Pre-registration is necessary because of the limited number of places in the school.
A short description of research activity and a CV should be sent to softmatter2018@ill.fr
The organising committee will examine your application and inform you in June 2018.

Pre-registration deadline : 20 May 2018
Notification of acceptance : 3 June 2018
Registration deadline : 17 June 2018

Registration fee (including VAT):

• 200€ including lecture material, lunches, social dinner and accommodation (2 nights)

• 150€ including lecture material, lunches and social dinner

Organisers
Leonardo Chiappisi
Thomas Zemb

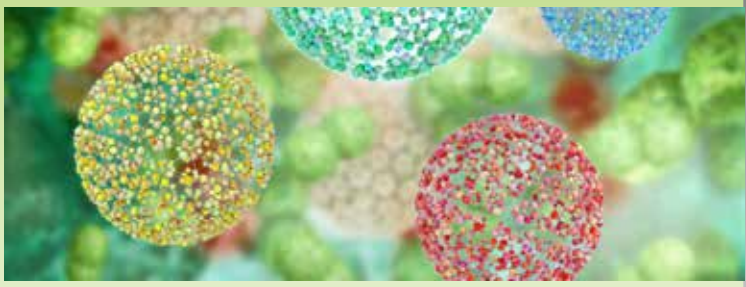
Workshop assistants
Alison Mader
Pauline Charriaux

Email address : softmatter2018@ill.fr

Web site :
https://workshops.ill.fr/e/softmatter2018

Thermodynamics and energetics of soft matter systems

Institut Laue-Langevin, Grenoble, France
from 24 to 26 July 2018



Soft matter pervades into daily life under several forms: biological matter, foams, food products, ink, tires, and many others. In contrast to their very different appearance, all these systems are governed by the same, fundamental physical laws. Aim of the school is providing an overview of the forces governing the behavior of soft matter systems and introducing the most relevant techniques to probe such interactions. The school proposes frontal lectures for doctoral students working in the field of soft matter given by recognized experts from all over Europe. Poster sessions will be opened for discussion on research topic and experimental results between students and invited lecturers.

Tue – 24.7	
9:00 - 9:45	Welcome and Registration *Hall ILL4*
10:00 - 11:30	ESRF Guided Tour *Visitor Center*
12:00 - 13:00	Lunch *ESRF/ILL Canteen*
13:30 - 13:45	School Opening *Chadwick Amphitheatre*
14:00 - 15:30	Lecture 1: **Introduction to colloid and interface Science** *Emanuel Schneck* Introduction to colloid and interface science & its applications. Basic concepts. Van der Waals interactions, the electric double layer, and DLVO theory. Further interaction mechanisms (steric, depletion).
15:30 - 16:00	Coffee Break
16:00- 17:30	Lecture 2: **Fundamentals of self-assembly processes** *Christoph Schalley* Basic Principles in Supra- molecular Chemistry. Non- Covalent Interactions and Host- Guest Complexes. Free energy landscape, polydispersity, cooperativity.
17:30	Poster Session & Discussion with Wine and Cheese *Hall ILL4*

Wen - 25.7	
9:00 - 10:30	Lecture 3: **Methods in Calorimetry and Volumetry** *Giuseppe Lazzara* Free energy and its derivatives: the partial molar quantities. Relevance in colloidal systems and methods to access them. Enthalpy changes in supramolecular aggregates: van't Hoff vs direct methods. Introduction and experimental tips in calorimetry and volumetry. Isothenral titration calorimetry: equilibrium and kinetics. Prediction abilities and case studies.
10:30 - 10:45	Coffee Break
10:45 - 12:15	Lecture 4: **Introduction to colloid and interface Science** *Roland Winter* Methods to probe the energetics, structure and conformational dynamics of biomolecular systems - Introduction to cell membranes, model biomembranes, lipid phase transitions. Proteins and their stability, free energy landscape, folding kinetics, interactions. Methods to probe the thermodynamics, conformation, dynamics and interactions of biomolecules.
12:15 - 14:00	Lunch *ESRF/ILL Canteen*
14:00 - 16:00	ILL/PSCM Guided Tour
16:00 - 17:30	Poster Session & Discussion
17:30 - 20:00	Free Afternoon
20:00	Social Dinner

Thu - 26.7	
9:00 - 10:30	Lecture 5: **Physics of macromolecular systems** *Julian Oberdisse* Conformation of polymer chains, chain statistics, polymer solutions and blends, thermodynamics, phase separation, mechanical properties.
10:30 - 10:45	Coffee Break
10:45 - 12:15	Lecture 6: **Thermodynamics of interfaces** *Antonio Stocco* Thermodynamics of interfaces and adsorption, surface tension, contact angle, wetting. Interaction between surfaces and stabilisation mechanisms (foams, emulsions).
12:15 - 14:00	Lunch *ESRF/ILL Canteen*
14:00 - 15:30	Lecture 7: **Solvation and Solubilization** *Dominik Horinek* Ideal and real mixtures and solutions. Molecules and macromolecules in solution. Free energy of solvation, chemical potentials, activity coefficients: experimental and theoretical approaches. A microscopic view from homogeneous to structured solutions: osmolytes, hydrotropes, surfactants. Concepts from Kirkwood-Buff theory. Solubilization in micro-structured solvents.
16:00	School Closing