DECHEMA
Gesellschaft für Chemische Technik
und Biotechnologie e.V.

PROGRAMME

21 – 24 October 2018
Karlsruhe · Germany

IMRET 2018
15th International Conference on Micro Reaction Technology

www.dechema.de/IMRET2018

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IMRET 15 2018

SUPPORTED BY:
ProcessNet Working Group Microreaction Engineering
and International Flow Chemistry Society

#IMRET2018

CONTENTS

GENERAL INFORMATION

VENUE

Convention Center Karlsruhe
„Gartenhalle“
Festplatz 3
76137 Karlsruhe
Germany

INTERNET ACCESS

Wifi access throughout the congress venue is available and free of charge. As the wifi access can be used by all visitors, a loss of efficiency is possible.
Network: IMRET2018
Password: IMRET2018

BOOK OF ABSTRACTS

A Book of Abstracts (lectures and posters) is available online for participants of the meeting at www. dechema.de/en/IMRET2018_BOA by 21 October 2018.

NAME BADGES

All participants are kindly requested to wear their name badges throughout the conference. In case you lost your badge, a new one will be available at the conference office.

SMOKING

Smoking is prohibited inside the venue. You are kindly requested to smoke outside the building where ashtrays are available for your convenience.

TAXI

In case you need a taxi, the conference office will be glad to assist you.

OFFICE HOURS CONFERENCE DESK

Sunday, 21 October 2018	17:00 – 20:00
Monday, 22 October 2018	08:00 – 20:00
Tuesday, 23 October 2018	08:15 – 18:00
Wednesday, 24 October 2018	08:30 – 13:30

CONTACT

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COMMITTEES

LOCAL ORGANISING COMMITTEE

Alexis Bazzanella	DECHEMA e.V., Frankfurt/Main/D
Roland Dittmeyer	Karlsruhe Institute of Technology, Eggenstein-Leopoldshafen/D
Kerry Gilmore	Max Planck Institute of Colloids and Interfaces, Potsdam/D
Christian Holtze	BASF SE, Ludwigshafen/D
Gunther Kolb	Fraunhofer IMM, Mainz/D
Stefan Loebbecke	Fraunhofer ICT, Pfinztal/D

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Steven A. Soper	University of North Carolina/USA

PLENARY LECTURES

Sunday, 21 October, 18:15 – 19:00 *Plenary Room*

Digital engineering and additive manufacturing for process technology equipment
Dr. Christoph Kiener, Siemens/D

Monday, 22 October, 09:15 – 10:00 *Plenary Room*

Micro Chemical Engineering – a fascinating journey from lab to industrial production
Dr. Kai Ehrhardt, BASF/D

Tuesday, 23 October, 08:45 – 09:30 *Plenary Room*

Innovation in catalytic methodology development through flow chemistry
Prof. Timothy Noël, Eindhoven University of Technology/NL

Wednesday, 24 October, 11:15 – 12:00 *Plenary Room*

Maintaining the benefits of microchannel Fischer-Tropsch synthesis to the full commercial scale
Dr. Heinz Robota, Velocys/USA

KEYNOTE LECTURES

Monday, 22 October, 10:30 – 11:20 *Conference Room 1*

21st Century Synthesis
Dr. Kerry Gilmore, Max Planck Institute of Colloids and Interfaces/D

Monday, 22 October, 14:00 – 14:50 *Plenary Room*

Complex fluids in microchannel flows
Dr. Myung-Suk Chun, Korea Institute of Science and Technology/KOR

Monday, 22 October, 16:10 – 17:00 *Plenary Room*

Microstructured reactors for chemical conversion of renewable energy on a decentralized scale – status and outlook
Dr. Tim Boeltken, INERATEC GmbH/D

KEYNOTE LECTURES

Tuesday, 23 October, 10:00 – 10:50 *Conference Room 1*

Microreaction systems for controllable preparation of particles
Prof. Guangsheng Luo, Tsinghua University/CN

Tuesday, 23 October, 13:15 – 14:05 *Conference Room 1*

Innovation of API production using flow fine synthesis
Prof. Shu Kobayashi, University of Tokyo/J

Tuesday, 23 October, 14:55 – 15:45 *Plenary Room*

Modular Plants – Enabler for flexibility and speed in specialty chemicals industry
Dr. Frank Stenger, Evonik Technology & Infrastructure GmbH/D

Tuesday, 23 October, 16:15 – 17:00 *Plenary Room*

Micro and millifluidic separation processes
Prof. Asterios Gavriilidis, University College London/GB

Wednesday, 24 October, 09:00-09:50 *Conference Room 1*

Biocatalysis in micro-flow: Bridging the gap between academia and industry
Prof. Polona Znidarsic Plazl, University of Ljubljana/SLO

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As a leading supplier in the fields of microfluidics and microreaction technology, Little Things Factory develops and manufactures high-quality components and system solutions made of glass, quartz and glass-silicon compound materials. The product range includes fluidic chips as well as microreactors for lab-on-chip, life science, flow chemistry, photochemistry and R&D applications.

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EXCURSIONS

Excursion 1	Excursion 2	Excursion 3
Start: 13:00 – End: 16:30	Start: 13:00 – End: 17:00	Start: 13:30 – End: 15:30
Microfluidic and Micro Reaction Technology at BASF	**Fraunhofer IMM in Mainz**	**Institute for Micro Process Engineering at KIT Campus North**
This is, what you will see at BASF: » Microfluidics lab for early stage screening » Micro-reaction technology lab for process development Both visits will include a presentation, lab-tour and discussion.	You will see continuous processes in action including: » Electrochemical organic synthesis » Chain-growth polymerization » Photochemical applications » Encapsulation of active ingredients Five good reasons to visit Fraunhofer IMM in Mainz: » See live demonstrations of lab and pilot scale set-ups in the field of continuous liquid phase processing » Find out how to speed-up process development and multi-step organic synthesis while taking care of environmental aspects » Discover solutions for inline monitoring and process control, reactive intermediate formation and consumption » Learn about future chemical production concepts based on a container-format approach Discuss your challenges with our experts	The lab tour at the institute including the micro fabrication center will show » mechanical micro machining » diffusion bonding » laser welding » 3D printing of metals » various coating technologies » characterisation methods for materials and coatings » selected application labs Moreover we provide a visit to the Energy Lab 2.0 site at KIT Campus North. There are modular microstructured reactors for methanation and Fischer-Tropsch synthesis developed by KIT together with INERATEC are going be tested in a scale of around 50 m^3/h (STP) gas throughput.
Transfer duration: 1h by bus from the conference site Transfer back to Karlsruhe with a stop at Mannheim main station will be provided. Maximum capacity: 45 participants	Transfer duration: 2h by bus from the conference site Return transfer to Karlsruhe with a stop at Frankfurt International Airport will be provided. Maximum capacity: 50 participants	Transfer duration: 20 minutes by bus from the conference site Transfer to Karlsruhe main station will be provided. Maximum capacity: 50 participants

Pre-registration is mandatory.

Sunday, 21 October — 18:00 – 21:00

Welcome Get together

We invite you to join the welcome get together in the evening before the official opening of IMRET 2018.

EVENING KEYNOTE SPEECH

Digital Engineering and Additive Manufacturing for Process Technology Equipment
Dr. Christoph Kiener, Siemens AG/D

IUPAC-THALESNANO FLOW CHEMISTRY PRIZE 2018

Awardee: **Prof. C. Oliver Kappe**, Graz University/AU

Monday, 22 October — 17:50 – 20:00

Poster Party

Posters will be presented and discussed in an informal atmosphere while cooled beer and freashly baked pretzels are served.

Wednesday, 23 October — 19:00 – 23:00

Conference Dinner and IMRET Party

We create a memorable event for you. Enjoy an excellent dinner, fine drinks and networking. Don't forget to put on your dancing shoes – we have hired the most awesome party band to set the dance floor on fire!

The conference dinner will take place at **Palazzo Karlsruhe**

Address:
Liststraße 18
76185 Karlsruhe

Directions:
From Gartenhalle ca. 10 min, 850 m walk to station „Mathystr."

5 (VBK) direction Rheinhafen, exit Kühler Krug

700 m walk to Palazzo Halle

A separate ticket for the conference dinner is mandatory. Please book a ticket online or buy a ticket at the conference desk until Monday, 22 October at the latest.

Sunday, 21 October 2018

10:00	Pre-Conference Workshop at KIT (10:00–16:00)
17:00	Registration
18:00	**Welcome Address**
18:15	**Dinner Keynote by Christoph Kiener**
19:00	**IUPAC-ThalesNano Flow Chemistry Prize 2018**
19:15	Get together in Exhibition Area

Monday, 22 October 2018

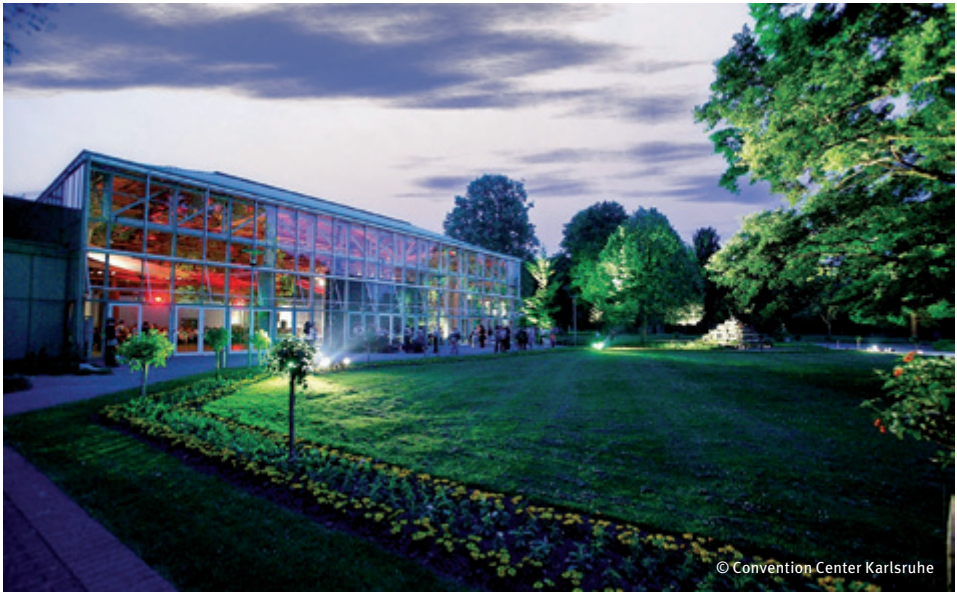
8:00	Registration and Welcome Coffee		
9:00	**Opening and Welcome Address**		
9:15	**Plenary Lecture by Kai Ehrhardt**		
10:00	Coffee Break in Exhibition Area		
	PLENARY ROOM	**CONFERENCE ROOM 1**	**CONFERENCE ROOM 2**
	Multiphase Systems	**Microfabrication**	**Process Analytics**
10:30	Filip Strniša	KEYNOTE LECTURE Kerry Gilmore	Philipp Sulzer
10:55	Ken-Ichiro Sotowa		Nikolay Cherkasov
11:20	Graeme Hunt	Manuel Christian Maier	Dusan Boskovic
11:45	Waldemar Krieger	Johannes Sackmann	Detlev Belder
12:10	Renée Ripken	Klaus Kadel	Jürgen Antes
12:35	Lunch in Exhibition Area		
	Multiphase Systems	**Microfabrication**	**Local Measurements by Miniaturised Sensors**
14:00	KEYNOTE LECTURE Myung-Suk Chun	Yoon-Ho Hwang	Mohammadmahdi Talebi
14:25		Mengxue Zhang	Benedikt Julius Deschner
14:50	Guangwen Chen	Christian Hornung	Sebastian Urban
15:15	Agnieszka Ladosz	Ki-Won Gyak	Michael Türk
15:40	Coffee Break in Exhibition Area		
	Energy	**Multiphase Systems**	**Coupled Processes**
16:10	KEYNOTE LECTURE Tim Boeltken	Dogancan Karan	Kersten Rabe
16:35		Kazuki Akamatsu	Yosuke Muranaka
17:00	Gunther Kolb	Chaoqun Yao	Chenyue Zhang
17:25	Marcel Loewert	Boris Guicheret	Susann Triemer
17:50	Sessions End		
17:50	Poster Party (17:50–20:00)		

