

PROGRAMME

27 – 30 October 2015
Veranstaltungsforum Fürstenfeldbruck near Munich
Germany

ESCRE 2015

European Symposium on
Chemical Reaction Engineering

– CRE Providing Tomorrow's Solutions –

www.dechema.de/escre2015



ESCRE 2015
European Symposium on
Chemical Reaction Engineering

Event No. 721



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INVITATION

Fifty-six years ago the first European Symposium on Chemical Reaction Engineering (ESCRE) was held in Amsterdam. After four symposia this conference series turned into the international symposium ISCRE, from early 70s on biannually, alternating between Europe and America. Since our Asian friends have joined this symposium series a decade ago, every six year Europe will be hosting an ISCRE event, the next one in 2018. So we decided to start a renewal of ESCRE in 2015 in Germany.

Germany is an ideal choice for this meeting due to its diversified and very strong community in CRE. The interaction between academia and industry is traditionally strong. The theme of the conference, "CRE providing tomorrow's solutions" emphasizes the necessity of CRE to meet the future challenges, particularly in energy sciences and technology.

The conference will be held at the Veranstaltungsforum Fürstenfeld in Fürstenfeldbruck near Munich. This excellent convention venue is integrated in a former monastery and provides a special atmosphere with this outstanding baroque location, ideal for casual private and informal network gatherings to take place throughout the venue. The conference centre is well connected to the inner city, allowing to enjoy the charm of the Bavarian capital and to experience the Bavarian culture and hospitality in a most personal way. The social programme includes a Welcome Reception, a Poster Party and a Bavarian Evening.

We are looking forward to provide you a warm welcome and the settings for an exciting conference.

Kai-Olaf Hinrichsen
Chairman of ESCRE 2015



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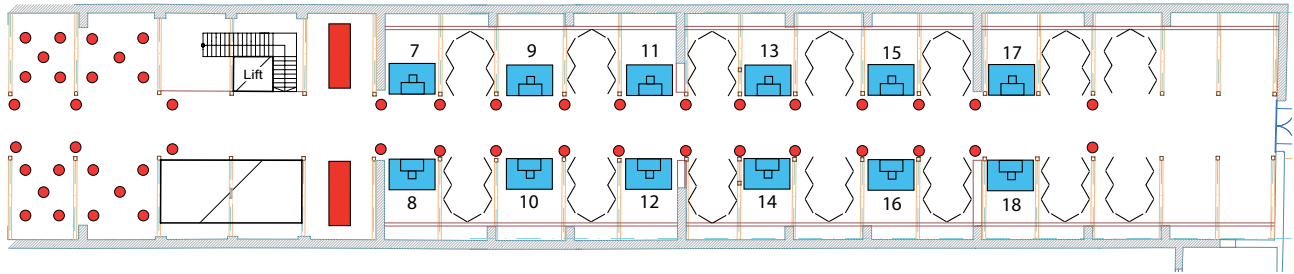


Royal Society of Chemistry/UK

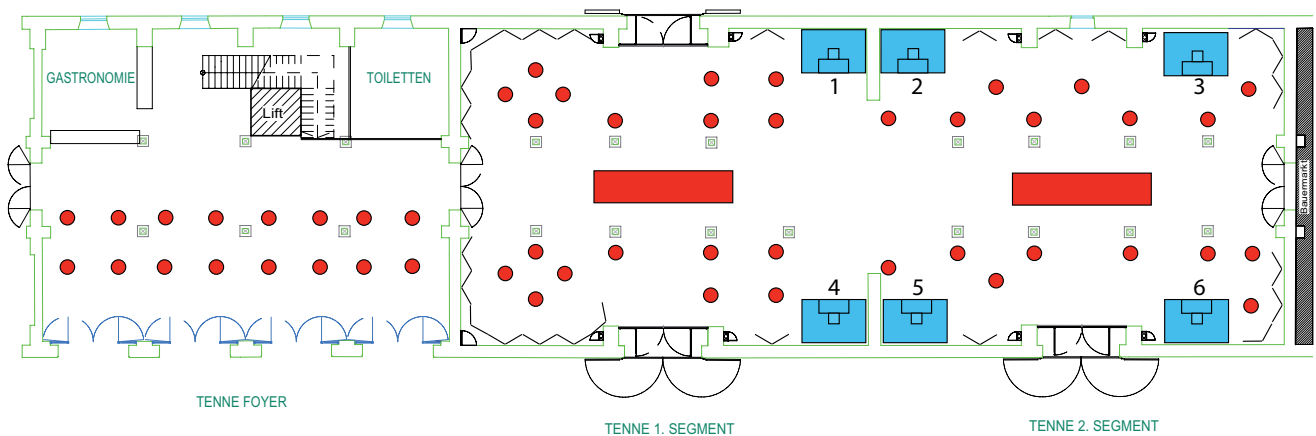


Fonds der chemischen Industrie
Frankfurt am Main/D

TENNE FIRST FLOOR



TENNE GROUND FLOOR



EXHIBITORS

- | | |
|---|--|
| 1. Clariant Produkte GmbH | 10. Fink Chem+Tech GmbH |
| 2. Zinsser Analytic GmbH | 11. Fluitec mixing + reaction solutions AG |
| 3. VTT Technical Research Centre of Finland | 12. Mettler - Toledo GmbH |
| 4. Parr Instrument GmbH | 13. CD-adapco |
| 5. Rubotherm GmbH | 14. S-Pact GmbH |
| 6. Quantachrome GmbH & Co. KG | 15. ABB Automation GmbH |
| 7. Ehrfeld Microtechnik BTS GmbH | 16. Magritek GmbH |
| 8. Micromeritics GmbH | 17. Knauer Wissenschaftliche Geräte GmbH |
| 9. HNP Mikrosysteme GmbH | 18. PS Enterprise Ltd. |

