

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.

POLYMERS AT INTERFACES

Many of today’s interesting systems consist of multiple components, have various interfaces, and exhibit complex effective interactions. Understanding the synergies between the regulating factors, thus predicting and controlling their impact on material properties, is a great scientific challenge. Advances in this direction should enable the creation of novel materials with a high level of functionality similar to those existing in nature.

PROGRAMME

The SoMaS Summer School 2013 aims to give attendees a broad exposure to fundamental concepts and recent advances in **polymers at interfaces**. The school integrates knowledge from chemistry, materials science, biology and physics.

The SoMaS School 2013 consists of:

- ❖ Introductory courses
- ❖ Research and rework seminars
- ❖ Master classes
- ❖ Poster sessions
- ❖ Seminars about professional opportunities after the PhD

MASTER CLASSES

The main aim of these classes is to give enthusiastic young researchers the opportunity to share ideas about their project with two distinguished scientists chairing the classes:

**Frans Leermakers and
Murugappan Muthukumar**

The concept underlying the Master Classes is that of “passing the torch” from the chairs, who contribute their experience, to the young generation of researchers, who present their project and contribute their ideas. The audience is invited to participate in these discussions.

INVITED SPEAKERS

Holger Bohn

Botanischer Garten der Universität Freiburg, Germany

Gerald Brezesinski

Max Planck Institut für Kolloid- und Grenzflächenforschung, Potsdam, Germany

Nicolas Delorme

Université du Maine, Le Mans, France

Mohammed Ibn-Elhaj

Rolic Technologies, Allschwil, Switzerland

Torsten Kreer

Leibniz-Institut für Polymerforschung, Dresden, Germany

Frans Leermakers

Wageningen UR, The Netherlands

Vincent Le Houérou

Institut Charles Sadron, Strasbourg, France

Hubert Motschmann

Universität Regensburg, Germany

Murugappan Muthukumar

University of Massachusetts, Amherst, USA

Benoît Schnell

Michelin, Clermont-Ferrand, France

Jens-Uwe Sommer

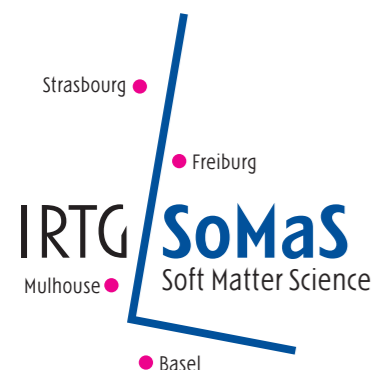
Leibniz-Institut für Polymerforschung, Dresden, Germany

Joachim Wittmer

Institut Charles Sadron, Strasbourg, France

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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EN ALLEMAGNE



INTRODUCTORY COURSES

Physics of polymer interfaces (*J.-U. Sommer*)

- ❖ Introduction to polymer solutions and melts
- ❖ Polymer adsorption, single chains, critical point, many chains and saturation
- ❖ Polymer brushes, mean-field and scaling concepts

Mechanical properties of polymers: from bulk to surfaces (*V. Le Houérou*)

- ❖ Introduction to deformation, yield and fracture of polymers
- ❖ Contact mechanics and experimental techniques
- ❖ Application to the study of frictional, scratching resistance and adhesive properties of polymer surfaces (bulk and coated)
- ❖ Sliding contacts between soft matter surfaces

Thermodynamics and analytical techniques at interfaces (*H. Motschmann*)

- ❖ A tutorial review of thermodynamics with an emphasis to interfaces
- ❖ Modern techniques for the characterization of static and dynamic processes at fluid interfaces
- ❖ Specific ion effects in physicochemical and biological systems: simulations, theory and experiments

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 7th July (afternoon)
End: Friday 12th July (after lunch)

Participation Fee

(including accommodation): 180,- €

Deadline for Registration and Abstract

June 7th, 2013

Further Information and Registration

www.softmattergraduate.uni-freiburg.de/summerschool2013

CONTACT

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IRTG SoMaS
International Research Training Group Soft Matter Science

ANNUAL
SUMMER SCHOOL
JULY 7-12, 2013

POLYMERS
AT INTERFACES

