

REGISTRATION

Please send this registration via E-mail to sylvia.gerwalin@itwm.fraunhofer.de or via fax to +49 631 31600-1090 until **August 26th**, 2016. Please note that the number of participants is limited.

INTERNATIONAL WORKSHOP "MATHEMATICAL METHODS IN PROCESS ENGINEERING"

Thursday, September 22nd to Friday, September 23rd 2016, Fraunhofer-Zentrum, Kaiserslautern

- Yes, I will attend the workshop
Regular fee: 690€ (includes sessions, conference documents, lunch, networking dinner and coffee breaks)
- Research staff (University of Kaiserslautern, Fraunhofer ITWM): free
- No, I cannot attend, but I am interested in receiving further information.

Title, First name, Family name

Company/Institution, Department

Street, Number

Zip code, City

Phone

E-mail

Invoice address

Date, Signature

INFORMATION

– Contact with regard to scientific program

Dr. Michael Bortz

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– Contact with regard to organization

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– Conference venue

Fraunhofer Institute for Industrial Mathematics ITWM
Fraunhofer-Platz 1
67663 Kaiserslautern
www.itwm.fraunhofer.de

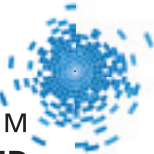
Directions: www.itwm.fraunhofer.de/anreise.html

An appropriate selection of accommodations in Kaiserslautern will be provided with the registration confirmation.

In cooperation with:

(CM)²


FELIX KLEIN
ZENTRUM FÜR
MATHEMATIK


LEISTUNGSZENTRUM
SIMULATIONS- UND
SOFTWARE-BASIERTE
INNOVATION

INTERNATIONAL WORKSHOP
MATHEMATICAL
METHODS IN PROCESS
ENGINEERING

Thursday, September 22nd to
Friday, September 23rd 2016
Fraunhofer-Zentrum, Kaiserslautern

PREFACE

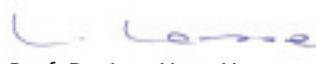
Performance Centers are a new line of excellence within Fraunhofer-Gesellschaft, which is with its 24,000 scientists, Europe's largest research organization for applied research and technology. The Performance Center "Simulation- and Software-based Innovation" has a special focus on process engineering, a field in which the co-operation between University of Technology, Kaiserslautern, and Fraunhofer Institute for Industrial Mathematics ITWM has been particularly strong, with more than 150 active scientists.

In fall 2016, **September 22nd to September 23rd** the Center will organize a 2-day workshop "**Mathematical Methods in Process Engineering**" with 6 internationally outstanding invited speakers and 11 short contributions from researchers of the Center.

All lectures are invited, and also attendance will require invitation. The number of invited participants is limited to about 80, which will include selected partners from process industry as well. The conference venue will be the Fraunhofer site at Kaiserslautern. The workshop will provide a unique opportunity for scientific discussions and personal networking between scientists from academia and industrial practice to render and to shape the topics to come in future process engineering.

Modeling, simulation and optimization are key technology capabilities in processing engineering that help to enhance and to improve productivity and flexibility of the process industry in a global market.


Prof. Dr. Karl-Heinz Küfer
Fraunhofer ITWM


Prof. Dr.-Ing. Hans Hasse
University of Kaiserslautern

PROGRAM

– Thursday, September 22nd

10:15 Registration open, welcome coffee

11:00 Welcome speech, greeting remarks, opening words
Karl-Heinz Küfer (Fraunhofer ITWM), Hans Hasse (University of Kaiserslautern), Norbert Asprien (BASF SE)

SESSION "PROCESS SIMULATION"

Session chair: Karl-Heinz Küfer

11:20 **Deterministic global optimization for mixed-integer nonlinear bilevel problems: The Branch-and-Sandwich algorithm**
Claire S. Adjiman (Imperial College London, UK)

12:10 **Considering uncertainties in thermodynamic property models**
Jakob Burger (University of Kaiserslautern)

12:35 **Pareto optimization of thermodynamic models**
Hans Hasse (University of Kaiserslautern)

13:00 Lunch (foyer)

SESSION "GRANULAR FLOW"

Session chair: Oleg Iliev

14:00 **Multiscale simulation methods for granular material**
Stefan Luding (Universiteit Twente UT, Enschede, NL)

14:50 **Parameter identification for DEM-simulation of particles and agglomerates**
Sergiy Antonyuk (University of Kaiserslautern)

15:15 **Granular flow simulation with continuum models**
Sebastian Rau (Fraunhofer ITWM)

15:40 Coffee break (foyer)

SESSION "PROCESS OPTIMIZATION I"

Session chair: Hans Hasse

16:20 **Advanced nonlinear programming strategies for process optimization**
Lorenz T. Biegler (Carnegie Mellon University, Pittsburgh, USA)

17:10 **Novel approach for simulation and optimization of distillation-based flowsheets using fixed-point iterations for stage-to-stage calculations**
Anna Hoffmann (Fraunhofer ITWM)

17:35 **Using data in process engineering: Model building, sensitivity analysis and optimization**
Jan Schwientek (Fraunhofer ITWM)

19:00 For speakers and external participants: Round table discussions and networking dinner

– Friday, September, 23rd

8:30 Arrival of participants, welcome coffee

SESSION "FIBERS AND NONWOVENS"

Session chair: Raimund Wegener

8:40 **Fiber and nonwoven production processes: Engineering perspective and needs for modeling and simulation**
Gunnar Seide (Institut für Textiltechnik, RWTH Aachen)

9:30 **Virtual nonwovens production processes**
Simone Gramsch (Fraunhofer ITWM)

9:55 **Modelling of nonwoven laydown structures**
Axel Klar (University of Kaiserslautern)

10:20 Coffee break (foyer)

SESSION "FILTRATION"

Session chair: Konrad Steiner

10:50 **Recent developments on filtration simulation**
Ben Mullins (Curtin University, Perth, Western Australia)

11:40 **Pore scale simulation of reactive flow**
Oleg Iliev (Fraunhofer ITWM)

12:05 **CAE for filter elements: From CFD to coupled simulations**
Ralf Kirsch (Fraunhofer ITWM)

12:30 Lunch (foyer)

SESSION "PROCESS OPTIMIZATION II"

Session chair: Norbert Asprien

13:30 **Process operation and real-time optimization**
Sebastian Engell (TU Dortmund University)

14:20 **Calculating and navigating pareto sets: A versatile approach to support decisions in chemical engineering and beyond**
Michael Bortz (Fraunhofer ITWM)

14:45 Wrap up/closing

15:00 End of the workshop

Invited Speakers

- Claire S. Adjiman (Imperial College London, UK)
- Lorenz T. Biegler (Carnegie Mellon University, Pittsburgh, USA)
- Sebastian Engell (TU Dortmund University)
- Stefan Luding (Universiteit Twente UT, Enschede, NL)
- Ben Mullins (Curtin University, Perth, Western Australia)
- Gunnar Seide (Institut für Textiltechnik, RWTH Aachen)