

Molecular dynamics in 1- and 2-dimensional nanometric confinement as studied by Broadband Dielectric Spectroscopy

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The question on what length-scale molecular and especially glassy dynamics of low molecular liquids and polymers takes place is of fundamental importance and has multifold practical implications. Recent results based on Broadband Dielectric Spectroscopy [1] for nanometric thin (≥ 5 nm) layers of a variety of polymers [2-6] and even for isolated chains [7] will be presented, delivering the concurring result that deviations from glassy dynamics of the bulk never exceed margins of ± 3 K *independent* of the layer thickness, the molecular weight of the polymer under study and the underlying substrate. - The experiments lead to the conclusions that glassy dynamics takes place on the length scale a few polymer segments ($\leq \sim 1$ nm), while the conformation of the chain as a whole is strongly modified by the geometrical confinement [8,9].

References

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