Liquid foams and emulsions: generation, stability and properties

Interactive training for industry combining theory with hands-on experiments in the lab

AUDIENCE

Technicians, engineers and researchers working in the pharmaceutical or cosmetic sector, food industry, household care products, optimisation of solid foams, etc.

PRE-REQUIREMENT

The participants should have at least a bachelor in chemistry, physics or related subjects.
In order to adapt the content of the training course to the expectations of trainees, please complete the survey available at the link below and return it when submitting your registration.
==> https://seafile.unistra.fr/f/c1813b5e588c425a8e91/?dl=1

CONTEXT AND STRENGTHS OF THE TRAINING

This training aims to provide participants with the fundamental physicochemical principles governing the generation, structure, stability, and properties of liquid foams and emulsions. It also offers hands-on experience with key characterization techniques used to analyze these complex systems.
The program delivers a multi-scale understanding of foams and emulsions and teaches how to fine-tune physical and chemical parameters to address practical formulation challenges.
This training is designed for professionals who need to diagnose, optimize, or develop innovative solutions involving foams and emulsions across industries such as cosmetics, food, detergents, and materials science.

Strenghts of the training

> **Highly interactive training with a small group of 12 participants, combining theory, experimental demonstrations and practical work in small sub-groups in the laboratories.**
> **Training given by two internationally renowned experts in foam/emulsion science with more than 25 years of experience in the field.**
> **The practical trainings are accompanied by experienced engineers & PhD students working on foam/ emulsion science.**
> **Efforts are made in class and during social moments to maximise interactions between the participants.**

LEARNING OBJECTIVES

> Acquire fundamental physicochemical concepts related to the generation of foams and emulsions, their structure, stability, and macroscopic properties (including rheology).
> Develop a comprehensive, multiscale understanding of liquid foams and emulsions.
> Become familiar with key techniques for generating and characterizing interfaces, thin films, foams, and emulsions.
> Understand and manage the interplay between physical and chemical parameters in foam and emulsion systems.
> Build effective problem-solving reflexes for diagnosing and addressing issues involving foams and emulsions.

PROGRAM

Day 1: 10:00 to 17:30

> Introduction (Training, teachers, and participants)
> Properties of gas/liquid and liquid/liquid interfaces
> Surfactants at interfaces and in thin liquid films
> Generation of foams/emulsions
> Practicals

Day 2: 09:00 to 17:30

> Structure of foams/emulsions
> Stability of foams/emulsions & antifoams
> Practicals

Day 3: 09:00 to 16:00

> Rheology of interfaces and of foams/emulsions
> Practicals
> Optimisation of foams/emulsions by formulation
> Open exchanges

Topics covered in the Practical sessions (groups of 3-4 participants):

> Techniques for measuring interfacial tension and interfacial rheology
> Techniques for the generation of foams and emulsions
> Characterisation techniques of individual films at the bubble / drop scale
> Characterisation techniques for foams/emulsions (imaging, conductimetry, rheology)

MÉTHODES ET RESSOURCES PÉDAGOGIQUES

Each training day includes approximately two-thirds of theoretical lectures, supported by numerous demonstration experiments. The remaining third is devoted to hands-on laboratory practicals, carried out in small groups of 3–4 participants, formed according to participants' backgrounds and interests.
A binder and a course material will be provided to the trainees.

TRAINING DIRECTORS

Wiebke, Drenckhan-Andreatta, Research Director at CNRS. Institut Charles Sadron, Strasbourg.
Email adress : drenckhan@unistra.fr
Arnaud, Saint-Jalmes, Research Director at CNRS. Institut de Physique de Rennes.

TRAINING COURSE

Durée : 3 days

En 2027

Référence : SGI27-1861A
du 17 mars 2027
au 19 mars 2027

Tarif

1900 €
Lunch is provided in a reserved area of the university restaurant.

Lieu

CNRS - Institut Charles Sadron
23 Rue du Loess
BP 84047
67034 Strasbourg Cedex 2

THIS TRAINING CAN BE ORGANIZED FOR A DEDICATED GROUP FROM THE SAME COMPANY.

Renseignements et inscriptions

Sandra GRISINELLI
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Sauf le vendredi après-midi
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Nature and sanction of the training

This training is designed as an upskilling and competency-development program.
Participants will receive an attendance certificate upon completion.
A final evaluation is carried out to measure participant satisfaction and the achievement of the training objectives (knowledge, skills, engagement, confidence), in accordance with Levels 1 and 2 of the Kirkpatrick model for training effectiveness.