FCK3318. Advanced Surface and Colloidal Chemistry. 15 points. Spring/Summer 2022. V3

The course emphasizes on understanding the molecular interactions that determine the properties of colloidal systems, and provides a deep knowledge of surface and colloid chemistry.

Course main content and disposition

This course covers many aspects of surface thermodynamics, surfactant association and phase diagrams, surface forces, colloidal stability and emulsions. It closely follows Evan and Wennerström's book: "The Colloidal Domain".

The course consists of eleven seminars in a lecture/tutorial style followed by a final examination seminar. The course participants should prepare themselves before each seminar by reading the corresponding book chapter and solving the assigned exercises (to be provided a later stage). In each seminar, the key elements of the corresponding chapter will be first summarized and placed in a general context, followed by small group discussions on issues found when solving the assigned problems. Note that at least 8 out of the 11 seminars need to be attended. The course will end with a mandatory examination seminar where each student will make a 8-10 min presentation of a scientific publication in the field (**list of articles to choose from to be provided during the course).**

Course Schedule:

Date	Seminar subject	Lecturer
4th April 9.00-12.00	1. Solutes and Solvent, Self-assembly of amphiphiles.	Eric T.
11th of April 9.00-12.00	2. Surface Chemistry and Monolayers	Mark R.
20th of April 9.00-12.00	3. Electrostatic interactions in Colloidal Systems	Eric T.
25th of April 9.00-12.00	4. Structure and Properties of Micelles	Istvan F.
2nd of May 9.00-12.00	5. Forces in Colloidal Systems	Per C.
9th of May 9.00-12.00	6. Bilayer Systems	Eric T.
16th of May 9.00-12.00	7. Polymers in Colloidal Systems	Per C.
23rd of May 9.00-12.00	8. Colloidal Stability	Per C.
30th of May 9.00-12.00	9. Colloidal Sols	Mark R.
8th of June 9.00-12.00	10. Phase Equilibria and Phase Diagrams	Mark R.
13th of June 9:00-12:00	11. Micro and Macroemulsions	Eric T.
17th of June 9:00-12:30 / 14:00-16:00	Examination seminar	Eric T. Per C. Mark R.

Location

The seminars will take place in the North conference room located at the Surface and Corrosion Science division. Drottning Kristinas väg 51, 4th floor.

Evaluation

To approve the course the student will need to first, successfully present and discuss the selected scientific publication in the examination seminar, and second, submit all assigned exercises (to be provided) no later than the **22nd of August 2022.**

Literature:

Evans and Wennerström's book "The Colloidal Domain" Second Edition. (Wiley)

Lecturers: Per M. Claesson, Istvan Furo, Mark Rutland, and Eric Tyrode

Course Organizer / Examiner: Eric Tyrode (tyrode@kth.se)

To register to the course please send an email to the course organizer!