

Calorimetric methods with basic thermodynamics

The aim of the course is to give an understanding of what kind of information can be obtained from calorimetric experiments. Basic thermodynamic concepts will be reviewed and various experimental methods will be introduced and discussed. The aim is to give basic knowledge so that possible calorimetric experiments can be planned and papers reporting calorimetric results can be better understood and evaluated. Examples where calorimetric methods are used in studies of lipid, surfactant and polymer systems and for applications in drug formulation and material science will be discussed.

The course will cover isothermal calorimetry and differential (temperature) scanning calorimetry:

- Reaction calorimetry; applications to slow processes, process monitoring
- Titration calorimetry; determinations of K and ΔH
- Sorption calorimetry; determinations of sorption isotherms and sorption
- Differential (temperature) scanning calorimetry (DSC); Applications to phase studies; 1-component systems; purity, metastable phases; 2-component systems; phase diagrams; Conformational changes
- Temperature-modulated DSC

Date: The course will start with lunch at 12.00 on Monday, October 10 and end with Lunch on Thursday, October 13.

Location: The course will be held at Örenäs Slott outside Landskrona. Information about how to reach Örenäs Slott can be found at www.orenasslott.com.

Teachers: Emma Sparr, Ola Karlsson, Gerd Olofsson, Physical Chemistry, Lund University; Vitaly Kocherbitov, Biomedical Laboratory Science and Technology, Malmö University, Lars Wadsö, Div. Building Materials, Lund University, Lars-Erik Briggner, Astra-Zeneca, Lund.

Teaching activities: On Monday afternoon and in the mornings up to lunch on Tuesday to Thursday there will be lectures while the afternoons will be used for exercises and discussions and evaluations of scientific papers.

Course material: A few articles describing calorimetric techniques and reprints of scientific papers reporting results of various calorimetric experiments will be sent to the participants about three weeks before the start of the course. Some of the articles should be read before the start of the course while others will be used during the course.

Cost: There is no fee for PhD students enrolled at Swedish universities. Cost for accommodation (full board and shared double room) will be covered by the Graduate School.

Credits: 4 ECTS credits are recommended for those who participate actively in the course.

Registration: To register send an e-mail to Emma.Sparr@fkem1.lu.se. The deadline for registration is September 12, 2011. The total number of participants is limited to about 25, and in case the course turns very popular, priority will be given to students that are enrolled in Chalmers Soft Matter Graduate School.

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<http://www.chalmers.se/soft/EN/courses/calorimetri>