

About the Course

The Sixth International Advanced Course on Liquid Interfaces, Drops And Sprays will be held at the Technical University of Vienna (Austria) from 4th to 7th September 2018, just before the 12th European Fluid Mechanics Conference (EFMC12).

The course objective is to provide participants with detailed, up-to-date knowledge on the physics of drops and sprays based on recent research results and the most updated methods for the prediction of dynamic outcomes, heat transfer, wettability effects, and its applications to technological and industrial areas.

The course is addressed to scientists, professionals, company engineers, R&D managers and graduate students in the fields of Engineering, Chemistry, Biology, Medicine, Applied and Fundamental Sciences. This course is especially of interest to those dealing with phenomena involving drops and sprays, in order to get acquainted with the traditional background and the most recent developments of the discipline.

More information on the course website:
<http://pcwww.liv.ac.uk/~vbertola/lidesp6>

Venue

Vienna University of Technology
Technische Universitaet Wien
Karlsplatz 13,
1040 Wien,
Austria

Participants should make their own accommodation arrangements.

International Directors

Prof. Alidad Amirfazli
York University, Toronto (Canada)

Dr. Volfango Bertola
University of Liverpool (UK)

Prof. Marco Marengo
University of Brighton (UK)

Hosting Director

Prof. Alfredo Soldati
Technical University of Vienna (Austria)

Lectures

Introduction and basic concepts. Gallery of basic phenomena, micro- to macro- scale, contact angle, Young equation.

Introduction to fluid mechanics of liquid interfaces. Basic equations, liquid film modelling, liquid jet break up, drop oscillations.

Surface tension & measurement techniques. Equilibrium and dynamic surface tension. De Nouy/Wilhelmy, sessile drop and pendant drop, maximum bubble pressure.

Dynamics of drops deposited on a surface. Sessile drops, spreading law, apparent and real contact angles. Drop shedding, contact angle hysteresis.

Introduction to drop interactions. Drop impact on dry and wetted surfaces. Morphology. Shallow and thick layers. Crater modelling. Splashing correlations.

Drop impact with a solid surface. Impact regimes, impact models, drop rebound.

Drop impact on heated surfaces. Introduction to drop impact onto heated surfaces. Impact regime maps. Transitions. Dynamic Leidenfrost temperature.

Heat and mass transfer in drops. Heat transfer mechanisms. Experimental investigations. Multiscale modeling approaches.

Drop-drop collision. Phenomenology and collision regimes. Survey of modelling and simulation results.

Modelling approaches to simulate interfaces, drops and bubbles. Lagrangian and Eulerian approaches. The Lagrangian Particle Tracking approach. The phase field approach. The sharp interface approach. Basics of parallel computing for fluid dynamics

Introduction to non-Newtonian fluids. Constitutive models of power-law, viscoplastic, viscoelastic fluids. Elements of rheological measurements.

Impact of non-Newtonian drops. Impact of power-law and viscoplastic drops on solid surfaces. Impact of dilute polymer solution drops. Dynamic wetting.

Non-Newtonian Sprays. Capillary breakup with non-Newtonian fluids. Characteristics of non-Newtonian sprays

Physics of sprays and applications. Spray formation, atomisation models. Evaporation, gas entrainment, impact.

Superhydrophobicity. Cassie-Wenzel and competing theories. Types of SHS and manufacturing techniques. Impact on SHS surfaces. Impalement transition.

Applications. Inkjet technology: Design of printheads, waveforms, ink formulations. Microlens manufacturing. Metal deposition. Icing and anti-icing techniques.

Registration & Fees

To register, please visit the course website at the address:

<http://pcwww.liv.ac.uk/~vbertola/lidesp6>

Registration fees:

Participant	Fee
Student	EUR 500*/600
Academic/Researcher	EUR 700*/800
Industrial	EUR 1000*/1200

*Early bird rates apply to participants who register before 15th July 2018. Additional discounts for the European Fluid Mechanics Conference (EFMC12) participants. Please visit <http://pcwww.liv.ac.uk/~vbertola/lidesp6> for more information.

Cancellation policy:

Until 15th July 2018: full refund (-5% administration fee)

From 16th July to 31st August 2018: 50% refund

After 31st August 2018: no refund

Course Secretariat

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6TH INTERNATIONAL ADVANCED COURSE ON LIQUID INTERFACES DROPS AND SPRAYS



6TH INTERNATIONAL ADVANCED COURSE ON LIQUID INTERFACES DROPS AND SPRAYS (LIDESP VI)

4-7 September 2018
Vienna (Austria)



TU Wien, Karlsplatz 13
1040 Wien (Austria)