

Diffusion of polymers through periodic networks of lipid-based nanochannel

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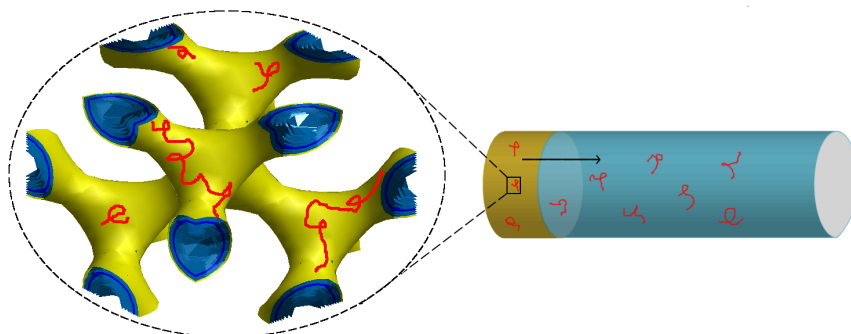
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We present an experimental investigation on the diffusion of unfolded polymers in the triply-periodic water-channel network of inverse bicontinuous cubic phases. Depending on the chain size, our results indicate the presence of two different dynamical regimes corresponding to Zimm and Rouse diffusion. We support our findings by scaling arguments based on a combination of blob and effective-medium theories, and suggest the presence of a third regime where dynamics is driven by reptation. Our experimental results also show an increasing behavior of the partition coefficient as a function of polymer molecular weight, indicative of a reduction of the conformational degrees of freedom induced by the confinement.

TOC



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