Tuesday, 23 October 2018

8:00	Re-Opening Exhibition		
8:45	**Plenary Lecture by Timothy Noël**		
9:30	Coffee Break in Exhibition Area		
	PLENARY ROOM	**CONFERENCE ROOM 1**	**CONFERENCE ROOM 2**
	Photochemistry	**Particle Synthesis**	**Polymer Synthesis**
10:00	Xiang Zhan	KEYNOTE LECTURE Guangsheng Luo	Kai Wang
10:25	Dalia Heggo		Mahmoud Kamaleddine
10:50	Thomas Rehm	Victor Sebastian	Esther Cremer
11:15	Thomas Claes	Klaus Stöwe	Sven Bettermann
11:40	Sebastian Ponce	Sibylle von Bomhard	Yuanhai Su
12:05	Lunch and Posters in Exhibition Area		
	Scale-up and Industrial Applications	**Reactions in Flow**	**Particle Synthesis**
13:15	Mei Yang	KEYNOTE LECTURE Shu Kobayashi	Claire Delacoure
13:40	Amol Kulkarni		Paolo Dolcet
14:05	Gabriele Menges-Flanagan	C. Oliver Kappe	Lifang Yan
14:30	Olivier Hannaerts	Bozhao Chu	Amol Kulkarni
14:55	KEYNOTE LECTURE Frank Stenger	Martin Linden	Julien Mahin
15:20		Alain Favre-Reguillon	Roberta Manno
15:45	Coffee Break in Exhibition Area		
	Separation Processes	**Particle Synthesis and Handling**	**Reactions in Flow**
16:15	KEYNOTE LECTURE Asterios Gavriilidis	Naghmeh Fatemi	Dogancan Karan
16:40		Hao Wang	Erfan Behravesh
17:05	Erik-Jan Ras	Zhengya Dong	Yuanhai Su
17:30	Lixia Yang	Osamu Tonomura	Katharina Hiebler
17:55	Sessions End		
19:00	Conference Dinner at Palazzo Halle		

Wednesday, 24 October 2018

8:30	Re-Opening Exhibition		
	PLENARY ROOM	**CONFERENCE ROOM 1**	**CONFERENCE ROOM 2**
	Energy	**Bioprocesses**	**Separation Processes**
9:00	Nichaporn Sirimungkalakul	**KEYNOTE LECTURE** Polona Znidarsic Plazl	Kay Marcel Dyrda
9:25	Takashi Fukuda		Arne Hommes
9:50	John Mantzaras	Jun Yue	Alexandr Romanov
10:15	Philipp Rudolf von Rohr	Sven Meinen	Norbert Kockmann
10:40	Coffee Break in Exhibition Area		
11:15	**Plenary Lecture by Heinz Robota**		
12:00	**Best Poster Awards**		
12:15	Closing Remarks		
12:30	Lunch in Exhibition Area (12:30–13:30)		
13:00	Excursions		
13:30	General Assembly of ProcessNet Working Group „Micro Reaction Engineering“ (13:30 – 15:00)		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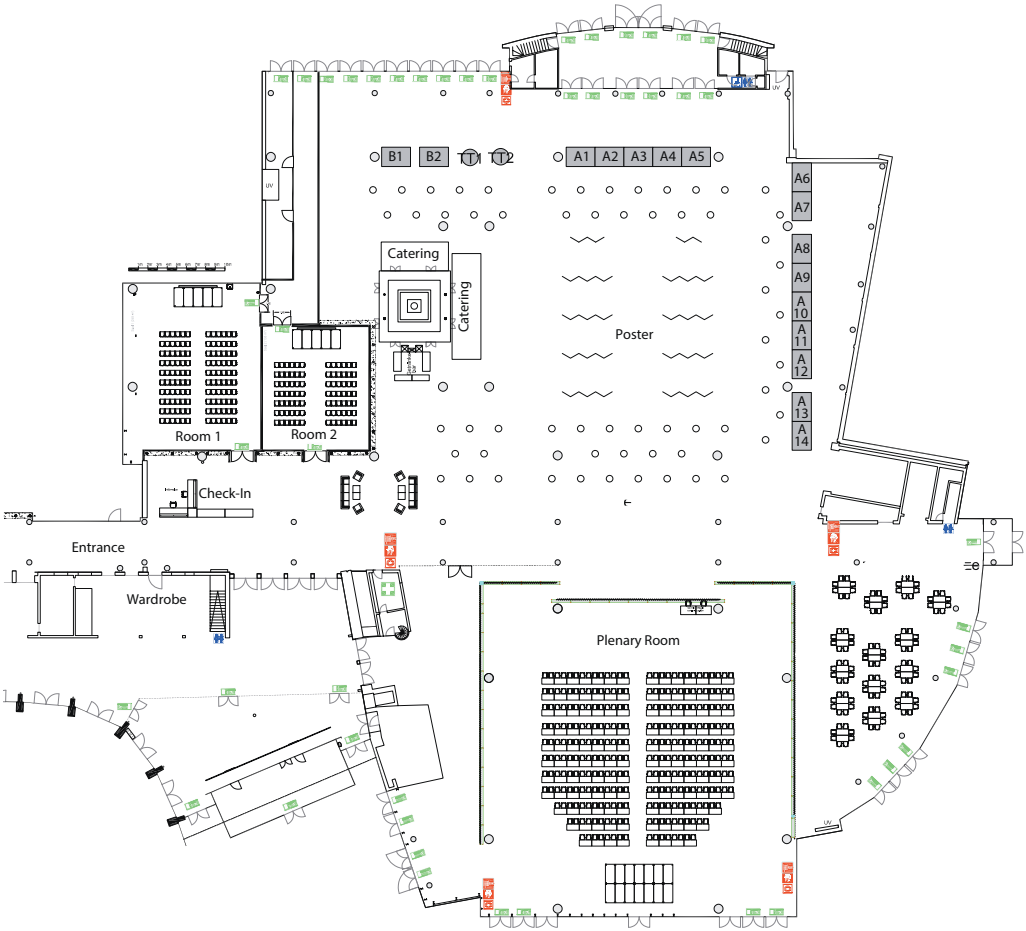
EXHIBITION PLAN



Exhibitors:

A 1 - Little Things Factory
A 2 - Vapourtec
A 3 - HNP Mikrosysteme
A 4 - Bruker BioSpin
A 5 - Fraunhofer ICT
A 6 - Amtech
A 7 - Kobe Steel
A 8 - Fuji Techno Industries
A 9 - Corning
A10 - Magritek
A11 - Zaiput Flow Technologies
A12 - CSIRO
A13 - Thales Nano
A14 - Advion
B 1 - Creaflow
B 2 - Karlsruhe Institute of Technology (KIT)
TT1 - Ehrfeld Mikrotechnik
TT2 - Springer

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We are specialised in highly automated reactor systems for laboratory as well as for piloting applications. Our main focus is on high-throughput technology for catalyst screening and testing purposes. Multi-reactor systems with 2-16 reactors can be run parallel but independently from each other by their high level of automation. Besides we offer highly automated test rigs for DeNOx catalysts either for automotive or industrial applications.

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CSIRO is Australia's national science agency and one of the largest and most diverse research agencies in the world. Its innovations contribute billions of dollars to the Australian economy every year. As the largest patent holder in the nation, CSIRO's wealth of intellectual property has led to more than 150 spin-off companies.

EHRFELD Mikrotechnik

www.ehrfeld.com

Ehrfeld Mikrotechnik sets standards worldwide in terms of microreaction technology. The portfolio is aligned to established equipment concepts in process technologies, with which we can meet an enormous range of disparate requirements. We focus on achieving tangible added value by implementing the technology platform of micro- and millireactors from lab to production scale of some thousand tons per year. A technologically sophisticated, integrated scale up concept will be exhibited and explained in detail.

Fraunhofer ICT

www.ict.fraunhofer.de

Fraunhofer ICT offers R&D services in the field of chemical synthesis, process development, process optimization and process analysis based on continuous processing and micro process engineering. We develop and apply spectroscopic and calorimetric process analysis techniques to provide insights into chemical processes, and to apply them in integrated process control. A special field of research at Fraunhofer ICT is the development of processes for the safe management of potentially explosive or otherwise hazardous reaction systems.

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» Pulse free - without accumulator
» Highly accurate and stable flow rate (< ±0.1%)
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» Ability to handle wide variety of chemicals including water reactive reagents
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Furthermore, HNPM develops dosing systems according to customer requirements. The Modular Dosing Systems (MoDoS®) is a tailor-made pump system for pilot plants and industrial research in the field of fine chemical and pharmaceutical production. Some components of the system are, among others, mzr®-pumps, filters, sensors, valves, control modules and bus systems.

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Founded in 2004, Magritek is the global leader in manufacturing cryogen-free benchtop Nuclear Magnetic Resonance (NMR) spectrometers for the analytical instrument market. Magritek’s revolutionary 80 MHz, 60 MHz and 43 MHz Spinsolve family of benchtop NMR models offer the highest sensitivity and resolution available in the market. These portable systems are robust and easy to use, allowing modern NMR methods to be performed on the chemistry lab bench or inside the fume hood next to a reactor. Magritek has offices in Germany, USA and New Zealand, as well as a worldwide network of partners to help support its customers. Learn more at

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Springer is a leading global publisher of chemistry books, including monographs, textbooks and reference works. We also publish a distinguished portfolio of chemistry journals, often in collaboration with prestigious chemical societies, and including leading open access journals.

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After 16 years on the market, ThalesNano is the world leader in bench-top flow chemistry reactors. The company has the widest portfolio of bench-top continuous process instruments for the pharmaceutical, biotech, fine chemical, petroleum/biofuel and education markets.

Our mission is to bring flow hydrogenation to the mainstream chemistry practice and have innovative quality instruments that serve the needs of scientists.

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Vapourtec Ltd is an innovative laboratory technology company based near Cambridge, UK. Vapourtec develops, manufactures and markets cutting-edge flow chemistry systems for fine chemical discovery and process development. Customers for Vapourtec's products include blue-chip companies and research institutes developing, pharmaceuticals, agrochemicals, fragrances, advanced materials and other fine chemicals.

www.zaiput.com

Zaiput Flow Technologies brings to market unique liquid-liquid and gas-liquid technology design for flow chemistry applications. We offer a scalable separation solution from bench to production. Our product line is complemented by back pressure regulators that offer excellent chemical resistance along with outstanding precision and accuracy. Whether you work in academia or industry, if you work with continuous flow, we believe that our products will help to streamline your work, enable new approaches and allow you to harvest the power of continuous flow. Zaiput is an MIT spin-out devoted to excellence, innovation and outstanding customer service.

MEDIA PARTNER

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www.degruyter.com

The Industrial Chemistry area supplements De Gruyter's established chemistry portfolio. Amongst other areas, De Gruyter focuses on catalyst and process development, process engineering and chemical reaction engineering. The portfolio of international authors, which is published exclusively in English, is geared towards current cross-sector technologies and application markets. The Graduate Textbook series is one example of this: relevant topics, such as energy and raw materials as well as innovations for linking production systems are considered here from a global, multidisciplinary perspective, including with the necessary practical orientation. This new format is therefore particularly aimed at students, young professionals and scientists who are looking for an introduction to the topic.

www.rsc.org

Reaction Chemistry & Engineering reports cutting-edge research into all aspects of making molecules for the benefit of fundamental research, applied processes and wider society. From fundamental molecular-level chemistry to large-scale chemical production, RCE brings together communities of chemists and chemical engineers working to ensure the crucial role of reaction chemistry in today's world. Topics include reaction development, scale-up, optimisation, simulation, reactor technology, and catalysis. The journal expects to receive its first Impact Factor in June 2018.

Springer

www.springer.com/gp/chemistry

Springer is a leading global publisher of chemistry books, including monographs, textbooks and reference works. We also publish a distinguished portfolio of chemistry journals, often in collaboration with prestigious chemical societies, and including leading open access journals.

Sunday, 21 October 2018

Conference Room 1

17:00 Registration / Check-In

Plenary Room

18:00 **Welcome Address**

18:15 **DINNER KEYNOTE**
Digital Engineering and Additive Manufacturing for process technology equipment
C. Kiener, Siemens AG, Munich/D

19:00 **IUPAC-THALESNANO FLOW CHEMISTRY PRIZE 2018**
Awardee: Prof. C. Oliver Kappe, Graz University/AU

19:15 **Get together in Exhibition Area** (19:15-21:00)

SUPPORTING PROGRAMME

Sunday, 21 October **10:00 – 16:00**

PRE-CONFERENCE WORKSHOP

Micro process engineering in practice

Address: KIT – Campus Nord, Hermann-von-Helmholtz-Platz 1, 76344 Eggenstein-Leopoldshafen

This workshop is organised for newcomers to the field and delegates from companies not yet using micro process technology. Internationally recognised experts give tutorial lectures on heat exchange, mixing, reaction and separation in microsystems, on scale-up and on new directions in microfluidics and flow chemistry.

