Course Description and Aims

Advances in various engineering and process applications necessitate better understanding of underlying surface processes or near-wall phenomena in concerning systems. High-temperature material synthesis and processing, engine heat transfer and combustion, and chemical process technology (chemical vapor deposition and infiltration, catalytic processes, etc.) are just a few familiar examples. Thereby processes, such as surface reconstruction, surface material damage, material deposition, film growth and material etching, wall-flame interaction, surface reactions and their coupling with chemically reactive flows, have to be addressed.
The course objective is to provide the participants with today's detailed knowledge on

- Turbulence-Chemistry Interaction
- Chemical Kinetics under low temperature conditions
- Near-Wall Reactive Flow Diagnostics
- Heat-Transfer and Turbulent Multiphase-Flows
- Near-Wall Reactive Flow Applications

The ICISS-Summer School in cooperation with TU Darmstadt and ERCOFTAC is intended to report on the status and perspective of experimental, theoretical, and numerical techniques for understanding, describing, and designing near-wall reactive flows in diverse scientific and engineering fields. Furthermore, it aims at providing an opportunity for researchers and interested workers to present the state of the art, discuss new challenges and developments, and exchange ideas in the areas of near-wall reactive flows.

Who should attend?

The course is directed towards international graduate students and researchers of mechanical or process engineering, chemistry, and physics focusing on the fields of combustion, energy science, turbulent or multiphase flow, fluid mechanics, kinetics, laser diagnostics, thermodynamics, or heat transfer.

Summer School site

The summer school is going to take place in the Alleehotel Europa in Bensheim, Germany.

www.alleehotel.de
Europa-Allee 45
64625 Bensheim
Germany

Fees and Registration

The Summer School, as well as accommodation, social events, and meals will be free of charge. The costs for traveling are not covered by the summer school.

The application form is available under:

www.trr150.de → Events→Summer School

Please include a short motivation on why you would like to attend the school in your application.

You are welcome to present a poster.

TECHNISCHE UNIVERSITÄT DARMSTADT

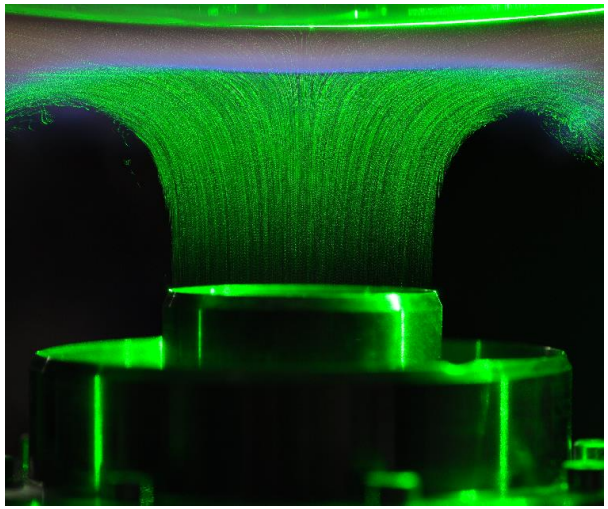
International Combustion Institute

Summer School on

Near-Wall Reactive Flows

6th – 10th June 2016
Bensheim, Germany

SFB/Transregio 150
Turbulente, chemisch reagierende Mehrphasenströmungen in Wandnähe



Organizing Committee

Prof. Andreas Dreizler
Technische Universität Darmstadt (Germany)

Prof. Olaf Deutschmann
Karlsruhe Institute of Technology (Germany)

Dr. Andrea Gruber
SINTEF Energy Research, Trondheim (Norway)

Prof. Thierry Poinsot
National Polytechnic Institute of Toulouse (France)

Prof. Amsini Sadiki
Technische Universität Darmstadt (Germany)

Lecture Program

Day 1: Monday, June 6th

Prof. Dreizler (TU Darmstadt, Germany): Welcome and Introduction to *Near-Wall Reactive Flow* topics

Prof. Deutschmann (Karlsruhe Institute of Technology, Germany): *Heterogeneous chemical kinetics*

Prof. Faravelli (Politecnico di Milano, Italy): *The pathologies of the low temperature hydrocarbon oxidation mechanism*

Poster Session I

Day 2: Tuesday, June 7th

Prof. Janicka (TU Darmstadt, Germany): *Numerical combustion – fundamental understanding and modeling concepts*

Dr. Selle (CNRS, France): *Fundamentals of flame-wall interaction and some recent results*

Prof. Dreizler (TU Darmstadt, Germany): *Flame-wall interactions – flow and scalar field measurements using laser diagnostics*

Prof. Bellenoue (Univ. of Poitiers, France): *Unsteady flame quenching and heat transfer diagnostics in combustion chambers*

Day 3: Wednesday, June 8th

Dr. Gruber (SINTEF, Norway): *Gaining insight on flame-wall interaction processes using direct numerical simulation*

Prof. Pfitzner (BW University, Germany): *Modelling of wall quenching effects in RANS and LES simulations of near-wall reacting flows*

Prof. Sick (Univ. of Michigan, USA): *Optical diagnostics at interfaces in internal combustion engines*

PD Dr. Mantzaras (ETH Zurich, Switzerland): *Heterogeneous and homogeneous combustion – numerical simulation and model validation with in situ measurements*

Poster Session II

Day 4: Thursday, June 9th

Prof. Tropea (TU Darmstadt, Germany): *Drop and spray impact on wetted walls*

Prof. Stephan (TU Darmstadt, Germany): *Heat and mass transfer near moving contact lines on superheated walls*

Dr. Eggels (Rolls Royce, Germany): *Modelling combustion walls in gas turbine combustors*

Dr. Leick (Robert Bosch GmbH, Germany): *Near-wall-effects in fuel injection: An overview of engineering targets, spray-wall interaction mechanisms and measurement techniques.*

Poster Session III

Day 5: Friday, June 10th (Lab tour)

Tour to the combustion and heat-transfer laboratories of the TU Darmstadt

Further information & Contact

www.trr150.de → Events→Summer School

or mail to Sebastian Bürkle (buerkle@trr150.de)

Save the Date!

Sponsors

Offered by the International Combustion Institute in cooperation/partnership with

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