

Non-Invasive Experimental Tools and Numerical Methods for the Investigation of Non-Reactive and Reactive Gas-Liquid Flows

TuTech Innovation GmbH, Schloßstraße 6-12, Hamburg Harburg,
Lecture Room "Hertz"

Color code:

Joint presentations

France

Germany

Netherlands

Wednesday, June 20th, 2018

Introduction

14:00

**Welcome remarks by Prof. Dr. Ed Brinksma,
President of Hamburg University of Technology**

14:10

Welcome remarks for the 2nd French/German Workshop

- FERMaT & TU Hamburg -

Session 1 "The scientific questions and toolboxes"

14:20

Towards the simulation of reactive mass transfer in bubble swarms
- TU Darmstadt -

Bothe

14:30

Bubbly flows in FERMaT: research activities, tools and applications
- FERMaT -

Billet/
Dietrich

14:50

Activation of Dioxygen with N-donor Copper-complexes
- RWTH Aachen -

Strassl

15:10

Data-driven approximate solutions for reactive boundary layer problems
- TU Darmstadt -

Weiner

15:30

Coffee break

Session 2 "Non reactive and reactive Taylor Flow"

15:50

Gas-liquid mass transfer around Taylor bubbles flowing in a meandering
millimetric square channel
- FERMaT -

Loubière

16:10

Analysis of reactive bubbles by means of time resolved scanning LIF
- TU Hamburg -

Kastens

16:30

Numerical simulations of Taylor bubble flows with chemical reaction
- TU Dortmund -

Mierka

16:50

Mass transfer in Taylor flow: transfer rate modelling from measurements at
the slug and film scale
- FERMaT -

Billet/
Lalanne

17:10

Taylor flow measurements by means of MRT
- University Bremen -

Kemper

17:30

Discussions

Thursday, June 21st, 2018

9:00

Keynote by Prof. Dr. Hans Kuipers
University of Technology Eindhoven, Department of
Chemical Engineering and Chemistry

- Multi-scale modelling of mass, momentum and heat transport in dense bubbly flows

Session 3 “Frontiers of experimental analysis in MPF I”

9:45	Experimental investigation on gas-liquid hydrodynamics and mass transfer in an in-plane spiral-shaped microreactor - FERMaT -	Mei
10:05	Oxygen mass transfer in 2-phase reactors using resazurin - Otto-von-Guericke-Universität Magdeburg-	Zähringer
10:25	Reactive mass transfer around an oxygen bubble rising freely in a confined cell: resazurin and copper complex methods - FERMaT -	Felis
10:45	Electrolyte effects on recirculating dense bubbly flow: X-ray study - TU Delft -	Mandalahalli

11:05 *Coffee break*

Session 4 “Frontiers of experimental analysis in MPF II”

11:25	Nitrosylmetal complexes in multiphase reaction media with in-situ characterizing - Ludwig-Maximilian-University München -	Ampßler
11:45	Measurement of local species concentrations within FE/edta/NO system using Fiber optical probe - Helmholtz-Zentrum Dresden-Rossendorf -	Möller
12:05	Investigation of influence of transport processes on chemical reaction in bubble flow using space resolved in-situ analytics and simultaneous characterization of bubble dynamics in real time - University Stuttgart -	Guhathakurta

12:25 *Lunch buffet at venue*

Session 5 “Non reactive and reactive bubbly flows I”

13:15	Binuclear iron HPTB complexes for O ₂ and NO activation and fluorescence detection - University Gießen -	Specht
13:35	Aromatic hybrid guanidine copper Complexes for the activation of dioxygen - RWTH Aachen -	Paul
13:55	Comparison of three different visualization techniques for local mass transfer characterization around single bubble rising in water - FERMaT -	Xu
14:15	Fluid dynamics with superimposed mass transfer of single bubbles in reacting liquids - TU Berlin -	Merker
14:35	Mass transfer modeling of bubble swarms with Euler/Lagrange approach - Martin-Luther-University Halle/Saale -	Muniz

14:55 *Coffee Break and Discussion*

15:15 *Tour of the laboratories of process engineering faculty*

18:30 *Dinner & Sightseeing*

Friday, June 22nd, 2018

9:00

**Keynote by Prof. Dr. Veronique Roig
Institut de Mécanique des Fluides de Toulouse**

- Hydrodynamics and mixing in thin-gap planar bubble columns

Session 6 “Non reactive and reactive bubbly flows II”

9:45

3D-shape reconstruction of free moving bubbles under the influence of turbulence
- Universität der Bundeswehr München - Haase

10:05

Simulating the emptying of a water bottle with a multi-scale two-fluid approach
- FERMaT - Mer

10:25

Influence of swarm turbulence mass transfer at fluidic interfaces of bubbles, a direct numerical simulation study
- TU Hamburg - Jin

10:45

Mass transfer in Hele Shaw cell: experimental and numerical studies
- FERMaT - Felis

11:05

Coffee Break

Session 7 “Non reactive and reactive bubbly flows III”

11:15

Numerical simulation of mass transfer in Taylor flow
- FERMaT - Lalanne

11:35

Subgrid-scale modeling for advection-dominated species boundary layers
- TU Darmstadt - Hillenbrand

11:55

Comparison between experiments and numerical simulations of bubble plumes
- FERMaT - Laupsien

12:15

Discussions about further collaboration and project applications

Concluding remarks

- FERMaT & TU Hamburg -

13:00

Farewell Lunch with Catering