The workshop gives an introduction to the practical side of micro process engineering and also covers important recent trends. Topics are addressed by international experts in the field. The teaching format is interactive and include visual aids and demonstration material.

Further information at www.dechema.de/en/IMRET2018_PreWorkshop

Pre-registration is mandatory.

Monday, 22 October 2018 — Morning

08:00 Check-In and Welcome Coffee in Exhibition Area

Plenary Room

09:00 **Opening and Welcome Address**

Chair: S. Loebbecke, Fraunhofer ICT, Pfinztal/D

09:15 **PLENARY LECTURE**
Micro Chemical Engineering – a fascinating journey from lab to industrial production
K. Ehrhardt, BASF, Ludwigshafen/D

10:00 Coffee Break in Exhibition Area

Plenary Room

MULTIPHASE SYSTEMS

Chair: C. De Bellefon, University of Lyon, Lyon/F

10:30 **Complex flows in microfluidic devices: model verification and validation**
F. Srnisa[1]; T. Urbič[1]; P. Žnidaršič Plazl[1]; I. Plazl[1]; [1] University of Ljubljana, Faculty of Chemistry and Chemical Technology, Ljubljana/SLO

10:55 **Numerical Analysis of Interfacial Mass Transfer Rate of Deforming Fluid Slugs in Microchannels**
K. Sotowa[1]; T. Nishimoto[1]; S. Miyai[1]; T. Horikawa[1]; J. Alcántara-Avila[1]; [1] Tokushima University, Tokushima/J

11:20 **Two-Dimensional Analytical Models for Heat and Mass Transport in Microreactors**
G. Hunt[1]; N. Karimi[1]; M. Torabi[2]; [1] University of Glasgow, Glasgow/UK; [2] Georgia Institute of Technology, Atlanta/USA

11:45 **Fluid dynamics and mass transfer of superimposed Taylor and Dean flow in coiled capillaries**
W. Krieger[1]; S. Schuster[1]; N. Kockmann[1]; [1] TU Dortmund, Arbeitsgruppe Apparatedesign, Dortmund/D

12:10 **Influence of bubble growth at the catalytic surface on heat and mass transfer in gas-liquid-solid microreactors**
R. Ripken[1]; J. Wood[1]; J. Gardeniers[1]; S. Le Gac[1]; [1] University of Twente, Enschede/NL

12:35 Lunch, Posters & Exhibition

Monday, 22 October 2018 — Morning

08:00 Check-In and Welcome Coffee in Exhibition Area

Plenary Room

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K. Ehrhardt, BASF, Ludwigshafen/D

10:00 Coffee Break in Exhibition Area

Conference Room 1

MICROFABRICATION

Chair: S. Hasebe, Kyoto University,Kyoto/J

10:30 **KEYNOTE LECTURE**
21st Century Synthesis
K. Gilmore[1], [1] Max Planck Institute of Colloids and Interfaces, Potsdam/D

11:20 **Customizing Micro Reactor Systems for Specific Multiphase Reactions through Additive Manufacturing**
M. Maier[1]; E. Slama[2]; S. Pfanner[3]; M. Schwentenwein[4]; S. Radl[1], R. Lebl[5], B. Gutmann[5]; H. Gruber-Woelfler[2]; [1] TU Graz, Institute of Process and Particle Engineering, Research Center Pharmaceutical Engineering GmbH, Graz/A; [2] TU Graz, Institute of Process and Particle Engineering, Center for Continuous Flow Synthesis and Processing, Research Center Pharmaceutical Engineering GmbH; Graz/A; [3] Anton Paar GmbH, Graz/A; [4] Lithoz GmbH, Vienna/A; [5] Center for Continuous Flow Synthesis and Processing, Research Center Pharmaceutical Engineering GmbH; Institute of Chemistry, University of Graz, NAWI Graz, Graz/A

11:45 **Ultrasonic processing of a bi-material microreactor**
J. Sackmann[1]; L. Hoehr[1]; W. Schomburg[1]; M. Berndt[2]; F. Reichmann[2]; N. Kockmann[2]; [1] RWTH Aachen University / KEmikro, Aachen/D; [2] TU Dortmund / BCI, Equipment Design, Dortmund/D

12:10 **All in One - Advanced technologies for complex low cost microfluidic devices in glass, silicon and quartz**
K. Kadel[1]; A. Schilling[1]; [1] Little Things Factory GmbH, Elsoff/D

12:35 Lunch, Posters & Exhibition

Monday, 22 October 2018 — Morning

08:00 Check-In and Welcome Coffee in Exhibition Area

Plenary Room

09:00 **Opening and Welcome Address**

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Micro Chemical Engineering – a fascinating journey from lab to industrial production
K. Ehrhardt, BASF, Ludwigshafen/D

10:00 Coffee Break in Exhibition Area

Room: Conference Room 2

PROCESS ANALYTICS

Chair: R. Dittmeyer, Karlsruhe Institute of Technology (KIT), Eggenstein-Leopoldshafen/D

10:30 **Inline monitoring of oxygen concentration in organic solvents for continuous flow reactions at high pressures**
P. Sulzer[1]; R. Lebl[2]; B. Gutmann[3]; T. Mayr[1]; [1] TU Graz / Institut für Analytische Chemie und Lebensmittelchemie, Graz/A; [2] Institute of Chemistry, University of Graz, Graz/A; [3] Center for Continuous Flow Synthesis and Processing , Research Center Pharmaceutical Engineering GmbH; Graz University of Technology, Institute of Process and Particle Engineering, Graz/A

10:55 **Counting hydrogen bubbles with an optical refractory sensor in an autonomously-operated hydrogenation reactor**
N. Cherkasov[1]; [1] Stoli Catalysts Ltd, Coventry/UK

11:20 **Process Spectroscopy for In-Line Reaction Monitoring and Integrated Process Control**
D. Boskovic[1]; S. Panic[1]; A. Mendl[1]; T. Klahn[1]; S. Loebbecke[1]; [1] Fraunhofer Institute for Chemical Technology ICT, Pfinztal/D

11:45 **Integrating chemical synthesis and analysis at the microscale**
D. Belder[1]; R. Warias[1]; [1] Leipzig University, Leipzig/D

12:10 **Flow reaction calorimetry: fast reaktion screening and process design**
J. Antes[1]; D. Jentner[2]; S. Loebbecke[1]; [1] Fraunhofer ICT, Pfinztal/D; [2] Fraunhofer Institute for Chemical Technology ICT, Pfinztal/D

12:35 Lunch, Posters & Exhibition

Monday, 22 October 2018 — Afternoon

Plenary Room

MULTIPHASE SYSTEMS

Chair: D. Kim, Pohang University of Science and Technology, Pohang/KOR

14:00	**KEYNOTE LECTURE** **Complex fluids in microchannel flows** M. Chun[1]; [1] Korea Institute of Science and Technology (KIST), Seoul/D
14:50	**Bubble splitting under gas-liquid-liquid three-phase flow in a double T-junction microchannel** G. Chen[1]; J. Yue[2]; S. Zhao[1]; C. Yao[1]; G. Chen[1]; [1] Dalian Institute of Chemical Physics, Chinese Academy of Sciences, Dalian/CN; [2] University of Groningen, Groningen/NL
15:15	**Pressure drop of liquid-liquid slug flow in square microchannels** A. Ladosz[1]; P. Rudolf von Rohr[2]; [1] MIT, Cambridge, MA/USA; [2] ETH Zürich, Zurich/CH
15:40	Coffee Break in Exhibition Area

Plenary Room

ENERGY

Chair: A. Bazzanella, DECHEMA e.V., Frankfurt/D

16:10	**KEYNOTE LECTURE** **Microstructured reactors for chemical conversion of renewable energy on a decentralized scale – status and outlook** T. Böltken[1]; [1] INERATEC GmbH, Karlsruhe/D
17:00	**Methanation of carbon dioxide: Comparison of different microreactor concepts and their application in the power range up to 50 kW** G. Kolb[1]; H. Pennemann[1]; M. Wichert[1]; D. Tiemann[1]; S. Neuberg[1]; W. Gac[2]; W. Zawadski[2]; M. Greluk[2]; [1] Fraunhofer IMM, Mainz/D; [2] Maria Curie-Sklodowska University, Lublin/PL
17:25	**Dynamic Operation of Microstructured Fischer-Tropsch Reactors** M. Loewert[1]; P. Pfeifer[1]; H. Lichtenberg[2]; J. Grunwaldt[2]; [1] KIT, IMVT, Eggenstein-Leopoldshafen/D; [2] KIT, IKFT, Eggenstein-Leopoldshafen/D
17:50	**POSTER PARTY** (17:50 – 20:00)

Monday, 22 October 2018 — Afternoon

Conference Room 1

MICROFABRICATION

Chair: Olivier Hannaerts, Lonza AG, Visp/CH

14:00	**Droplet formation by density-induced flow-focusing in 3D-printed microfluidic device** Y. Hwang[1]; J. Hong[1]; D. Kim[1]; [1] POSTECH - Pohang University of Science and Technology, Pohang/ROK
14:25	**Fabrication of a Dielectric-Barrier-Discharge (DBD) microchip using plasma deposited patterned transparent electrodes and examples of application** M. Zhang[1]; C. Guyon[1]; N. Touati[1]; S. Ognier[1]; L. Binet[1]; M. Tatoulian[1]; [1] Institut de Recherche de Chimie Paris, IRCP, CNRS-Chimie ParisTech-PSL, Paris/F
14:50	**Continuous flow tubular reactors with Catalytic Static Mixers** C. Hornung[1]; X. Nguyen[1]; J. Gardiner[1]; A. Urban[1]; D. Fraser[1]; D. Gunasegaram[1]; M. Horne[1]; B. Bayatsarmadi[1]; J. Tsanaktsidis[1]; [1] Commonwealth Scientific and Industrial Research Organisation (CSIRO), Clayton/AUS
15:15	**3D Printed Polymer and SiC-based Ceramic Microreactors from Photo-Curable Preceramic Resin and their applications** K. Gyak[1]; Y. Hwang[1]; N. Vishwakarma[1]; D. Kim[1]; [1] Pohang University of Science and Technology (POSTECH), Pohang-Si/ROK
15:40	Coffee Break in Exhibition Area

Conference Room 1

MULTIPHASE SYSTEMS

Chair: G. Chen, Dalian Institute of Chemical Physics, Chinese Academy of Sciences/CN

16:10	**Triphasic Mesoscale Flow Reactors for Metal Catalysed Gas-Liquid Reactions** D. Karan[1]; S. Khan[1]; [1] National University of Singapore, Singapore/SGP
16:35	**Microchannel mimicking membrane pores to observe splitting behaviors of emulsion droplets** K. Akamatsu[1]; K. Minezaki[1]; M. Yamada[2]; M. Seki[2]; S. Nakao[1]; [1] Kogakuin University, Hachioji-shi, Tokyo/J; [2] Chiba University, Chiba/J
17:00	**Leakage Flow During Gas-liquid and Liquid-liquid Taylor flow in Microchannels** C. Yao[1]; [1] Dalian Institute of Chemical Physics (DICP), Dalian, China/D
17:25	**Intensification of terpene hydrogenation using hierarchical foam catalytic internals in three-phase milli-packed bed** B. Guicheret[1]; R. Castro-Contreras[2]; V. Meille[3]; L. Vanoye[4]; A. Favre-Reguillon[5]; C. de Bellefon[6]; P. Serp[2]; R. Philippe[1]; [1] CNRS, Villeurbanne/F; [2] Université Toulouse/F; [3] Université de Lyon/F; [4] Université Lyon/F; [5] CNRS - CPE Lyon - Université Lyon 1, Villeurbanne/F; [6] CPE Lyon - Université of Lyon/F
17:50	**POSTER PARTY** (17:50 – 20:00)

Monday, 22 October 2018 — Afternoon

Conference Room 2

LOCAL MEASUREMENT BY MINITURISED SENSORS

Chair: A. Bazzanella, DECHEMA e.V., Frankfurt/D

14:00 **Experimental and Numerical Investigation of Flow Transfer in Rectangular Metal Microchannel**
M. Talebi[1]; K. Cobry[2]; S. Sadir[3]; A. Stroh[4]; R. Dittmeyer[3]; B. Frohnapfel[4]; P. Woias[2];
[1] Universität Freiburg/D; [2] Institute of Microsystem Technology (IMTEK), Albert-Ludwigs-University of Freiburg/D; [3] Institute for Micro Process Engineering, Karlsruhe Institute of Technology (KIT), Karlsruhe/D; [4] Institute of Fluid Mechanics , Karlsruhe Institute of Technology (KIT), Karlsruhe/D

