ENTRY FEES/REGISTRATION

– Entry fees

- Industry: 690 EUR*
  (VAT is not charged according to § 4 No. 22a UStG)
- Research staff (Universities, Fraunhofer ITWM):
  free of charge

*The participation fee includes the entitlement to participate in the event, the conference documents, catering during the workshop and the networking dinner. Invoicing takes place after the event.

– Registration

Please register online by **March 14, 2019**:
www.leistungszentrum-simulation-software.de/SM2

GENERAL INFORMATION

– Contact with regard to scientific program

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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/en/contact

LEISTUNGSZENTRUM
SIMULATIONS- UND SOFTWARE-BASIERTE INNOVATION
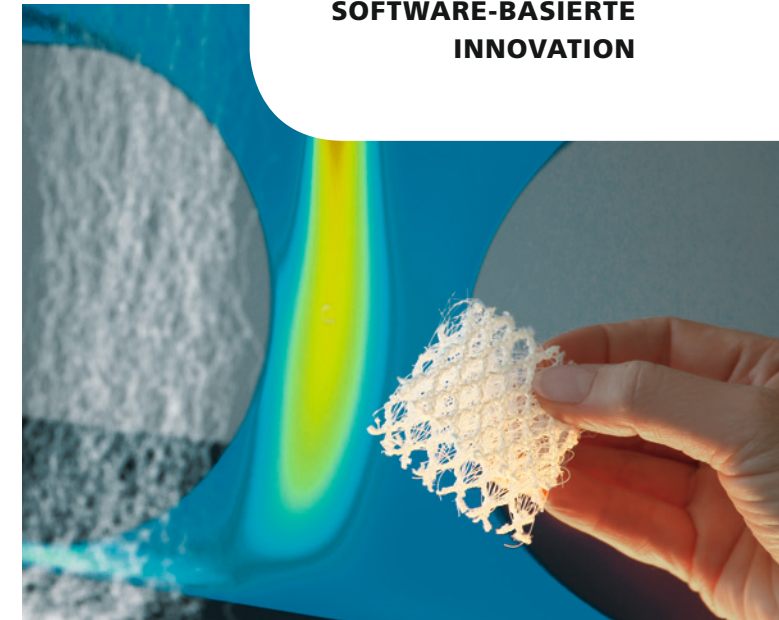
INTERNATIONAL WORKSHOP
SMART MODELS FOR SMART MATERIALS (SM)²

Wednesday, March 27 to
Thursday, March 28, 2019
Fraunhofer-Zentrum, Kaiserslautern

PREFACE

Digitalization has become a megatrend in industries and societies of many countries around the world. Mathematical models, algorithms and data science are in the core of this development.

In spring 2019, March 27 to 28, the Fraunhofer High Performance Center Simulation- and Software-based Innovation will organize an international workshop "Smart Models for Smart Materials" with six internationally outstanding speakers and twelve short contributions from researchers of the center and industry.

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 material science.

Prof. Dr. Dieter Prätzel-Wolters
Speaker of the council
High Performance Center Simulation- and
Software-based Innovation

PROGRAM

– Wednesday, March 27

10:00	Registration open, welcome coffee

10:20	**Opening** PD Dr. Michael Bortz, Dr. Konrad Steiner, Dr. Raimund Wegener

10:30	**Keynote – The need for digitalization in R&D in the chemical industry** Dr. Horst Weiss, BASF SE

S1 Battery Materials
Session chair: Dr. Konrad Steiner

11:00	**Spatially resolved modeling and simulation of degradation in lithium ion batteries** Prof. Dr. Arnulf Latz, Helmholtz Institute Ulm (HIU)

11:40	**Cathode active materials for automotive applications** Dr. Pascal Hartmann, BASF SE

12:10	**Modeling of Li-ion batteries on mico- and cell-scale with emphasis on spatial inhomogeneities and electrode blends** Dr. Jochen Zausch, Fraunhofer ITWM

12:45	Lunch (foyer)

S2 CFD in Process Engineering – Challenges and New Methods
Session chair: Dr. Raimund Wegener

13:30	**Modeling and simulation of dispersed and separated multiphase flows in different applications** Prof. Dr. Uwe Janoske, Bergische Universität Wuppertal

14:10	**Current challenges for CFD modeling in polymer process engineering** Dr. Andreas Daiss, BASF SE

14:40	**Meshfree modeling of products and processes** Dr. Jörg Kuhnert, Fraunhofer ITWM

15:10	Coffee break (foyer)

S3 Fiber Reinforced Plastics and Melt Flows
Session chair: Dr. Dietmar Hietel

15:50	**Efficient simulation of visco-elastic composite materials with fibers and particles** Dr. Felix Fritzen, University of Stuttgart

16:30	**Multiscale simulation of glass fiber reinforced plastics** Dr. Fabian Welschinger, Robert Bosch GmbH

17:00	**Fluid dynamical design of polymer spin packs** Dr. Christian Leithäuser, Fraunhofer ITWM

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

– Thursday, March 28

8:30	Arrival of participants, welcome coffee

S4 Electrochemistry
Session chair: Dr. Peter Klein

8:40	**Electrochemistry modeling of fuel cells and batteries** Prof. Dr. Thomas Carraro, Heidelberg University

9:20	**Optimization of electrode structures to improve the performance of lithium ion batteries** Stanislav Severov, Volkswagen AG

9:50	**Modeling, simulation, optimization of an electrochemical process** Dr. Martin von Kurnatowski, Fraunhofer ITWM

10:20	Coffee break (foyer)

S5 Filters
Session chair: Prof. Dr. Oleg Iliev

10:50	**DEM-CFD-coupling in filtration** Prof. Dr. Sergiy Antonyuk, TU Kaiserslautern

11:30	**Tomography based simulation of automotive particulate filters** Dr. Martin Votsmeier, Umicore AG & Co. KG

12:00	**Multiscale modeling of reactive transport in catalytic filters** Dr. Torben Prill, Fraunhofer ITWM

12:30	Lunch (foyer)

S6 Molecular Modeling
Session chair: PD Dr. Michael Bortz

13:30	**Multiscale materials modeling with emphasis to polymers: making a difference in industry** Prof. Dr. Vlasis Mavrantzas, ETH Zürich (CH)/University of Patras (GR)

14:10	**Artificial intelligence for chemistry and materials: developing simulation models using existing knowledge** Dr. Teodoro Laino, IBM Research – Zurich (CH)

14:40	**The FORCE multicriteria optimization framework using physical and data based materials modeling** Dr. Peter Klein, Fraunhofer ITWM

15:10	Wrap-up/closing

15:30	End of the workshop

Invited university speakers:
- Prof. Dr. Sergiy Antonyuk, TU Kaiserslautern
- Prof. Dr. Thomas Carraro, Heidelberg University
- Dr. Felix Fritzen, University of Stuttgart
- Prof. Dr. Uwe Janoske, Bergische Universität Wuppertal
- Prof. Dr. Arnulf Latz, Helmholtz Institute Ulm (HIU)
- Prof. Dr. Vlasis Mavrantzas, ETH Zürich (CH)/University of Patras (GR)