



Polymer- & Soft-Matter-Seminar

Dr. Michael Sommer

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“Conjugated and responsive polymers: defect structures, new syntheses and high performance materials”

My group focuses on the development of new materials for use in opto-electronic devices as well as for sensing applications. Suitable candidates of high performance conjugated polymers have been identified as active materials for a variety of thin film devices including photovoltaic cells, field-effect transistors, light emitting diodes, batteries or supercapacitors. A major challenge that has moved into focus is the quest for simpler, greener and environmentally more benign synthesis routes while maintaining high performance, batch-to-batch reproducibility and control over molecular weight. In the first part of my talk, I will explore the scope and limitations of direct C-H activation polycondensation (DAP), which is a recently emerging polycondensation technique that outperforms classical cross-couplings methods such as Stille polycondensation. DAP protocols require less synthetic steps, are faster and produce less (toxic) waste.[1] In particular, we address the question as to what extent well-defined and high performance materials can be obtained by simplified synthetic protocols.[2-8] Direct C-H activation is also used for the synthesis of all-conjugated block copolymers that allow to compatibilize all-conjugated polymer blends for photovoltaics.[9] In the second part of my talk, I will introduce a new concept towards the controlled mechanochromic behavior of stress-sensitive polymers. Mechanical stress and deformation are ubiquitous phenomena in polymer science. However, probing different levels of stress by the naked eye remains a challenge. We develop new spiropyran-based main chain copolymers that are able to respond to a broad force range by changing color.[10-12]

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Tuesday,
1st December
2015

at: 5.15pm

VDP4 1.27,
Von-
Danckelmann-
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