14:25 **In operando reactant and phase distribution in a microstructured suspension-flow membrane reactor for H_2O_2 direct synthesis**
B. Deschner[1]; S. Urban[2]; K. Cobry[2]; M. Kraut[3]; P. Woias[2]; G. Urban[2]; R. Dittmeyer[3];
[1] Karlsruher Institut für Technologie, Institut für Mikroverfahrenstechnik (IMVT), Eggenstein-Leopoldshafen/D; [2] Albert-Ludwigs-Universität Freiburg/D; [3] Karlsruher Institut für Technologie (KIT), Eggenstein-Leopoldshafen/D

14:50 **Monitoring of hydrogen peroxide, hydrogen and oxygen in direct synthesis microreactors with electrochemical sensors**
S. Urban[1]; A. Weltin[1]; H. Flamm[1]; J. Kieninger[1]; B. Deschner[2]; M. Kraut[2]; R. Dittmeyer[2]; G. Urban[1]; [1] University of Freiburg/D; [2] Karlsruhe Institute of Technology (KIT), Karlsruhe/D

15:15 **Green Synthesis of MexOy Nanoparticles with Near- and Supercritical Water**
M. Türk[1]; C. Schüßler[1]; [1] KIT, Institut für Technische Thermodynamik und Kältetechnik, Karlsruhe/D

15:40 Coffee Break in Exhibition Area

Conference Room 2

COUPLED PROCESSES

Chair: C.O. Kappe, Graz University of Technology/AT

16:10 **Thermotolerant Biotechnology: Biocatalysts for added manufacturing**
K. Rabe[1]; [1] Karlsruhe Institute of Technology (KIT), Eggenstein-Leopoldshafen/D

16:35 **Efficient 5-Hydroxymethylfurfural production from glucose using microreactor and microextraction system**
Y. Muranaka[1]; K. Matsubara[1]; T. Maki[1]; H. Nakagawa[1]; K. Mae[1]; [1] Kyoto University, Kyoto/J

17:00 **Integrated reactor-separator system in drug synthesis through intensified process design: ONE-FLOW Solvent Factory**
C. Zhang[1]; Z. Song[2]; T. Noel[1]; S. Li[1]; K. Sundmacher[2]; H. Groeger[3]; V. Hessel[1]; [1] Eindhoven University of Technology, Eindhoven/NL; [2] Max-Planck-Institut für Dynamik komplexer technischer Systeme; Otto-von-Guericke-Universität Magdeburg/D; [3] Bielefeld University/D

17:25 **Coupling of extraction and partial synthesis for efficient artemisinin production**
S. Triemer[1]; K. Gilmore[2]; G. Vu[1]; A. Seidel-Morgenstern[1]; [1] Max Planck Institute for Dynamics of Complex Technical Systems, Magdeburg/D; [2] Max Planck Institute of Colloids and Interfaces, Potsdam/D

17:50 **POSTER PARTY** (17:50 – 20:00)

Tuesday, 23 October 2018 — Morning

08:00	Re-Opening Exhibition
	Plenary Room
	Chair: K. Gilmore, Max Planck Institute of Colloids and Interfaces, Potsdam/D
08:45	**PLENARY LECTURE** **Innovation in catalytic methodology development through flow chemistry** T. Noël, Eindhoven University of Technology, Eindhoven/NL
09:30	Coffee Break in Exhibition Area
	Plenary Room
	PHOTOCHEMISTRY
	Chair: S. Ookawara, Tokyo Institute of Technology, Tokyo/J
10:00	**Degradation of micropollutant in a novel microstructured photocatalytic membrane reactor** X. Zhan[1]; Y. Zhang[1]; M. Klumpp[1]; A. Schäfer[1]; R. Dittmeyer[1]; [1] Karlsruher Institut für Technologie (KIT), Eggenstein-Leopoldshafen/D
10:25	**Genetic Algorithm Based Kinetic Analysis of Photo-Fenton Degradation of Carbofuran with Low Iron Concentration in Batch and Microreactors** S. Ookawara[1]; Y. Shinozawa[1]; S. Yoshikawa[1]; D. Heggo[2]; [1] Tokyo Institute of Technology, Tokyo/J; [2] Kyoto University, Department of Chemical Engineering, Kyoto/J
10:50	**Flow Photochemistry for Fine Chemical Synthesis and CO_2 Reduction** T. Rehm[1]; [1] Fraunhofer ICT-IMM, Mainz/D
11:15	**Design and evaluation of photocatalytic microstructured reactor modules** T. Claes[1]; E. Leblebici[1]; T. Van Gerven[1]; [1] KU Leuven, Leuven/B
11:40	**A novel optical microreactor for gas/liquid reactions** S. Ponce[1]; J. Albert[2]; A. Drochner[3]; B. Etzold[3]; [1] TU Darmstadt, Darmstadt/D; [2] FAU Erlangen-Nürnberg, Erlangen/D; [3] TU Darmstadt, Ernst-Berl-Institut für Technische und Makromolekulare Chemie, Darmstadt/D
12:05	Lunch, Posters & Exhibition

Tuesday, 23 October 2018 — Morning

08:00 Re-Opening Exhibition

Plenary Room

Chair: K. Gilmore, Max Planck Institute of Colloids and Interfaces, Potsdam/D

08:45 **PLENARY LECTURE**
Innovation in catalytic methodology development through flow chemistry
T. Noël, Eindhoven University of Technology, Eindhoven/NL

09:30 Coffee Break in Exhibition Area

Conference Room 1

PARTICLE SYNTHESIS

Chair: M. Türk, Karlsruhe Institute of Technology (KIT), Karlsruhe/D

10:00 **KEYNOTE LECTURE**
Microreaction systems for controllable preparation of particles
G. Luo[1]; [1] Tsinghua University, Beijing/CN

10:50 **Toward continuous production of high quality nanomaterials: nanoengineering the shape, structure and chemical composition**
V. Sebastian[1]; K. Jensen[2]; [1] University of Zaragoza, Zaragoza/E; [2] Massachusetts Institute of Technology Department of Chemical Engineering, Boston/USA

11:15 **New applications of micro-structured devices for high-throughput synthesis and screening of functional materials**
K. Stöwe[1]; M. Pfeifer[1]; A. Clausing[1]; J. Hiemer[1]; T. Schwarz[1]; [1] TU Chemnitz, Chemnitz/D

11:40 **Polymeric nanoparticles – modular set-ups for the continuous formation and downstream processing**
S. von Bomhard[1]; A. Musyanovych[1]; L. Bacher[1]; J. Schramm[1]; P. Höbel[1]; R. Thiermann[1]; R. Bleul[1]; P. Löb[1]; M. Maskos[1]; [1] Fraunhofer IMM, Mainz/D

12:05 Lunch, Posters & Exhibition

Tuesday, 23 October 2018 — Morning

08:00 Re-Opening Exhibition

Plenary Room

Chair: K. Gilmore, Max Planck Institute of Colloids and Interfaces, Potsdam/D

08:45 **PLENARY LECTURE**
Innovation in catalytic methodology development through flow chemistry
T. Noël, Eindhoven University of Technology, Eindhoven/NL

09:30 Coffee Break in Exhibition Area

Conference Room 2

POLYMER SYNTHESIS

Chair: R. Dittmeyer, Karlsruhe Institute of Technology (KIT), Eggenstein-Leopoldshafen/D

10:00 **Highly efficient synthesis of polyvinyl butyral (PVB) using microreactor systems and recycling technology**
K. Wang[1]; X. Lin[1]; B. Zhou[1]; G. Luo[1]; [1] Tsinghua University, Beijing/CN

10:25 **A hydrodynamic study of oligomerization catalyst testing in a gas-liquid microreactor**
M. Kamaleddine[1]; C. Bonnin[1]; T. Michel[1]; L. Brunet-Errard[1]; J. Aubin[2]; L. Prat[2]; [1] IFP Energies nouvelles, Rond-Point de l'Echangeur de Solaize, BP3, Solaize/F; [2] Laboratoire de Génie Chimique, Université de Toulouse, CNRS, Toulouse/F

10:50 **Modelling of continuous polymerization reactors using multi-scale compartment models**
E. Cremer[1]; M. Grünewald[1]; [1] Ruhr-Universität Bochum/Lehrstuhl für Fluidverfahrenstechnik, Bochum/D

11:15 **Temperature profiles of emulsion copolymerizations in a 3D-printed reactor by integration of inline analytic in combination with thermal imaging and CFD simulation**
S. Bettermann[1]; H. Moritz[1]; W. Pauer[1]; [1] University of Hamburg, Hamburg/D

11:40 **Influence of the mixing performance in microreactors for polymerization of acrylamide**
Y. Song[1]; Y. Su[1]; [1] Shanghai Jiao Tong University, Shanghai/CN

12:05 Lunch, Posters & Exhibition

Tuesday, 23 October 2018 — Afternoon

Plenary Room

SCALE-UP AND INDUSTRIAL APPLICATIONS

Chair: N. Kockmann, TU Dortmund/D

13:15	**High Throughput Preparation of Magnesium Hydroxide Flame Retardant via Microreaction Technology** M. Yang[1]; S. Tao[1]; H. Chen[1]; G. Chen[1]; [1] Dalian Institute of Chemical Physics (DICP), Dalian/CN
13:40	**Analysis of different steady states in pilot scale pinched tube flow reactors: A case study** M. Sharma[1]; [1] National Chemical Laboratory, Pune/IND
14:05	**SCALABLE CONTINUOUS PROCESS FOR THE SYNTHESIS AND DIRECT FURTHER REACTION OF GRIGNARD REAGENTS** G. Menges-Flanagan[1]; D. Reinhard[1]; C. Hofmann[1]; P. Löb[1]; [1] Fraunhofer IMM, Mainz/D
14:30	**Micro-Reactor Mixing Unit Interspacing for Fast Liquid-Liquid Reactions Leading to a Generalized Scale-up Methodology** D. Roberge[1]; E. Mielke[2]; P. Plouffe[2]; S. Mongeon[2]; C. Aellig[3]; S. Filliger[3]; O. Hannaerts[3]; A. Macchi[2]; [1] Lonza AG, Visp/CH; [2] University of Ottawa, Ottawa/CDN; [3] Lonza, Visp/CH
14:55	KEYNOTE LECTURE **Modular Plants - Enabler for flexibility and speed in specialty chemicals industry** F. Stenger[1]; [1] Evonik Technology & Infrastructure GmbH, Hanau-Wolfgang/D
15:45	Coffee Break in Exhibition Area

Plenary Room

SEPARATION PROCESSES

Chair: C.O. Kappe, Graz University of Technology, Graz/AT

16:15	KEYNOTE LECTURE **Micro and Millifluidic Separation Processes** A. Gavriilidis[1]; [1] University College London, London/UK
17:05	**Studying separation processes using downscaled laboratory equipment – making better use of high-throughput testing in the development of catalytic processes** E. Ras[1]; R. Moonen[1]; I. van Zandvoort[1]; R. Wessels[1]; [1] Avantium, Amsterdam/NL
17:30	**Biphasic interfacial reaction in flow using droplet-based microfluidic platform integrated with capillary-based separation** L. Yang[1]; A. Ladosz[1]; P. Rudolf von Rohr[1]; [1] ETH Zürich/CH
19:00	**Conference Dinner at Palazzo Halle** (19:00 – 23:00)

Tuesday, 23 October 2018 — Afternoon

Conference Room 1

REACTIONS IN FLOW

Chair: C. Holtze, BASF, Ludwigshafen/D

13:15	KEYNOTE LECTURE **Innovation of API Production Using Flow Fine Synthesis** S. Kobayashi[1]; [1] The University of Tokyo, Tokyo/J
14:05	**The Use of Molecular Oxygen in Flow Chemistry Applications –** C. Kappe[1]; C. Hone[2]; [1] University of Graz, Graz/A; [2] Research Center Pharmaceutical Engineering GmbH, Graz/A
14:30	**Solvent-free green oxidation of cyclohexanone to ε-caprolactone in micro-reactor system** B. Chu[1]; L. He[1]; J. Ma[1]; S. Zhong[1]; [1] Sinopec Shanghai Research Institute of Petrochemical Technology, Shanghai/CN
14:55	**Continuous anodic oxidation of TEMPO as a mediator for selective synthesis of aldehydes from primary alcohols** C. Deckers[1]; M. Linden[1]; J. Heinrich[1]; H. Löwe[1]; [1] Johannes Gutenberg-University Mainz, Institute of Organic Chemistry, Mainz/D
15:20	**Continuous Flow Aerobic Oxidation Reactions Using Heterogeneous Ru⁰ Catalyst** A. Favre-Reguillon[1]; [1] CPE Lyon - Université Lyon 1, Villeurbanne/F
15:45	Coffee Break in Exhibition Area

