



Polymer- & Soft-Matter-Seminar

Tuesday,
19th February
2013

at: 5.15 pm

VSP1 1.26

Von-
Seckendorff-
Platz 1,
06120 Halle

Dr. Didier Long

Laboratoire Polymères et Matériaux Avancés,
CNRS/Rhodia, 85 avenue des Frères Perret, F-69192
Saint-Fons, France
(Dated: January 14, 2013)

"Mechanical Properties of Thin Confined Polymer Films Close to the Glass Transition"

Over the past twenty years experiments performed on thin polymer films deposited on substrates have shown that the glass transition temperature T_g can either decrease or increase depending on the strength of the interactions.

Over the same period, experiments have also demonstrated that the dynamics in liquids close to the glass transition temperature is strongly heterogeneous, on the scale of a few nanometers.

We propose a unified mechanism regarding these two features. It allows for describing and calculating the mechanical properties of polymers close to the glass transition in the linear regime of deformation, with a spatial resolution of a few nanometers. In particular, this allows to calculate the corresponding increase of glass transition temperature, up to 20 K in the considered situations.