Course Information

Time
3-5 December 2013.
The course starts on Tuesday at 09:30 (registration and coffee from 09:00) and finishes on Thursday at approx. 14:30.

Location
SP Facilities, Drottning Kristinas väg 45, Stockholm, Sweden.
500 m from subway station Tekniska Högskolan on the red line no. 14 towards Mörby centrum. Exit towards Östra Station/Tekniska Högskolan.

Language
The course is held in English.

Registration
Register at www.sp.se/spkmcccddec2013. Last date for registration is 5 November 2013.

Fee
EUR 1500 excl. VAT. 25% VAT is charged all participants. Early bird registration discount: 10% off before 27 August and 5% off before 24 September. Do not pay until you are invoiced. Fees cover all tuition costs, course notes, lunches and coffee break refreshments. Accommodation is not included in the fee.

Accommodation
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- **Hotel Birger Jarl** (1.4 km), www.birgerjarl.se, Tel:+46 8 674 18 00.
  Subway station: Rådmansgatan.
- **Elite Hotel Arcadia** (700m), www.elite.se/eng/node/1403, Phone: +46 8 566 215 00.
  Subway station: Tekniska Högskolan.
- **Mornington Hotel Stockholm City** (1.9 km), www.mornington.se, Phone: +46 8 507 330 00.
  Subway station: Östermalmstorg.
- **Scandic Park** (1.3 km), www.scandic-hotels.se/park, Phone: +46 8 517 348 00.
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Cancellations
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Questions
Please contact the course coordinator Annika Bergström.
Phone: +46 10 516 6070, e-mail: annika.bergstrom@sp.se.

This 3-day intensive course provides a comprehensive introduction to the fundamental and practical aspects of colloid chemistry and colloidal dispersions. The course is focused on particles that are dispersed in liquids. Nearby topics, such as surfactant chemistry, polymers in solution and emulsions, are also covered to some degree in order to make the course complete on a stand-alone basis.

Register at www.sp.se/spkmcccddec2013 no later than 5 November!
Welcome to the course Colloid Chemistry and Colloidal Dispersions

The course is hosted by the Chemistry, Materials and Surfaces department at SP Technical Research Institute of Sweden in Stockholm.

Who is this course intended for?

The course is relevant for people working in research, development and formulation of any colloidal system, be it paints, coatings, ceramics, food or pharmaceutical formulations.

What will this course give me?

This 3-day intensive course provides a comprehensive introduction to the fundamental and practical aspects of colloid chemistry and colloidal dispersions.

Colloidal dispersions are systems where one phase, having at least one dimension between 1 and 1000 nm, is dispersed in a second phase. Examples are particles dispersed in a liquid to form a suspension or liquid droplets dispersed in a second liquid, in which it is insoluble, to form an emulsion.

Colloidal dispersions are present in everyday life, from food systems to ceramics. The chemistry of colloidal dispersions covers many overlapping fields of science, such as physical chemistry, organic chemistry, physics and biology. It is therefore rare that solely colloidal dispersions are covered in academic course programs.

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Lecturers

Lecturers, all from SP Chemistry, Materials and Surfaces:

Prof. Bengt Kronberg
Dr. Martin Andersson
Dr. Isabel Mira
Dr. Anders Larsson
Dr. Anwar Ahniyaz

Course Content

Introduction to Colloid Chemistry
- Nature of the colloidal state and classification
- Brownian motion
- Particle size and shape

Attractive Forces between Colloidal Particles
- Origin of attractive forces
- Hydrophobic forces

Colloidal Stability – Charge Stabilization I & II
- How to introduce charges on colloidal particles
- Theories of stabilization with charge
- Characterization of colloidal particles by electrokinetic measurements

Colloidal Stability – Steric Stabilization
- Stabilization of colloids with polymers

Solvent Properties
- Solvents other than water

Amphiphilic Molecules
- Adsorption at liquid interfaces
- Surface and interfacial tension
- Self-assembly structures (micelles, bilayers, vesicles)

Adsorption of Surfactants on Colloidal Particles

Polymers in Solution
- Characterization and properties

Adsorption of Polymers on Colloidal Particles

Flocculation and Coagulation
- Mechanisms of flocculation and coagulation
- Structure of flocculated systems
- Flocculation agents and selective flocculation

Preparation of Colloidal Particles/Dispersions
- Condensation methods
- Dispersion methods

Colloidal Self-Assemblies and the Formation of Novel Materials
- Self-assembly
- Soft and micellar templating

Heterosystems – Stability and Instability
- Systems with particles and liquid interfaces – suspo-emulsions
- Attachment of dispersed particles to interfaces and effects on colloidal stability

Rheological Behaviour of Colloidal Systems I & II
- Basic concepts and definitions
- Effect of dispersion state and solid content
- Viscoelasticity and rheometry techniques

Thickeners in Aqueous Solution
- Conventional and associative thickeners
- Particle thickeners

Emulsion and Emulsifiers
- Emulsion characteristics
- Surfactant choice and the preparation of emulsions
- Mechanisms of emulsion stability and instability

Foams
- Foam characteristics, preparation and stability

Laboratory Tour

The course program includes a tour of the Stockholm laboratory facilities of SP Chemistry, Materials and Surfaces.

The tour is an opportunity for you to see and learn more about research instruments relevant to the topics of the course.
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