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Gegründet im Jahre 1869 von H. Hlasiwetz, J. Loschmidt, J. Petzval und J. Stefan

EINLADUNG

zum Vortrag
von

Prof. Dr. Friedrich Kremer
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Glassy dynamics of polymers in geometrical confinement: From nanometric layers to condensed isolated chains

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Dienstag, 19. November 2013, um 17:30 Uhr

Ort: Lise-Meitner-Hörsaal, Fakultät für Physik, Universität Wien,
1090 Wien, Strudlhofgasse 4 / Boltzmanngasse 5, 1. Stock

Barrierefreier Zugang: Boltzmanngasse 5, Lift, 1. Stock rechts über den Gang zum Hintereingang des Hörsaals

Abstract:
The question on what length-scale molecular and especially glassy dynamics of polymers takes place is of fundamental importance and has multifold practical implications as well. Recent results based on Broadband Dielectric Spectroscopy [1,2] for nanometric thin (≥5 nm) layers of poly(styrene) [3], poly(methylmethacrylate) [4,5] and poly(cis-1,4-isoprene) [6] 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. A further exciting perspective is the measurement of the dynamics of condensed isolated polymer chains [7]. - The experiments lead to the conclusions that glassy dynamics takes place on the length-scale a few polymer segments (≤ ~ 0.5 nm) while the conformation of the chain as a whole is strongly modified due to geometrical confinement.

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6. Mapesa, E.U., M. Tress, G. Schulz, H. Huth, C. Schick, M. Reiche, F. Kremer "Segmental and chain dynamics in nanometric layers of poly (cis-1,4-isoprene) as studied by Broadband Dielectric Spectroscopy and temperature-modulated Calorimetry",Soft Matter, (2013) DOI: 10.1039/C3SM51311D
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