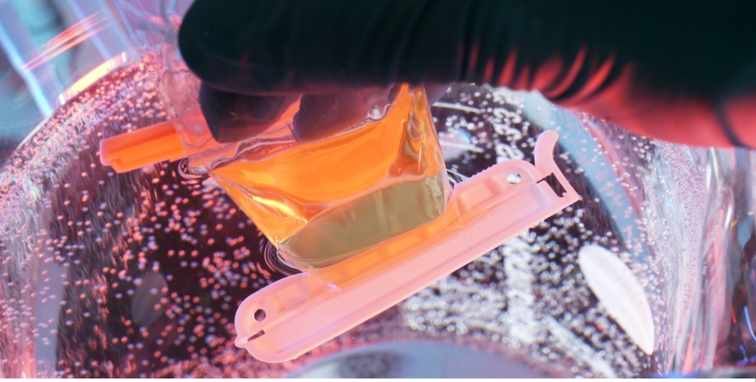
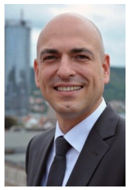


PROF. DR. ULRICH S. SCHUBERT



- Born in 1969 in Tübingen
- Habilitation at the TU München in 1999
- Since 2007 full professor at the FSU Jena
- More than 950 publications, 38,000 citations and H-index of 92

JENA - THINKING WITHOUT LIMITS

Nothing is very far away in Jena. One can live nestled in a forested area and can be in the center of the city in a matter of minutes, and vice versa.
There are no clear-cut borders, neither urban nor intellectual. There are shortcuts in Jena, even in the figurative sense: Through personal connections among the scientists/academics themselves and also between academics and the authorities of both: City and economy/business. In this manner, proposals for research and teaching receive a speedy and uncomplicated jump-start – and creativity can run wild. Many Jenaer academics attest to the fact that there are no mental restrictions here, and they utilize this freedom for innovative projects above and beyond departmental limitations.

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ESF EUROPA FÜR THÜRINGEN EUROPÄISCHER SOZIALFONDS

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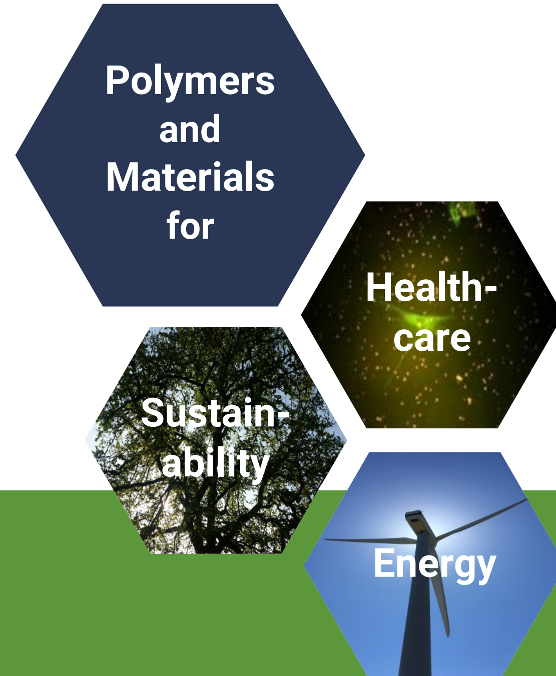
Faculty of Chemistry and Earth Sciences



SCHUBERT GROUP

JCSM Jena Center for Soft Matter

PolyTarget SFB 1278

RESEARCH TOPICS

Our laboratory covers a range of research fields among organic synthesis, macromolecular chemistry, supramolecular chemistry, combinatorial research, material research, advanced characterization and nanoscience.

Materials for Life sciences

We focus on the development of tailor-made polymers for the transport of genes and drugs, respectively. In particular, polymeric nanoparticulate materials are investigated (within the framework of DFG CRC 1278 – Polytarget). Moreover, the interaction between polymeric materials and cells is studied.

Recent publications:
Angew. Chem. Int. Ed. **2018**, *57*, 2479; *Biomacromolecules* **2018**, *18*, 3280; *Nature Commun.* **2014**, *5*, 5565.

Nanochemistry

Our lab focuses on the synthesis of nanoparticles or carbon nanotubes by non-classical methods (*e.g.*, by microwave irradiation). Moreover, surfaces can be functionalized on the nm-level by electro-oxidative lithography.

Recent publications:
ChemPhysChem **2016**, *17*, 2863; *Adv. Eng. Mater.* **2016**, *18*, 890; *Adv. Mater.* **2015**, *27*, 4113.

Engineering functional materials for the 21st century

New innovative materials as key elements for healthcare, energy and sustainability

Advanced characterization techniques

Different (advanced) characterization techniques allow the detailed analysis of the different polymeric materials providing information on the (absolute) molar mass (*e.g.*, by analytical ultracentrifugation, mass spectrometry), sizes of polymer assemblies up to other polymer properties (*e.g.*, thermal properties). In particular, electron microscopy (cryo-TEM, SEM) allows a deeper insight into polymeric assemblies, particles etc.

Recent publications:
Polym. Chem. **2017**, *8*, 7169; *Polymer* **2017**, *131*, 252; *Anal. Chim. Acta* **2016**, *932*, 1; *Adv. Mater.* **2013**, *25*, 761.

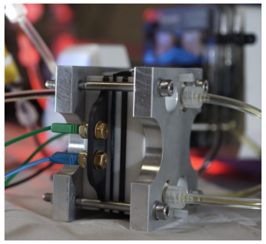
Self-healing, self-organization and self-assembling materials and systems

Supramolecular interactions (metal complexes, ionic interactions, hydrogen bonding) are utilized for the design of molecular building blocks (*e.g.*, for energy and electron transfer) as well as of supramolecular polymers. Latter materials are also studied in the context of self-healing polymers. These materials are also fabricated based on reversible covalent interactions.

Recent publications:
NPG Asia Materials **2017**, *9*, e420; *Angew. Chem. Int. Ed.* **2017**, *56*, 4047; *Macromolecules* **2016**, *49*, 8418.

Polymers for energy

New battery technologies as alternative to the classical lithium batteries are investigated – these systems are based on organic materials and polymers. Redox-active polymers are used as active materials within thin batteries (*e.g.*, printable batteries, solar batteries) as well as in redox-flow batteries. The usage of organic materials allows the abstention of critical metals (like cobalt or vanadium).



Recent publications:
Adv. Energy Mater. **2017**, *7*, 1601415; *Angew. Chem. Int. Ed.* **2017**, *56*, 686; *Angew. Chem. Int. Ed.* **2016**, *55*, 14425; *Nature* **2015**, *527*, 78.

High-throughput experimentation & tailor-made macromolecules

In order to obtain well-defined polymers (with tailor-made properties), living and controlled polymerization methods are utilized (*e.g.*, RAFT polymerization or CROP of oxazolines). For instance, LCST-type polymers were synthesized by these methods. Moreover, high-throughput experimentation methods allow the fabrication of polymer libraries in order to elucidate structure-property relationships.

Recent publications:
Macromol. Rapid Commun. **2017**, *38*, 1700396; *Polym. Chem.* **2016**, *7*, 4063 + 4924; *J. Contr. Release* **2015**, *209*, 1; *ACS Comb. Sci.* **2014**, *16*, 386.