



Polymers under Multiple Constraints

Polymer- & Soft-Matter-Seminar

Tuesday,
31th January
2017

at: 5.15pm

VDP4 1.27,
Von-
Danckelmann-
Platz 4,
06120 Halle

Prof. René Androsch

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“About the α' / α -crystal polymorphism of poly (L-lactic acid) (PLLA)”

Crystallization of the PLLA melt at temperatures higher than about 120 °C leads to formation of orthorhombic α -crystals while at lower temperatures, close to the glass transition, growth of pseudo-hexagonal, conformational disordered α' -crystals is favored. The α' -form is metastable at the temperature of its formation and lower temperatures, but transforms on heating irreversibly into the stable α -form or into liquid phase, depending on the thermal profile imposed. It will be shown that the α' / α -transition can completely be suppressed on fast heating to temperatures higher than the equilibrium melting temperature of the α -phase and that the transformation of α' -phase into α -structure at lower temperatures proceeds by melting of the α' -phase followed by fast melt-recrystallization. The effect of both presence of d-isomer co-units in the PLLA chain and molar mass on the kinetics of the α' / α -transition is discussed.