Conference Room 1

PARTICLE SYNTHESIS AND HANDLING

Chair: S. Loebbecke, Fraunhofer ICT, Pfinztal/D

16:15	**Controlled particle formation in microreactors** N. Fatemi[1]; Z. Dong[1]; S. Kuhn[1]; [1] KU Leuven/B
16:40	**3D lattice Boltzmann simulation of Janus particle formation in microchannels** H. Wang[1]; H. Wang[1]; Y. Jin[1]; Y. Cheng[1]; [1] Tsinghua University, Beijing/CN
17:05	**Managing solids in microreactor by high-frequency ultrasound** Z. Dong[1]; C. Delacour[1]; S. Kuhn[1]; [1] KU Leuven, Leuven/B
17:30	**Blockage detection and diagnosis in micro chemical plants with numbering-up structure** O. Tonomura[1]; S. Taniguchi[1]; S. Hasebe[1]; [1] Kyoto University, Kyoto/J
19:00	**Conference Dinner at Palazzo Halle** (19:00 – 23:00)

Tuesday, 23 October 2018 — Afternoon

Conference Room 2

PARTICLE SYNTHESIS

Chair: G. Luo, Tsinghua University, Beijing/CN

13:15 **A low-frequency ultrasound reactor for continuous flow precipitation reactions**
C. Delacour[1]; Z. Dong[1]; S. Kuhn[1]; [1] KU Leuven/B

13:40 **Microfluidic Synthesis of Au, Pd and Au_xPd_y Nanoparticles and In situ XAS Studies of Au NP Formation in a Continuous Flow**
G. Tofighi[1]; P. Dolcet[1]; H. Lichtenberg[2]; W. Wang[3]; G. Rinke[4]; R. Dittmeyer[4]; J. Grunwaldt[1]; [1] Karlsruhe Institute of Technology (KIT), Institute for Chemical Technology and Polymer Chemistry (ITCP), Karlsruhe/D; [2] Karlsruhe Institute of Technology, Institute of Catalysis Research and Technology (IKFT), Karlsruhe/D; [3] Karlsruhe Institute of Technology (KIT)/ Institute of Nanotechnology, Karlsruhe/D; [4] Karlsruhe Institute of Technology (KIT), Institute for Micro Process Engineering (IMVT), Karlsruhe/D

14:05 **Preparation of itraconazole nanoparticles below 100 nm in microfluidic device**
X. Zhang[1]; H. Chen[1]; H. Wang[1]; X. Jin[1]; F. Qian[1]; Y. Cheng[1]; L.Yan[1]; [1] Tsinghua University, Beijing/CN

14:30 **In-line functionalization of Continuously Synthesized SiO_2 particles**
R. Jundale[1]; A. Bari[1]; A. Kulkarni[1]; [1] CSIR- National Chemical Laboratory (NCL), Pune/IND

14:55 **Continuous synthesis of monodisperse iron oxide nanoparticles**
J. Mahin[1]; L. Torrente-Murciano[1]; [1] Department of Chemical Engineering and Biotechnology, University of Cambridge/UK

15:20 **Continuous Triphasic Millireactors for Robust Liters-per-day Production of Catalytic Metal Nanoparticle Dispersions**
W. Wong[1]; S. Khan[1]; [1] National University of Singapore/SGP

15:45 Coffee Break in Exhibition Area

Conference Room 2

REACTIONS IN FLOW

Chair: A. Kulkarni, National Chemical Laboratory, Pune/IN

16:15 **Deconvoluting Mass Transfer and Chemical Reaction in Segmented Flow Cu/TEMPO-catalyzed Aerobic Oxidations**
W. Wong[1]; D. Karan[1]; [1] National University of Singapore/SGP

16:40 **Au-based Catalyst Coatings in Microstructured Reactor for Partial Oxidation of Ethanol**
E. Behravesh[1]; K. Eränen[2]; N. Kumar[2]; X. Zhan[3]; M. Klumpp[3]; D. Murzin[2]; R. Dittmeyer[3]; T. Salmi[2]; [1] Åbo Akademi University, Turku, Finland/FIN; [2] Åbo Akademi University, Turku/FIN; [3] Karlsruhe Institute of Technology (KIT), Karlsruhe/D

17:05 **Heterogeneous catalysis in microreactors with nanofluids for fine chemicals syntheses: Benzylation of toluene with benzyl chloride over silica-immobilized $FeCl_3$ catalyst**
X. Pu[1]; Y. Su[1]; [1] Shanghai Jiao Tong University, Shanghai/CN

17:30 **Development and application of Pd-stabilized Pickering emulsions for catalytic cascade reactions in continuous flow**
K. Hiebler[1]; H. Gruber-Woelfler[1]; R. Gonzales-Groom[2]; B. Binks[2]; [1] Graz University of Technology, Graz/A; [2] University of Hull/UK

19:00 **Conference Dinner at Palazzo Halle** (19:00 – 23:00)

Wednesday, 24 October 2018

08:30	Re-Opening Exhibition
	Plenary Room
	ENERGY
	Chair: G. Kolb, Fraunhofer IMM, Mainz/D
09:00	**A Novel Microscale-based process for Bio-Hydrogenated Diesel production** N. Sirimungkalakul[1]; [1] PTT, Bangkok/Thailand/T
09:25	**Study of reaction controlled condition for a catalytic plate-type reactor under methane reforming** T. Fukuda[1]; M. Harada[1]; H. Kawanami[1]; A. Miyazawa[1]; [1] National Institute of Advanced Industrial Science and Technology (AIST), Sendai/J
09:50	**Surface temperature uniformity in catalytic microreactors for power generation applications** R. Sui[1]; J. Theile[1]; I. Mantzaras[1]; [1] Paul Scherrer Institut (PSI), Villigen PSI/CH
10:15	**Carbon Dioxide Hydrogenation: New Synthetic Perspectives for Chemical Energy Carriers** H. Reymond[1]; P. Rudolf von Rohr[1]; [1] ETH Zurich/CH
10:40	Coffee Break in Exhibition Area
	Plenary Room
	Chair: G. Kolb, Fraunhofer IMM, Mainz/D
11:15	**PLENARY LECTURE** **Maintaining the benefits of microchannel Fischer-Tropsch synthesis to the full commercial scale** H. Robota, Velocys, Plain City/USA
12:00	**BEST POSTER AWARDS** The best poster award winner will receive a monetary price sponsored by ProcessNet Working Group „Micro Reaction Engineering“ and the book set “Flow Chemistry” sponsored by DE GRUYTER.
12:15	**Closing Remarks**
12:30	Lunch in Exhibition Area (12:30 – 13:30)
13:00	**Excursion 1 to Fraunhofer Institute IMM, Mainz** (13:00 – 17:00)
13:00	**Excursion 2 to BASF, Ludwigshafen** (13:00 – 16:30)
13:30	**Excursion 3 to Institute for Micro Process Engineering at KIT Campus North, Eggenstein-Leopoldshafen** (13:30 – 15:30)
	Conference Room 1
13:30	**General Assembly of ProcessNet Working Group “Micro Reaction Engineering”** (13:30 – 15:00)

Wednesday, 24 October 2018

08:30 Re-Opening Exhibition

Conference Room 1

BIOPROCESSES

Chair: K. Gilmore, Max Planck Institute of Colloids and Interfaces, Potsdam/D

09:00 **KEYNOTE LECTURE**
Biocatalysis in micro-flow: Bridging the gap between academia and industry
P. Žnidaršič Plazl[1]; [1] University of Ljubljana, Faculty of Chemistry and Chemical Technology, Ljubljana/SLO

09:50 **Slug flow microreactors combined with homogeneous catalysis for biobased chemical synthesis**
J. Yue[1]; W. Guo[1]; A. Hommes[1]; H. Heeres[1]; [1] University of Groningen, Groningen/NL

10:15 **Velocimetry in a micro cavity: characterization of a novel micro reactor for biopharmaceutical application using oscillation mixing technique**
S. Meinen[1]; L. Frey[2]; A. Dietzel[1]; R. Krull[2]; [1] TU Braunschweig/ Institut für Mikrotechnik, Braunschweig/D; [2] TU Braunschweig - Institut für Bioverfahrenstechnik, Braunschweig/D

10:40 Coffee Break in Exhibition Area

Plenary Room

Chair: G. Kolb, Fraunhofer IMM, Mainz/D

11:15 **PLENARY LECTURE**
Maintaining the benefits of microchannel Fischer-Tropsch synthesis to the full commercial scale
H. Robota, Velocys, Plain City/USA

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12:15 **Closing Remarks**

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13:30 **Excursion 3 to Institute for Micro Process Engineering at KIT Campus North, Eggenstein-Leopoldshafen** (13:30 – 15:30)

Conference Room 1

13:30 **General Assembly of ProcessNet Working Group “Micro Reaction Engineering”** (13:30 – 15:00)

Wednesday, 24 October 2018

08:30 Re-Opening Exhibition

Conference Room 2

SEPARATION PROCESSES

Chair: A. Gavriilidis, University College London, UK

09:00 **Development of a microsieve based micro contactor for gas / liquid phase separation**
K. Dyrda[1]; K. Haas-Santo[1]; R. Dittmeyer[1]; [1] Karlsruher Institut für Technologie (KIT), Institut für Mikroverfahrenstechnik (IMVT), Eggenstein-Leopoldshafen/D

09:25 **Penetration model description for liquid-liquid extraction under slug flow in microreactors**
A. Hommes[1]; J. Kraakman[1]; M. Hazenberg[1]; S. [1]; H. Heeres[1]; J. Yue[1]; [1] University of Groningen/NL

09:50 **Enzyme synthesis, extraction and product separation assisted by electric field in ATPS**
A. Romanov[1]; L. Vobecká[1]; Z. Slouka[1]; M. Pribyl[1]; [1] UCT Prague, Prague/CZ

10:15 **Equipment and separation units for flow chemistry applications and process development**
S. Soboll[1]; L. Bittorf[1]; F. Reichmann[1]; M. Schmalenberg[1]; N. Kockmann[1]; [1] TU Dortmund, Arbeitsgruppe Apparatedesign, Dortmund/D

10:40 Coffee Break in Exhibition Area

Plenary Room

Chair: G. Kolb, Fraunhofer IMM, Mainz/D

11:15 **PLENARY LECTURE**
Maintaining the benefits of microchannel Fischer-Tropsch synthesis to the full commercial scale
H. Robota, Velocys, Plain City/USA

12:00 **BEST POSTER AWARDS**
The best poster award winner will receive a monetary price sponsored by ProcessNet Working Group „Micro Reaction Engineering“ and the book set “Flow Chemistry” sponsored by DE GRUYTER.

