

Abstract Submitted
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Glassy dynamics and glass transition in thin polymer layers of PMMA deposited on different substrates FRIEDRICH KREMER, University of Leipzig, Germany, MICHAEL ERBER, Leibniz Institute of Polymer Research Dresden, Germany, ANATOLI SERGHEI, University of Massachusetts Amherst, MARTIN TRESS, EMMANUEL MAPESA, University of Leipzig, Germany, KLAUS-JOCHEN EICHHORN, BRIGITTE VOIT, Leibniz Institute of Polymer Research Dresden, Germany — Broadband Dielectric Spectroscopy (BDS) and spectroscopic Vis-Ellipsometry are combined to study the glassy dynamics and the glass-transition of thin layers of atactic poly(methylmethacrylate) (PMMA) prepared under identical conditions. The interfacial interactions are systematically modified ranging from strong attractive interactions for covalently bonded PMMA brushes with high grafting densities to weak and strong repulsive interactions as realized by Au-coated and silanized SiO_x -surfaces, respectively. Down to layer thicknesses of ~ 10 nm and independently from the substrate used, both methods deliver – within the experimental accuracy (± 1.0 K for BDS and ± 2 K for Ellipsometry) – the coinciding result that the glassy dynamics and the glass transition are not altered due to the geometrical confinement in thin polymer layers.

Anatoli Serghei
University of Massachusetts Amherst

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