

SOFT MATTER

Soft matter science is an interdisciplinary field of research, attracting attention from chemists, physicists, biologists and engineers. To some extent, this appeal comes from the amazing properties of “soft materials” e.g., from their unique capability to respond to external stimuli. Even weak stimuli may induce significant changes in behaviour due to softness and mesoscopic structuring of these materials. While softness results from weak interactions between the constituents, mesoscopic structuring is often a consequence of spontaneous self-assembly into ordered arrangements much larger in size than the constituent molecules.

CONCEPTS AND METHODS IN SOFT MATTER

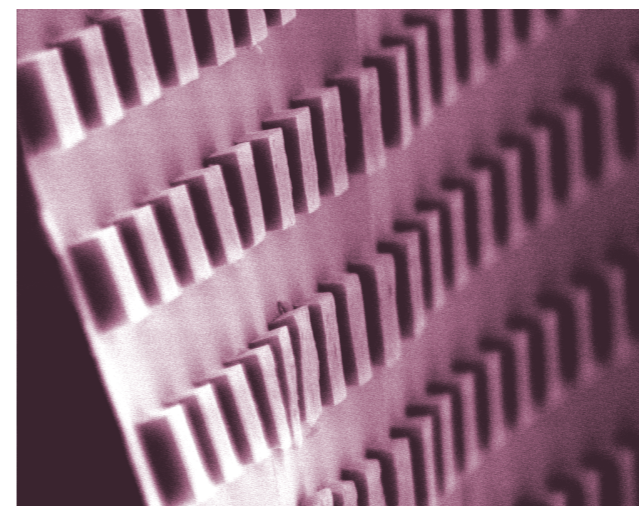
Polymeric materials play a central role in the important areas of energy conversion and storage, environmental science and medicine. Whatever application is targeted, the material of interest needs to be tailor-made according to the specific needs and conditions of the application. A fundamental knowledge of polymer dynamics, polymer synthesis, nanostructure formation and structure-function relationships is required to understand and improve existing and future polymeric materials needed in modern societies.

PROGRAMME

The SoMaS Summer School 2015 aims to give attendees a broad exposure to **Concepts and Methods in Soft Matter**. The school integrates knowledge from chemistry, materials science, biology and physics.

The SoMaS School 2015 consists of:

- ❖ Introductory courses and lectures
- ❖ Research and rework seminars
- ❖ Poster sessions
- ❖ Career seminars



INVITED SPEAKERS

Rolf Mülhaupt,
University of Freiburg, Germany

Alexei Likhtman
University of Reading, UK

Felix H. Schacher
Friedrich-Schiller-University Jena, Germany

Joachim Loos
DSM Resolve, Geleen, Netherlands

Markus Gallei
Technical University of Darmstadt, Germany

Jorge Ramirez
Technical University of Madrid, Spain

Alexander Semenov
University of Strasbourg, France

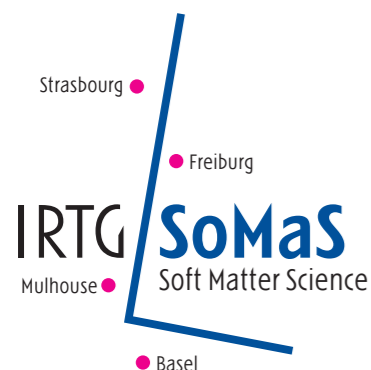
Hiroshi Jinnai
Kyushu University, Fukuoka, Japan
to be confirmed

Fabian Weyßer
Bayer AG, Leverkusen, Germany

Patrycja Polinska
Goodyear, Colmar-Berg, Luxembourg

ORGANIZERS

Pursuing the tradition of **Soft Matter Science** in the Rhine Valley by introducing the young generation of researchers to this field, the **International Research Training Group (IRTG) "Soft Matter Science: Design of Functional Materials"** organizes a series of annual summer schools in Alsace, France.



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INTRODUCTORY COURSES

Introductory Lecture: Concepts and Methods in Soft Matter: Tailor-made Polymers

(*Rolf Mülhaupt*)

Physical Concepts of Macromolecules

(*Alexei Likhtman*)

- ❖ Experimental probes of polymer dynamics
- ❖ Single chain dynamics - from microscopic to Rouse models
- ❖ Chain interactions and entanglements
- ❖ Tube and slip-spring models

Polymer Synthesis and Structure Formation

(*Felix H. Schacher*)

- ❖ Basic polymer synthesis (chain growth, step-growth; ionic, radical, insertion polymerization)
- ❖ Advanced polymer synthesis (living / controlled techniques)
- ❖ Copolymers. block copolymers, different architectures (linear, branched, star, comb)
- ❖ Polymer modification and functionalization
- ❖ Polymerization methodologies (solution, bulk, emulsion – practical aspects)
- ❖ Basic concepts in block copolymer self-assembly

Visualization of Organic Nanostructures and their Properties

(*Joachim Loos*)

- ❖ Visualization toolbox
- ❖ Polymer crystals
- ❖ Nanocomposites
- ❖ Organic electronics

GENERAL INFORMATION

Centre de Mittelwihr

16 rue du Bouxhof
68630 Mittelwihr, France
+ 33 (0) 3 89 47 93 09
www.mittelwihr.com

Duration of the Summer School

Beginning: Sunday 5th July (afternoon)
End: Friday 10th July (after lunch)

Participation Fee

(including accommodation): 200,- €

Deadline for Registration and Abstract

May 25th, 2015

Further Information and Registration

www.softmattergraduate.uni-freiburg.de/summerschool2015

CONTACT

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IRTG SoMaS
International Research Training Group

ANNUAL
SUMMER SCHOOL
JULY 5-10, 2015

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