Polymers under Multiple Constraints

Polymer- & Soft-Matter-Seminar

Tuesday,
27th November 2012

at: **5.15 pm**

VSP1 1.26

Von-Seckendorff- -Platz 1,
06120 Halle

Prof. Dr. Christoph Schick

Universität Rostock
Institut für Physik
Wismarsche Str. 43-45
18051 Rostock
Germany

"Learning about nucleation and crystallization kinetics from high rate calorimetry"

It is commonly accepted that crystallization starts with a nucleation process in the super-cooled melt followed by growth. Nucleation can be either homogeneous or heterogeneous. Homogeneous nuclei are formed due to thermodynamic driving forces by the polymer chain itself, whereas heterogeneous nuclei are formed at surfaces, interfaces, or often at impurities. Information about nuclei can be derived in most cases only indirectly by looking at the final structure or by following the crystallization process. In [1] it was shown, that fast scanning chip calorimetry [2] allows studying the kinetics of cold crystallization on heating, which can be translated to a measure of nucleation kinetics. Here we will follow this line and apply the suggested method to nucleation and crystallization in a wide range of temperatures from below the glass transition up to the melting temperature.

1. E.Zhuravlev, J.W.P.Schmelzer, B.Wunderlich, C.Schick, Kinetics of nucleation and crystallization in poly(epsilon caprolactone) (PCL), Polymer 52 (2011) 1983-1997
2. E.Zhuravlev, C.Schick, Fast Scanning Power Compensated Differential Scanning Nano-Calorimeter: 1. The Device & 2. Heat Capacity Analysis, Thermochim. Acta, 505 (2010) 1-13 & 14-21