12:15 **Closing Remarks**

12:30 Lunch in Exhibition Area (12:30 – 13:30)

13:00 **Excursion 1 to Fraunhofer Institute IMM, Mainz** (13:00 – 17:00)

13:00 **Excursion 2 to BASF, Ludwigshafen** (13:00 – 16:30)

13:30 **Excursion 3 to Institute for Micro Process Engineering at KIT Campus North, Eggenstein-Leopoldshafen** (13:30 – 15:30)

Conference Room 1

13:30 **General Assembly of ProcessNet Working Group “Micro Reaction Engineering”** (13:30 – 15:00)

REACTIONS AND CATALYSIS IN FLOW SYSTEMS

P 1.01 **Biopharmaceutical analysis in flow: the development of a fast and robust methodology**
T. Bihari PhD.[1]; G. Sipos PhD.[2]; F. Darvas PhD.[3]; A. Guttmann PhD.[4]; [1] InnoStudio Inc., Budapest/H; [2] ComInnex Inc., Budapest/H; [3] ThalesNano Zrt., Budapest/H; [4] University of Debrecen, Debrecen/H

P 1.02 **Development of sustainable enzyme-catalyzed biodiesel production in a microreactor**
M. Ostojčić[1]; T. Tadiić[1]; A. Šalić[2]; M. Tišma[1]; S. Budžaki[1]; B. Zelić[2]; [1] J. J. Strossmayer University of Osijek, Osijek/HR; [2] University of Zagreb, Zagreb/HR

P 1.03 **Designing microreactor system for ultra-fast reaction based on mixing time estimation**
S. Asano[1]; S. Yatabe[1]; Y. Muranaka[1]; T. Maki[1]; K. Mae[1]; [1] Kyoto University, Kyoto/J

P 1.04 **Synthesis of lipid nanoparticles using an inkjet-ejected systems with droplets collision**
K. Inohara[1]; T. Maki[2]; S. Asano[3]; Y. Muranaka[2]; K. Mae[2]; [1] Kyoto University, Nishikyo-ku, Kyoto/J; [2] Kyoto University, Kyoto/J; [3] Kyoto Universty, Kyoto/J

P 1.05 **Mass-spectrometric investigation of chemical transformations at the nanoscale**
M. Kretzschmar[1]; J. Beulig[1]; D. Belder[1]; [1] Universität Leipzig/Fakultät für Chemie und Mineralogie, Leipzig/D

P 1.06 **Continuous homogeneous catalyst recycling using organic solvent nanofiltration (OSN) in a multiphase system for CO_2 valorization**
J. Schnoor[1]; M. Fuchs[1]; P. Veelken[1]; A. Böcking[2]; M. Wessling[2]; M. Liauw[1]; [1] RWTH Aachen University - Institut für Technische und Makromolekulare Chemie , Aachen/D; [2] Chemical Process Engineering-AVT.CVT, RWTH Aachen University, Aachen/D

P 1.07 **Immobilization of Enzymes, Cells and Hydrogels for Flow Biocatalysis and Validation of Multiscale Simulations**
T. Peschke[1]; S. Gallus[1]; P. Bitterwolf[1]; K. Rabe[1]; C. Niemeyer[1]; [1] Karlsruhe Institute of Technology, Institute for Biological Interfaces, Eggenstein-Leopoldshafen/D

P 1.08 **Soap-free emulsion polymerization in water-in-oil slug flow for synthesis of high-molecular weight polystyrene particles**
K. Karita[1]; T. Watanabe[1]; T. Ono[1]; [1] Okayama Unviersity, Okayama/J

P 1.09 **Continuous synthesis of UiO-66 under different reactor concepts**
A. Polyzoidis[1]; C. Piscopo[1]; M. Schwarzer[1]; D. Boskovic[1]; S. Löbbecke[1]; [1] Fraunhofer Institute for Chemical Technology ICT, Pfinztal/D

P 1.10 **Experimental and numerical insights into the synthesis of cyclobutanes by [2+2] photocycloaddition reactions in a flow reactor**
M. Zhang[1]; V. Mansuy[2]; I. Mabille[1]; L. Fensterbank[2]; S. Ognier[1]; [1] Institut de Recherche de Chimie Paris, IRCP, CNRS-Chimie ParisTech-PSL, Paris/F; [2] CNRS UMR 8232, Sorbonne Universités, UPMC Univ Paris 06, Paris/F

P 1.11 **Highly Efficient Photoreductions of Nitrobenzene Derivatives in Flow Microreactors by Using LED Lamps**
Y. Nishiyama[1]; H. Mori[1]; K. Kakiuchi[2]; [1] Industrial Technology Center of Wakayama Prefecture, Wakayama/J; [2] Nara Institute of Science and Technology (NAIST), Ikoma/J

P 1.12 **Synthesis of size and light emission controlled quantum dots using microreactor**
T. Takehara[1]; T. Watanabe[1]; T. Ono[1]; [1] Okayama Unviersity, Okayama/J

P 1.13 **Continuous microflow synthesis of Photothermal Nanoparticles: Au nanorods and Biodegradable Copper Sulfide hollow nanospheres**
V. Sebastian[1]; I. Ortiz de Solorzano[1]; L. Uson[1]; M. Prieto[1]; G. Mendoza[1]; T. Alejo[1]; S. Irusta[1]; J. Santamaria[1]; M. Arruebo[1]; [1] University of Zaragoza, Zaragoza/E

P 1.14 **Direct coupling of flow synthesis and chip-based liquid chromatography with mass spectrometric detection**
R. Warias[1]; J. Heiland[1]; D. Belder[1]; [1] Leipzig University, Leipzig/D

P 1.15 **Flow enabled heterocycle sythesis for screening libraries**
T. Sipöcz[1]; B. Gyimóthy[1]; F. Darvas[1]; [1] ComInnex Inc., Budapest/H

P 1.16 **A Novel Microscale-based process for Bio-Hydrogenated Diesel production**
N. Sirimungkalakul[1]; [1] PTT, Bangkok/Thailand/T

P 1.17 **Radical based plasma-assisted chemical synthesis in a micro reactor**
A. Lepoetre[1]; S. Ognier[1]; M. Zhang[1]; X. Duten[2]; M. Tatoulian[1]; [1] Institut de Recherche de Chimie Paris, Paris/F; [2] CNRS - LSPM, Paris/F

P 1.18 **Pressure drop studies on single and two phase flow through packed bed microreactors**
A. Hommes[1]; R. Schuring[1]; H. Heeres[1]; J. Yue[1]; [1] University of Groningen, Groningen/NL

P 1.19 **Biphasic enzymatic biodiesel production in a slug flow capillary microreactor**
A. Hommes[1]; T. de Wit[1]; H. Heeres[1]; G. Euverink[1]; J. Yue[1]; [1] University of Groningen/NL

P 1.20 **Plasma-assisted chemical synthesis in a micro-patterned plasma reactor**
J. Wengler[1]; S. Ognier[1]; M. Zhang[1]; C. Ollivier[2]; L. Fensterbank[2]; M. Tatoulian[1]; [1] Institut de Recherche de Chimie Paris/F; [2] Institut Parisien de Chimie Moléculaire, Paris/F

P 1.21 **Addressing of droplets in two phase systems enhanced by electric field in microfluidic chips**
J. Tuček[1]; Z. Slouka[1]; M. Přibyl[1]; [1] University of Chemistry and Technology, Prague/CZ

P 1.22 **Comparison of catalyst-coated tube and packed-bed reactors for hydrogenation**
N. Cherkasov[1]; [1] Stoli Catalysts Ltd, Coventry/UK

P 1.23 **Silica-supported kinetic and mechanistic studies in heterogeneous catalysis**
C. Haas[1]; C. Mellen[1]; T. Roider[1]; U. Tallarek[1]; [1] Philipps-Universität Marburg/D

P 1.24 **Selective Continuous Hydrogenation of 1-iodo-4-nitrobenzene**
N. Steinfeldt[1]; [1] Leibniz-Institut für Katalyse e. V., Rostock/D

P 1.25 **Decentral LNG Production based on Process Intensification with Microchannel Reactors**
S. Farsi[1]; O. Görke[1]; P. Pfeifer[1]; R. Dittmeyer[1]; [1] Karlsruhe Institute of Technology (KIT), Eggenstein-Leopoldshafen/D

P 1.26 **Development of a Microdevice for Reduction of Nitrate Ion Including Micro-Tubular Carriers Made of Copper**
Y. Asano[1]; S. Togashi[1]; Y. Ito[2]; Y. Endo[3]; R. Miyake[3]; [1] Hitachi, Ltd., Hitachinaka/J; [2] Hitachi, Ltd., Tsuchiura/J; [3] The University of Tokyo, Kawasaki/J

P 1.27 **Performance study of laminated foam metal with hole array as catalyst support for methanol steam reforming microreactor**
W. Zhou[1]; Y. Liu[1]; Y. Lin[1]; L. Chen[1]; [1] Xiamen University, Xiamen city, Fujian province/CN

P 1.28 **Mercaptan removal from light hydrocarbons using a microreactor**
X. Tang[1]; [1] Research Institute of Petroleum Processing, SINOPEC, Beijing/CN

P 1.29 **Direct Partial Oxidation of Methane to Organic oxygenates in a Micro Fixed-bed Reactor**
H. Zuo[1]; J. Sonntag[1]; E. Klemm[1]; [1] University of Stuttgart/D

P 1.30 **Continuous flow N-Alkylation of 1H-benzimidazole in a cost efficient fixed bed reactor**
T. Sauk[1]; L. Henke[1]; S. Scholl[1]; [1] TU Braunschweig, Institut für Chemische und Thermische Verfahrenstechnik, Braunschweig/D

P 1.31 **Design and optimization of the flow synthesis of Paullone-scaffolds**
M. Rehbein[1]; J. Wolters[1]; L. Priess[1]; S. Scholl[1]; C. Kunick[2]; [1] TU Braunschweig, Institut für Chemische und Thermische Verfahrenstechnik, Braunschweig/D; [2] TU Braunschweig, Institut für Medizinische und Pharmazeutische Chemie, Braunschweig/D

P 1.32 **Green Chemistry , K-M reactor for nano iron copper core shell as example**
M. AbdelKawy[1]; [1] CMRDI, Helwan/ET

P 1.33 **Microfluidics and X-ray Scattering for Time-Resolved Macromolecular Studies**
M. Vakili[1]; M. Trebbin[1]; [1] University of Hamburg/D

P 1.34 **Flow Microreactor Synthesis of Core-shell Particles Composed of Soft Metal-Organic Frameworks**
S. Watanabe[1]; A. Fujiwara[1]; M. Miyahara[1]; [1] Kyoto University, Kyoto/J

P 1.35 **Continuous-flow process for effective encapsulation of lipophilic and hydrophilic agents in polymeric particles**
L. Bacher[1]; A. Musyanovych[1]; M. Maskos[1]; [1] Fraunhofer IMM, Mainz/D

P 1.36 **Lithiation of 5,5'-dibromo-2,2'-bithiophene using flow microreactors**
Y. Jiang[1]; H. Yamashita[1]; N. Takabayashi[1]; A. Nagaki[1]; J. Yoshida[1]; [1] Kyoto University, Graduate School of Engineering, Kyoto/J

P 1.37 **Kinetic Studies and Modelling of Methylation with Chloromethane using Microreactor Technology**
C. Benzin[1]; N. Kockmann[2]; T. Röder[1]; [1] Hochschule Mannheim - University of Applied Sciences, Mannheim/D; [2] TU Dortmund University - Department of Biochemical and Chemical Engineering, Equipment Design, Dortmund/D

P 1.38 **Proposal for Propane dehydrogenation coupled to H_2 oxidation in a membrane reactor for efficient production of Propylene**
A. Navarrete[1]; K. Haas-Santo[2]; R. Dittmeyer[2]; [1] Karlsruhe Institute of Technology, Eggenstein-Leopoldshafen/D; [2] Karlsruhe Institute of Technology, Karlsruhe/D

P 1.39 **Reactor system for in- situ and real-time monitoring of mass changes during catalytic and other chemical Processes**
A. Karlsson[1]; [1] SINTEF Materials and Chemistry, Oslo/N

MIXING AND HEAT TRANSFER IN MICRO SYSTEMS

P 2.01 **The effects of fluid properties and system pressure on hydrodynamics and mass transfer of gas-liquid Taylor flow**
C. Yao[1]; [1] Dalian Institute of Chemical Physics, Dalian, China/D

P 2.02 **Transport processes in single and two-phase flows in the ART plate reactor**
A. Rave[1]; R. Kuwertz[2]; G. Fieg[1]; J. Heck[2]; [1] Institute of Process and Plant Engineering, Hamburg University of Technology, Hamburg/D; [2] Ehrfeld Mikrotechnik GmbH, Wendelsheim/D

P 2.03 **Oscillating bubbles a versatile tool for mass transfer enhancement in microreactors**
S. Zhao[1]; G. Chen[1]; [1] Dalian Institute of Chemical Physics, Chinese Academy of Sciences, Dalian/CN

P 2.04 **Proof of concept: measuring heat of reaction in flow**
A. Ladosz[1]; A. Teixeira[1]; B. Hardy[1]; I. Roes[1]; J. Moore[1]; K. Jensen[1]; [1] MIT, Cambridge, MA/USA

P 2.05 **Fouling detection in an optical accessible, micro structured heat exchanger**
C. Spiegel[1]; M. Kraut[2]; G. Rabsch[2]; C. Küsters[3]; W. Augustin[1]; S. Scholl[1]; [1] Technische Universität Braunschweig, Institut für Chemische und Thermische Verfahrenstechnik, Braunschweig/D; [2] Karlsruhe Institute of Technology, Institut für Mikroverfahrenstechnik, Karlsruhe/D; [3] Cargill Deutschland GmbH, Krefeld/D

P 2.06 **Design and experimental study of a milli-channel vaporizer**
G. Henry[1]; A. Pere-Gigante[1]; J. Commenge[1]; S. Fournel-Valentin[2]; M. Wagner[3]; [1] Université de Lorraine CNRS Laboratoire Réactions et Génie des Procédés NANCY (France), Nancy/F; [2] Air Liquide R&D, Paris-Saclay/F; [3] Air Liquide R&D,, Paris-Saclay/F

