



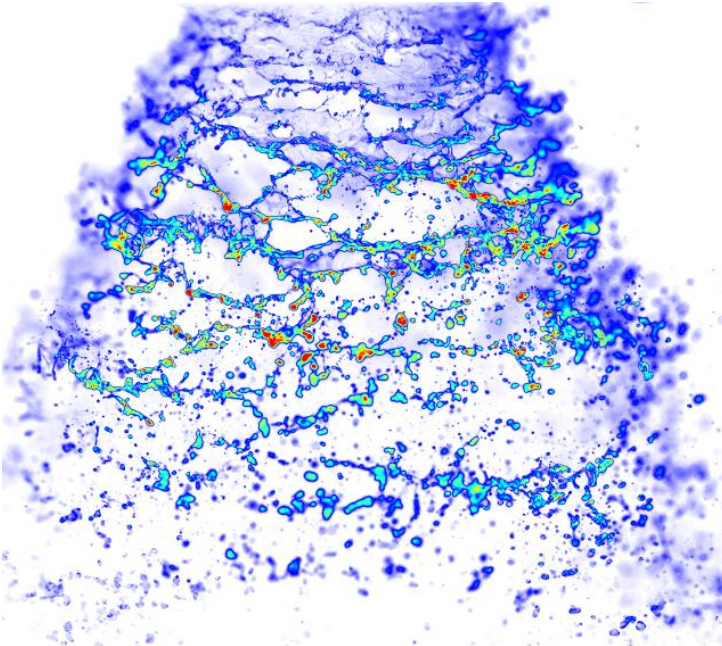
# Graduate School and Incentive Program Activities

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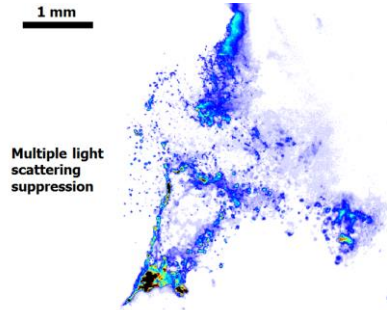
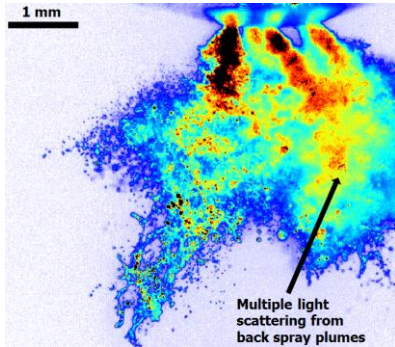
The Graduate School of CECOST,  
Centre for Combustion Science and Technology,  
announces the Graduate Course:

## Laser Imaging of Spray Systems

November 26 – 30, 2018.



Graduate Course - Fall 2018



## Laser Imaging of Spray Systems

### Objective

The objective of the course is to give an overview of laser imaging techniques for the characterization of spray systems. The course is intended for PhD-students and professionals within the field of *Atomization and Sprays* who want to get familiar with both the standard and most recent laser-based imaging techniques. The course will introduce the underlying principles of light propagation in sprays and will focus on the applicability and limitations of various techniques used for spray imaging. At the end of the course, the participants will be able to identify which approach is the most suitable for a specific problem and situation.

### Content

The course will focus on:

- The fundamental aspects of imaging systems
- The effects induced by multiple light scattering and other artifacts affecting spray images
- The strategies to suppress those unwanted effects and how one can increase the image contrast
- The techniques for the visualization of liquid breakups and spray dynamics at high-contrast, high-resolution and high-speed.
- The imaging techniques for the measurement of scalar quantities such as droplet size, liquid volume fraction and spray temperature.

Conventional optical approaches (e.g. white light shadowgraphy, laser sheet imaging) as well as more advanced imaging techniques (e.g. Ballistic imaging and Structured Laser Illumination Planar Imaging and 2-photon excitation liquid LIF) will be treated. Also, X-ray imaging will be described during the course.

In addition to the lectures:

- Several experimental measurements will be demonstrated in the laboratory.
- An online software called "*Multi-Scat*" will also be taught to simulate the propagation of light through sprays.
- Group projects will be assigned and the participants will be required to submit a report at the end of the course.

### Range

The course corresponds to 5 credits (ECTS). To fulfill the requirements, the student must participate in all lectures, laboratory demonstrations and the homework report has to be approved.

### Schedule

The course takes place during one week at Lund University on November 26-30, 2018. The course contains lectures and practical demonstrations. At the end of the course participants will be given a homework assignment for which a report shall be submitted. The first lecture will take place on Monday November 26 at 13.30 in room E421, the Building E, Department of Physics, Professorsgatan 1, Lund, Sweden.

### Literature and language

The course and the literature will be given in English. Specially developed course material will be distributed on the webpage: [www.spray-imaging.com](http://www.spray-imaging.com)

### Prerequisites, Fees and Registration

See page 4.

Deadline for registration:  
September 30, 2018

### Course responsible

Assoc. Prof. Edouard Berrocal  
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Lund University  
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Phone: +46 (0)46 222 03 54



### Invited lecturers

Prof. Mark Linne, University of Edinburgh  
Dr Elias Kristensson, Lund University



## General information

When all course requirements are fulfilled, the student will be awarded a diploma. For PhD-students, the supervisors determine if the course is appropriate for inclusion in the PhD degree and the home department administrates the registration of the course in the study plan.

### Prerequisites

The courses are primarily intended for graduate students and professionals with a background corresponding to a Master of Science in Engineering Physics, Mechanical Engineering, Chemical Engineering or equivalent.

### Fees

The CECOST courses are free of charge for PhD-students registered at Swedish or foreign universities.

Lunch, coffee and social activities at the seminars are provided free of charge. Travel and accommodation for participation in the seminars is to be arranged by all course participants themselves.

### Registration:

Please register by sending an email to [sven-inge.moller@forbrf.lth.se](mailto:sven-inge.moller@forbrf.lth.se) with the following information:

Family name (last name):

Given name (first name):

Department:

University or Institute:

Email address:

Diet restrictions (optional):

Deadline for registration: September 30, 2018

Early registration is encouraged!

### Information

For further information please contact:

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