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Apparent changes in the molecular dynamics of thin polymer layers due to the impact of interfacial layers ANATOLI SERGHEI, University of Massachusetts Amherst, MARTIN TRESS, FRIEDRICH KREMER, University of Leipzig, Germany — Possible mechanisms leading to an apparent faster glassy dynamics in thin polymer layers, as investigated by means of Broadband Dielectric Spectroscopy, are analyzed in detail. It is shown that manifold experimental findings can be traced back to the influence of interfacial sub-layers, where – due to the proximity to solid interfaces – the dielectric function of the polymer is altered and modifies, by that, the overall dielectric response of the polymer films. A large amount of experimental data is analyzed to evidence how the contribution of the interfacial dynamics combines with that of the bulk in order to give the total response of a thin polymer film. It is shown that the non-linear character of this combination could lead to apparently discrepant experimental results.

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