P 2.07 **Dynamic changes in gas-liquid mass transfer during Taylor flow in long serpentine square microchannels**
Y. Zhao[1]; [1] Yantai University, Laishan District, Yantai City, Shandong Province/CN

P 2.08 **Influence of microstructured static mixers on gas/liquid mass transfer in a narrow rectangular channel**
L. Sengen[1]; F. Herbstritt[2]; J. Heck[2]; M. Grünewald[1]; [1] Ruhr-Universität Bochum/Lehrstuhl Fluidverfahrenstechnik, Bochum/D; [2] Ehrfeld Mikrotechnik GmbH, Wendelsheim/D

P 2.09 **Design and experimental study of a milli-channel vaporizer**
G. Henry[1]; A. Pere-Gigante[1]; J. Commenge[1]; S. Fournel-Valentin[2]; M. Wagner[2]; [1] Université de Lorraine CNRS Laboratoire Réactions et Génie des Procédés NANCY (France), Nancy/F; [2] Air Liquide R&D,, Paris-Saclay/F

P 2.10 **A Study on 3D-Printed Microchannel Heat Sink for Liquid Cooling of Electronic Components and Concentrator Photovoltaic Cells**
S. Ookawara[1]; A. Saito[1]; S. Yoshikawa[1]; [1] Tokyo Institute of Technology, Tokyo/J

P 2.11 **Tailored 3D Printed Fluid Guiding Elements for Process Intensification**
E. Hansjosten[1]; A. Wenka[1]; A. Hensel[1]; W. Benzinger[1]; M. Klumpp[1]; R. Dittmeyer[1]; [1] KIT, IMVT, Eggenstein-Leopoldshafen/D

P 2.12 **Effect of physical properties of dispersed phase on the residence time distribution in straight capillaries**
J. Raval[1]; N. Suryawanshi[1]; A. Kulkarni[1]; [1] CSIR-National Chemical Laboratory, Pune/IND

P 2.13 **Hydrodynamic study of non-conventional segmented flows: viscous liquids and slurries in milli-channels**
C. Méhault[1]; R. Philippe[1]; C. de Bellefon[1]; [1] CNRS, Laboratoire de Génie des Procédés Catalytiques, Villeurbanne/F

P 2.14 **Experimental and theoretical characterisation of a micro-channel heat exchanger for liquid-liquid heat transfer without phase change**
J. Portha[1]; G. Henry[1]; A. Pere-Gigante[1]; J. Commenge[1]; [1] Université de Lorraine, Nancy/F

P 2.16 **Hydrodynamics and mass transfer in Gas-Liquid-Liquid flow in microreactor: comparison to Gas-Liquid microflow**
G. Chen[1]; J. Yue[2]; C. Xu[1]; S. Zhao[1]; C. Yao[1]; G. Chen[1]; [1] Dalian Institute of Chemical Physics, Chinese Academy of Sciences, Dalian/CN; [2] University of Groningen, Groningen/NL

P 2.17 **The effect of surface agent on the preparation of $BaSO_4$ nanoparitcles in the micoreactor**
J. Wang[1]; Y. Wang[1]; [1] Tsinghua University, Beijing/CN

P 2.18 **Mass transfer characterization within droplet in physical and reactive extraction systems under liquid-liquid slug flow in microreactors**
Y. Liu[1]; G. Chen[2]; H. Heeres[1]; J. Yue[1]; [1] University of Groningen, Groningen/NL; [2] Dalian Institute of Chemical Physics, Chinese Academy of Sciences, Dalian/CN

P 2.19 **In-situ characterization of microfluidic devices by NMR**
S. Schuhmann[1]; N. Schork[1]; S. Milles[1]; M. Maier[1]; D. Meyer[1]; F. Dalitz[1]; H. Nirschl[1]; G. Guthausen[1]; [1] Karlsruhe Institute of Technology (KIT), Karlsruhe/D

P 2.20 **The mixability evaluation method using molecular weight distribution using anionic polymerization of polystyrene**
Y. Endo[1]; Y. Nakahara[1]; M. Furusawa[2]; T. Shimazaki[3]; Y. Takahashi[4]; A. Nagaki[4]; [1] Ajinomoto Co., Inc., Kanagawa/J; [2] TOHO Chemical Industry Co., Ltd., Kanagawa/J; [3] TACMINA CORPORATION, Oosaka/J; [4] Kyoto University, Kyoto/J

DOWNSTREAM PROCESSING

P3.01 **Application of deep eutectic solvents and water for biodiesel purification on a microscale**
M. Franjo[1]; A. Šalić[1]; A. Jurinjak Tušek[1]; M. Cvjetko Bubalo[1]; B. Zelić[1]; [1] University of Zagreb/HR

P 3.02 **Liquid-vapor/gas microchannel device for the stripping of volatile organic compounds from water: experiments and modeling**
C. Adiche[1]; [1] Technische Universität Darmstadt/D

P 3.03 **Optimization of aqueous two-phase system for extraction of 6-aminopenicillanic acid**
L. Vobecká[1]; A. Romanov[1]; Z. Slouka[1]; M. Přibyl[1]; [1] University of Chemistry and Technology Prague/CZ

MODELLING AND SIMULATION

P 4.01 **A one-dimensional numerical simulation for the understanding of the partial oxidation of methane in an atmospheric pressure parallel-plate DBD microstructured reactor: Methodology and pathways investigation**
S. Al Ayoubi[1]; E. Martinez Ruiz[2]; S. Ognier[2]; M. Tatoulian[2]; [1] Ecole Nationale Superieure de Chimie de Paris, Paris/F; [2] Institut de Recherche de Chimie Paris, IRCP, CNRS-Chimie ParisTech-PSL, Paris/F

P 4.02 **Accelerating Microreactor Development with Accessible Simulation**
E. Daymo[1]; J. Guerrero[2]; M. Hettel[3]; [1] Tonkomo, LLC, USA/USA; [2] Wolf Dynamics, Genoa/I; [3] Karlsruhe Institute of Technology (KIT), Karlsruhe/D

P 4.03 **Computational modelling of flow behaviour at T and Y-junctions in microchannels**
M. Nagargoje[1]; [1] IIT Guwahati, Guwahati/IND

P 4.04 **Selectivity Engineering of Continuous Flow Meerwein Arylation using Non-Isothermal Model**
C. Shukla[1]; A. Kulkarni[1]; [1] CSIR- National Chemical Laboratory (NCL), Pune/IND

P 4.07 **Pressure drop estimation for Gas-Liquid-Liquid Slug Flow**
D. Hellmann[1]; D. Agar[1]; [1] TU Dortmund, Lehrstuhl für Chemische Verfahrenstechnik, Dortmund/D

P 4.08 **Multiscale modeling of processes at the microscale**
F. Srnisa[1]; T. Urbič[1]; I. Plazl[1]; [1] University of Ljubljana, Faculty of Chemistry and Chemical Technology, Ljubljana/SLO

P 4.09 **3D lattice Boltzmann simulation of Janus particle formation in microchannels**
H. Wang[1]; Y. Fu[1]; Y. Jin[1]; Y. Cheng[1]; [1] Tsinghua University, Beijing/CN

P 4.10 **Modelling of the Catalytic Hydrodeoxygenation of Pyrolysis Oil in Microreactors**
S. Hafeez[1]; S. Mahmood[1]; E. Aristodemou[1]; S. Al Salem[2]; G. Manos[3]; A. Constantinou[1]; [1] LSBU, London/UK; [2] Kuwait Institute for Scientific Research, Kuwait City/KWT; [3] UCL University College London, London/UK

P 4.11 **Taylor flow entering a porous medium: experiment and simulation**
M. Serres[1]; F. Jamshidi[2]; X. Cai[3]; H. Marschall[4]; O. Deutschmann[3]; R. Philippe[1]; V. Vidal[1]; M. Wörner[3]; [1] Université de Lyon/F; [2] Hochschule Karlsruhe - Technik und Wirtschaft, Karlsruhe/D; [3] Karlsruhe Institute of Technology (KIT), Karlsruhe/D; [4] Technische Universität Darmstadt/D

P 4.12 **Modeling and multiscale optimization of micro bioreactors with immobilized enzyme cascades**
P. Pietrek[1]; T. Burgahn[2]; K. Rabe[2]; C. Niemeyer[2]; R. Dittmeyer[1]; [1] KIT, IMVT, Karlsruhe/D; [2] KIT, IBG, Karlsruhe/D

MICROFABRICATION

P 5.01 **High Surface Area Activated Carbon Monoliths from 3D Printed Open Cell Polymer Structures**
H. Steldinger[1]; J. Gläsel[1]; B. Etzold[1]; [1] Technische Universität Darmstadt/D

P 5.02 **Design, manufacturing and application of ultrasonic microreactors**
S. Zhao[1]; G. Chen[1]; [1] Dalian Institute of Chemical Physics, Chinese Academy of Sciences, Dalian/CN

P 5.03 **Development of microreactors for in-situ analytics**
G. Rinke[1]; A. Ewinger[1]; A. Urban[1]; R. Dittmeyer[1]; [1] Karlsruhe Institute of Technology (KIT), Eggenstein-Leopoldshafen/D

P 5.04 **Fabrication and Characterization of 3D-Printed Micromixers in the Graduate Chemical Engineering Curriculum**
F. Schael[1]; [1] Hochschule Darmstadt/D

P 5.05 **All in One – Advanced technologies for complex low cost microfluidic devices in glass, silicon and quartz**
K. Kadel[1]; A. Schilling[1]; [1] Little Things Factory GmbH, Elsoff/D

PROCESS AUTOMATION, SENSORS, DIGITALIZATION

P 6.01 **Automated Online Model Based Design of Experiments for the Rapid Identification of Kinetic Models using Microreactors**
C. Waldron[1]; A. Pankajakshan[1]; E. Cao[1]; F. Galvanin[1]; A. Gavriilidis[1]; [1] University College London/UK

P 6.02 **In-situ Reaction Monitoring of Unstable Lithiated Intermediates through Inline FT-IR Spectroscopy**
V. Fath[1]; P. Weller[2]; S. Szmais[3]; S. Härtner[3]; P. Lau[3]; A. Bamberg[3]; P. Leonhard[3]; C. Enders[3]; M. Fritzsche[3]; N. Kockmann[4]; T. Röder[5]; [1] TU Dortmund University - Department of Biochemical and Chemical Engineering, Equipment Design; Mannheim University of Applied Sciences - Institute of Chemical Process Engineering, Mannheim/D; [2] Mannheim University of Applied Sciences - Institute of Instrumental Analytics and Bioanalysis, Mannheim/D; [3] Merck KGaA, Darmstadt/D; [4] TU Dortmund University - Department of Biochemical and Chemical Engineering, Equipment Design, Dortmund/D; [5] Mannheim University of Applied Sciences - Institute of Chemical Process Engineering, Mannheim/D

P 6.03 **Automated in situ Measurement of Gas Solubility in Liquids with a Simple Tube-in-Tube Reactor**
j. Zhang[1]; A. Teixeira[2]; K. Jensen[2]; [1] Tsinghua University, Beijing/CN; [2] Massachusetts Institute of Technology, Cambridge/USA

P 6.04 **Improving the Reliability and Safety of Automated Flow Processes using Spectroscopic Data**
A. Mendl[1]; T. Klahn[1]; S. Panic[1]; D. Boskovic[1]; [1] Fraunhofer Institute for Chemical Technology ICT, Pfinztal/D

MODULAR PLANT CONCEPTS

P 7.01 **Pumps - Enabling Continuous Flow Chemistry**
C. Damerau[1]; [1] HNP Mikrosysteme GmbH, Schwerin/D

P 7.02 **Polymeric nanoparticles – modular set-ups for the continuous formation and downstream processing**
S. von Bomhard[1]; [1] Fraunhofer IMM, Mainz/D

P 7.03 **Micro reaction engineering: Investigation of pressure drop and heat transfer of the Miprowa® Lab reactor**
M. Düvell[1]; [1] Universität Hamburg, Institut für Technische und Makromolekulare Chemie, Hamburg/D

NEW APPLICATIONS IN CHEMISTRY, BIOLOGY AND ENERGY

P 8.01 **Use of high velocity flows to determine the chemical kinetics constant during uranium(VI) extraction**
A. Lélias Vanderperre[1]; F. Corne[1]; A. Magnaldo[1]; C. Sorel[1]; N. Di Miceli Raimondi[2]; L. Prat[2]; [1] CEA Commissariat a l'Energie Atomique, Bagnols/Cèze/F; [2] ENSIACET - Ecole Nationale Supérieure des Ingénieurs en Arts Chimiques Et Technologiques, Toulouse/F

