, Finland, SEE-CHEN YING, Brown University, ANIKET BHATTACHARYA, University of Central Florida, TKK COLLABORATION, BROWN COLLABORATION, UCF COLLABORATION — We investigate the influence of polymer-pore interactions on the translocation dynamics using Langevin dynamics simulations². An attractive interaction can greatly improve translocation probability. At the same time, it also increases translocation time slowly for weak attraction while exponential dependence is observed for strong attraction. For fixed driving force and chain length the histogram of translocation time has a transition from Gaussian distribution to long-tailed distribution with increasing attraction. Under a weak driving force and a strong attractive force, both the translocation time and the residence time in the pore show a non-monotonic behavior as a function of the chain length. Our simulations results are in good agreement with recent experimental data³.

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² K. Luo, T. Ala-Nissila, S. C. Ying, and A. Bhattacharya, Phys. Rev. Lett. **99**, 148102 (2007).

³ O. V. Krasilnikov *et al.*, Phys. Rev. Lett. **97**, 018301 (2006); A. Meller *et al.*, Proc. Natl. Acad. Sci. U.S.A. **97**, 1079 (2000).

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