International Research Training Group
Freiburg/Strasbourg/Basel/Mulhouse

Soft Matter Science

Concepts for the Design of Functional Materials

IRTG SoMaS Soft Matter Science

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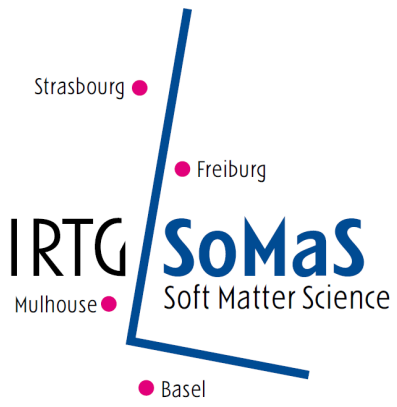
The **International Research Training Group "Soft Matter Science"** brings together chemists, physicists, biologists and engineers from Freiburg, Strasbourg, Mulhouse and Basel for a comprehensive PhD programme in soft matter science, aiming to develop concepts for the design of innovative materials with a high level of functionality.

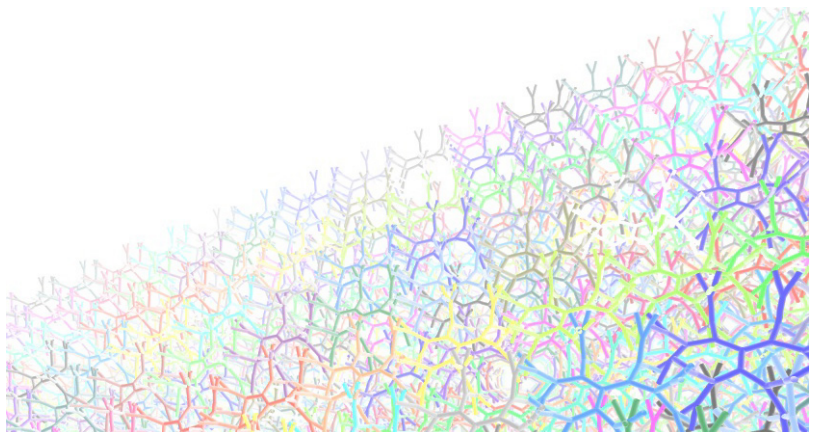


Physics

Materials Sciences

Chemistry

Biology



OUR RESEARCH NETWORK

University of Strasbourg
Institut de Physique et Chimie des Matériaux de Strasbourg
Institut de Science et d'Ingénierie Supramoléculaires
Laboratory of Biophotonics and Pharmacology
Charles Sadron Institute
Insitute of Chemistry

University of Freiburg
Freiburg Center for Interactive Materials and Bioinspired Techonologies
Department of Microsystems Engineering
Institute for Macromolecular Chemistry
Center for Biological Signalling Studies
Institute of Pharmaceutical Sciences
Freiburg Materials Research Center
Department of Physical Chemistry
Institute of Physiology
Institute of Physics
Botanical Garden

University of Mulhouse
Institute of Materials Science of Muhouse

University of Basel
Department of Chemistry

FACTS AND FIGURES

Our interdisciplinary and structured research and qualification programme on Soft Matter Science comprises more than

- 25 doctoral researchers who discuss their research projects together and share intercultural moments in and outside the laboratories
- 40 scientists who share their experience
- 20 bilateral research projects between French, German and Swiss groups
- 15 laboratories located within one hour of travelling time from each other

Postdoctoral researchers, student assistants and associated scientists complete our International Research Training Group.

OUR PROJECTS

Soft matter interfaces: From membranes to tribology

- Influence of oxidation on translocation across membranes
- Membrane active peptides and complexes for nucleic acid delivery
- Controlled deformation & modification of membranes
- Interactions between bio-systems & micro-structured surfaces
- From insect-plant interactions to friction on textured surfaces
- Adhesion and friction on nano/micro-structured surfaces

From design to multifunctional materials and devices

- Graphene-induced crystallization of conjugated polymers
- Structural models of semiconducting polymers
- Graphene solution exfoliation by conjugated polymers
- Self-assembled nanotubes sheathing semiconducting wires
- Compartmentalized polymer ionic liquids for responsive systems
- Multifunctional hybrid polymers for adaptive nanocrystalline multilayer composites

From physical concepts to material properties

- Colloid stabilization by unattached polymers in solution
- Influence of shear history & particle attractions on the relaxation from non-equilibrium to colloidal glassy states
- Viscoelastic properties of glassy polymer films
- Polymer ordering & crystallisation in quasi-2 dimensions
- Thermodynamics of membranes with complex compositions
- Long-range ordering of conducting nanowires & heterojunctions
- Recognition of synthetic polymers by biological nanopores

\+ ongoing projects from the first funding period

\+ various associated projects

OUR RESEARCH TEAM

K. Anselme
G. Baaken
E. Bartsch
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