P 8.02 **Customized design of scalable microfluidic droplet generators using step-emulsification methods**
A. Eberhardt[1]; Y. Winter[2]; D. Boskovic[1]; S. Löbbecke[1]; [1] Fraunhofer Institute for Chemical Technology ICT, Pfinztal/D; [2] TH Köln/D

P 8.03 **Holistic Study of the Photon Efficiency in Photomicroreactors**
M. Sender[1]; B. Wriedt[1]; D. Ziegenbalg[1]; [1] Institut für Technische Chemie, Universität Stuttgart/D

P 8.04 **Preparation of poly(vinyl alcohol) fiber by microchannel wet-spinning process**
S. Masumoto[1]; T. Watanabe[1]; T. Ono[1]; [1] Okayama Unviersity, Okayama/J

P 8.05 **Increase of space time yield in micro structured reactors producing antibiotics**
M. Kumpert[1]; V. Wirth[1]; T. Bayer[1]; H. Gröger[2]; M. Pieper[2]; J. Volkmar[1]; [1] Provadis School of International Management and Technology, Frankfurt/D; [2] University Bielefeld – Department of Chemistry, Bielefeld/D

P 8.06 **Potential of periodic open cell structures (POCS) in chemical and biochemical synthesis processes**
C. Spille[1]; N. Büscher[2]; A. Aquino[2]; M. Fassbender[2]; P. Hergoss[3]; C. Emmelmann[3]; G. Luinstra[2]; M. Schmidt[2]; A. Liese[2]; M. Hoffmann[1]; M. Schlüter[1]; [1] Institute of Multiphase Flows, Hamburg University of Technology, Hamburg/D; [2] Hamburg University of Technology, Hamburg/D; [3] Fraunhofer Research Institution for Additive Manufacturing Technologies IAPT, Hamburg/D

P 8.07 **Cultivation in a micro cavity: characterization of a novel micro reactor for biopharmaceutical application using oscillation mixing technique**
L. Frey[1]; S. Meinen[2]; D. Vorländer[3]; D. Rasch[3]; B. Müller[4]; T. Mayr[4]; A. Dietzel[2]; R. Krull[3]; [1] Institute of Biochemical Engineering, Center of Pharmaceutical Engineering (PVZ), Braunschweig Integrated Centre of Systems Biology (BRICS), TU Braunschweig/D; [2] Institute for Microtechnology, TU Braunschweig/D; [3] Institute of Biochemical Engineering, TU Braunschweig/D; [4] Institute of Analytical Chemistry and Food Chemistry, Graz University of Technology, Graz/A

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R. Miyake[1]; [1] , Hongo, Bunkyo-ku, Tokyo/J

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A. Wunsch[1]; T. Berg[1]; M. Mohr[1]; P. Pfeifer[1]; [1] Karlsruher Institut für Technologie, Institut für Mikroverfahrenstechnik (IMVT), Eggenstein-Leopoldshafen/D

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F. Guba[1]; D. Ziegenbalg[2]; [1] Universität Stuttgart, Stuttgart-Vaihingen/D; [2] University of Ulm/D

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A. Navarrete[1]; S. Muñoz[2]; M. Grzelczak[3]; A. Sanchez-Iglesias[4]; M. Ángel[2]; M. Cocero[2]; R. Dittmeyer[5]; [1] Karlsruhe Institute of Technology (KIT), Eggenstein-Leopoldshafen/D; [2] University of Valladolid/E; [3] Donostia International Physics Center (DIPC), Donostia-San Sebastián/E; [4] CIC biomaGUNE, Donostia-San Sebastián/E; [5] Karlsruhe Institute of Technology (KIT), Karlsruhe/D

INDUSTRIAL IMPLEMENTATION

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P 9.02 **Logistics for modular production – A view from the research perspective**
F. Helbeck[1]; [1] Institut für Transportlogistik, TU Dortmund/D

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D. Kauzlaric[1]; A. Greiner[2]; C. Schüßler[3]; A. Medesi[4]; [1] University of Freiburg, Technical Faculty, Freiburg/D; [2] University of Freiburg/D; [3] Karlsruhe Institute of Technology (KIT), Karlsruhe/D; [4] Karlsruher Institut für Technologie (KIT), Institute for Applied Materials, Eggenstein-Leopoldshafen/D

P 10.02 **Electrical Impedance Spectroscopy and Tomography for Monitoring Phase Distributions within Microchannels**
K. Cobry[1]; B. Schleusener[1]; B. Deschner[2]; R. Dittmeyer[2]; P. Woias[1]; [1] University of Freiburg/D; [2] Karlsruhe Institute of Technology (KIT), Karlsruhe/D

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P 10.03 **Fabrication of Ceramic Microreactors with Integrated Impedance Spectroscopy-Sensor System for in-situ-Monitoring of continuous HydroThermal Synthesis (cHTS)**
A. Medesi[1]; T. Hanemann[1]; C. Schüßler[2]; M. Türk[2]; [1] Karlsruher Institut für Technologie (KIT), Institute for Applied Materials, Eggenstein-Leopoldshafen/D; [2] Karlsruhe Institute of Technology (KIT), Institute for Technical Thermodynamics and Refrigeration, Karlsruhe/D

P 10.04 **VoF-based simulation of vapor bubble nucleation in a rectangular microchannel**
A. Stroh[1]; S. Sadir[2]; R. Dittmeyer[2]; B. Frohnapfel[1]; [1] Institute of Fluid Mechanics (ISTM), Karlsruhe Institute of Technology (KIT), Karlsruhe/D; [2] Institute for Micro Process Engineering (IMVT), Karlsruhe Institute of Technology (KIT), Karlsruhe/D

P 10.05 **Simulation of the mixing behavior during continuous hydrothermal synthesis (CHTS) of CeO_2 nanoparticles**
M. Türk[1]; S. Ponusamy[2]; C. Schüßler[2]; D. Kauzlarić[3]; A. Greiner[4]; [1] Karlsruhe Institute of Technology (KIT), Campus South, Karlsruhe/D; [2] KIT Intistut für Technische Thermodynamik und Kältetechnik, Karlsruhe/D; [3] Universität Freiburg - IMTEK, Freiburg/D; [4] Universität Freiburg/D

P 10.06 **Smoothed particle hydrodynamics (SPH) modelling of particle loaded flow in microchannels with chemical reactions**
B. Deschner[1]; L. Chen[2]; D. Trüzler[1]; D. Kauzlaric[2]; A. Greiner[2]; P. Woias[2]; R. Dittmeyer[1]; M. Kraut[1]; K. Cobry[2]; [1] Karlsruhe Institute of Technology (KIT), Eggenstein-Leopoldshafen/D; [2] University of Freiburg/D

P 10.07 **3D-Printed Mold Inserts for Use in Ceramic Injection Molding (CIM) of Ceramic Microreactors**
T. Hanemann[1]; A. Medesi[1]; D. Nötzel[1]; M. Franzreb[1]; J. Wohlgemuth[1]; S. Schlehahn[1]; M. Türk[3]; [1] Karlsruher Institut für Technologie (KIT), Eggenstein-Leopoldshafen/D

P 10.08 **Integration of Miniaturized Mid-Infrared Spectrometer with Microreactor for Photochemistry**
Z. Wang[1]; [1] University of Freiburg, Technical Faculty, Freiburg/D

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B. Deschner[1]; M. Selinsek[1]; S. Urban[2]; L. Chen[2]; D. Kauzlaric[2]; A. Weltin[2]; A. Greiner[2]; K. Cobry[2]; M. Kraut[1]; P. Woias[2]; G. Urban[2]; R. Dittmeyer[1]; [1] Karlsruhe Institute of Technology (KIT), Eggenstein-Leopoldshafen/D; [2] University of Freiburg/D

P 10.10 **Experimental and Numerical Investigation of Evaporation Process in Microchannel**
S. Sadir[1]; A. Stroh[2]; B. Frohnapfel[2]; M. Talebi[3]; K. Cobry[3]; M. Kraut[1]; P. Woias[3]; R. Dittmeyer[1]; [1] Institute for Micro Process Engineering (IMVT), Karlsruhe Institute of Technology (KIT), Eggenstein-Leopoldshafen, Karlsruhe/D; [2] Institute of Fluid Mechanics (ISTM), Karlsruhe Institute of Technology (KIT), Karlsruhe/D; [3] Institute of Microsystem Technology (IMTEK), Albert-Ludwigs-University of Freiburg/D

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R. Dittmeyer[1]; S. Bräse[1]; B. Frohnapfel[1]; T. Hanemann[1]; M. Türk[1]; K. Cobry[2]; A. Greiner[2]; G. Urban[2]; P. Woias[2]; H. Zappe[2]; [1] Karlsruhe Institute of Technology (KIT), Eggenstein-Leopoldshafen/D; [2] University of Freiburg/D

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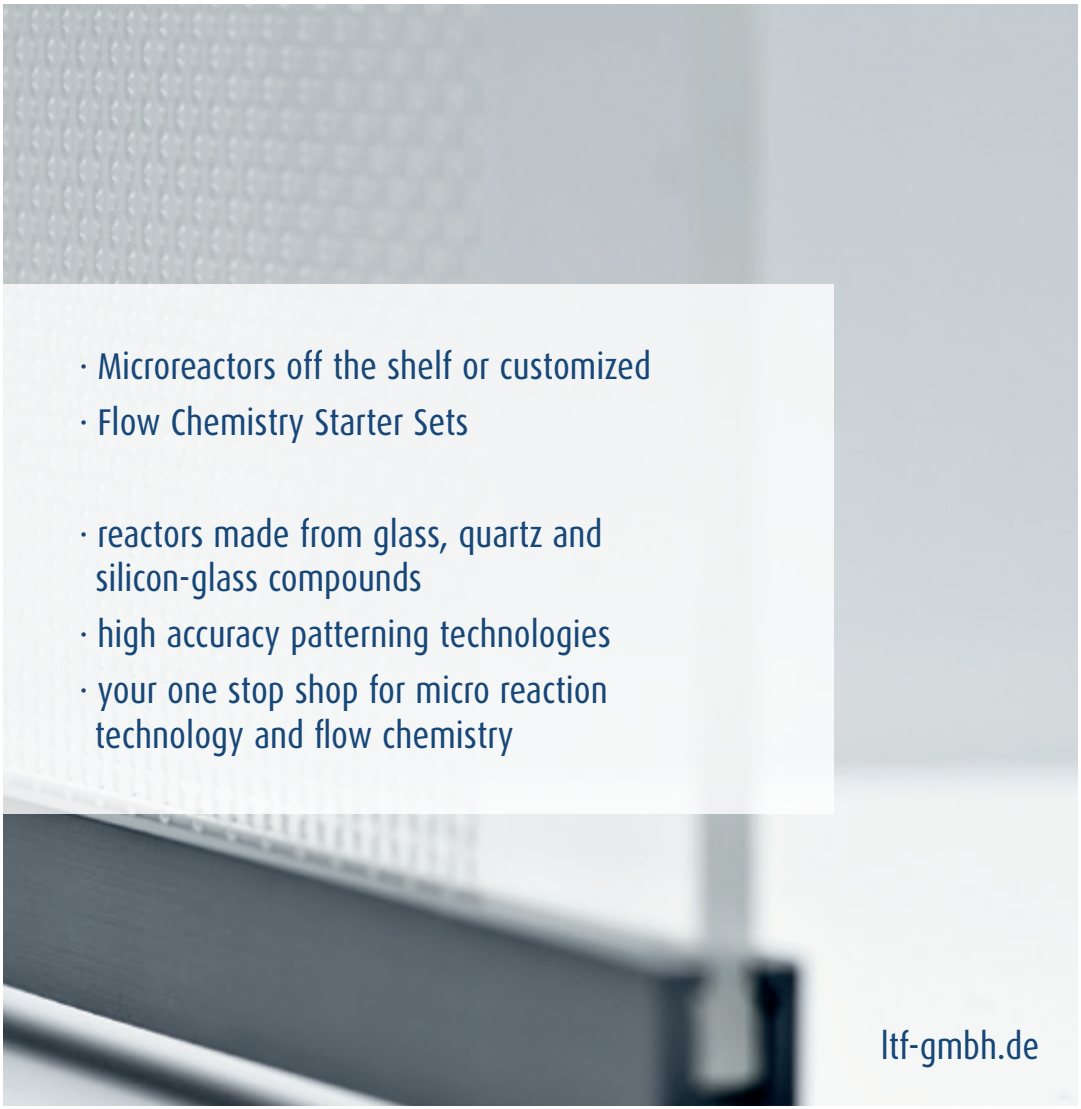

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