Polymers under Multiple Constraints

Polymer- & Soft-Matter-Seminar

Thursday,
11th July 2013

at: 3.00 pm

till: 4.30 pm

Jacob Volhard Hörsaal,

Theodor – Lieser - Str. 9, 06120 Halle

SPECIAL EVENT

Prof. Samuel P. Gido

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&

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"Optimization of Macromolecular Architecture in Styrene/Diene Block Copolymer Thermoplastic Elastomers"

Thermoplastic elastomers (TPEs) are rubbery materials that can undergo large reversible deformation. Unlike conventional cross-linked rubber, TPEs do not require chemical crosslinking, which gives advantages of lower processing costs and easy recycling. Conventional styrene/diene TPEs, for example Kraton® - a product of Kraton Polymers and a major commercial product, have changed little since their discovery 50 years ago by Shell Oil Company. We will summarize results of a fundamental study focused on understanding how changing macromolecular architecture affects morphology and mechanical properties of styrene/diene block copolymers. By optimizing macromolecular architecture we have been able to develop materials that stretch much more before breaking, have superior elastic recovery, and have a highly tunable modulus. We are at present starting to explore their potential commercial applications.