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K.-O. Hinrichsen	TU München/D (chairman)
E. Klemm	University of Stuttgart/D (vize-chairman)
U. Kragl	Universität Rostock/D
B. Kraushaar-Czarnetzki	Karlsruher Institut für Technologie (KIT)/D
R. Leiberich	Lanxess Deutschland GmbH, Leverkusen/D
M. Nilles	BASF SE, Ludwigshafen/D
S. Palkovits	RWTH Aachen University/D
J. Sauer	Karlsruher Institut für Technologie (KIT), Eggenstein-Leopoldshafen/D
R. Schütte	Evonik Industries AG, Hanau/D
T. Turek	TU Clausthal/D
H. Vogel	TU Darmstadt/D

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B. Andersson	Chalmers University of Technology, Göteborg/SE
L.W. Bolton	BP Chemicals, Sunbury on Thames/GB
L. Falk	Ecole Nationale Supérieure des Industries Chimiques, Nancy/F
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J. Hanika	Academy of Sciences of the Czech Republic, Praha/CZ
M. Hillestad	Norwegian University of Science & Technology, Trondheim/N
J.F. Joly	IFPEN, Solaize/F
J.G. Khinast	Research Center Pharmaceutical Engineering GmbH, Graz/A
L. Kiwi-Minsker	Ecole Polytechnique Federale de Lausanne/CH
J.J. Lerou	Jan Lerou Consulting, Hilliard, Ohio/USA
J. Levec	University of Ljubljana/SLO
M. Marek	Prague Institute of Chemical Technology, Praha/CZ
G.B. Marin	Universiteit Gent/B
J. Markos	Slovak University of Technology, Bratislava/SK
E. Molga	Warsaw University of Technology, Warszawa/PL
J.A. Moulijn	Delft University of Technology/NL
N. Papayannakos	National Technical University of Athens/GR
A. Renken	Ecole Polytechnique Fédérale de Lausanne, Lausanne/CH
A.E. Rodrigues	University of Porto/PL
T. Salmi	Abo Akademi University, Turku/FIN
J.C. Schouten	Eindhoven University of Technology/NL
A. Seidel-Morgenstern	MPI für Dynamik komplexer technischer Systeme, Magdeburg/D
M. Sheintuch	Technion - Israel Institute of Technologie, Haifa/IL
M. Siebenhofer	TU Graz/A
H. Stitt	Johnson Matthey plc, Billingham Cleveland/GB
E. Tronconi	Politecnico di Milano Energia, Milano/I

GENERAL INFORMATION

VENUE

Veranstaltungsforum Fürstenfeld
Fürstenfeld 12
82256 Fürstenfeldbruck
www.fuerstenfeld.de//Home_eng

Public Transportation:

S-Train Number 4 – Stop „Fürstenfeldbruck“

By Car:

Address for navigation system:
82256 Fürstenfeldbruck, Zisterzienserweg



ORGANISER & CONTACT

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SOCIAL EVENTS

Sunday, 27 October 2015

18:10 – 21:00

Come Together

After the opening speech of Johan Hoorn an informal gathering to welcome the participants will take place. Drinks and snacks will be served.

Thursday, 29 October 2015

19:00 – 23:00

Bavarian Evening

Enjoy an typical Bavarian evening with your colleagues in a traditional Bavarian atmosphere. The **Augustiner Keller** is situated in a historically interesting location in Munich that is centrally located and extremely easy to get to. We will spent the evening in the Festsaal which is one of the few remaining halls with barrel vaults in Munich.

Registration is necessary.
Tickets are not included in the conference registration fee.
The number of participants is limited. Booking is separately possible, as long as capacity is available.
Price per person is 40 € and includes drinks, buffet, entertainment and 19% VAT.

Location and meeting point

Augustiner Keller
Arnulfstr. 52
80335 München

From Veranstaltungsforum Fürstenfeld please use the S-Train – Stop “Hackerbrücke” or “Hauptbahnhof”.



Tuesday, 27 October 2015

Room:	Stadtsaal
15:00 – 17:00	MITGLIEDERVERSAMMLUNG der Fachgruppe Reaktionstechnik
17:00 – 17:10	WELCOME AND OPENING O. Hinrichsen, TU München/D
17:10 – 18:10	PLENARY LECTURE Reactor engineering for tomorrow's challenges? J. Hoorn, DSM Chemical Technology R&D B.V., Geleen/NL
Room:	Tenne
18:10 – 21:00	COME TOGETHER

Wednesday, 28 October 2015

Room:	Stadtsaal		
Chair:	<i>M. Busch</i>		
09:00 – 10:00	PLENARY LECTURE Recent trends in modeling of polymerization reactors K.B. McAuley, Queen's University, Kingston, Ontario/CDN		
10:00 – 10:30	COFFEE BREAK		
Room:	Stadtsaal	Säulensaal	Kleiner Saal
	Reaction Engineering Fundamentals	Biomass Conversion	Polymer Reaction Engineering
Chairs:	<i>O. Wachsen</i>	<i>S. Palkovits</i>	<i>M. Busch</i>
10:30 – 10:50	KEYNOTE G.B. Marin	M. Grilc	T. Hellwig
10:50 – 11:10		O.V. Manaenkov	J.-G. Rosenboom
11:10 – 11:30	S. Standl	M. Al-Naji	T. Höchfurtner
11:30 – 11:50	M. Sabbe	I. Hachemi	KEYNOTE L. Costa
11:50 – 12:10	M. Bracconi	C. Kiparissides	
Room:	Tenne		
12.10 – 14:00	LUNCH, POSTERS & EXHIBITION		
Room:	Stadtsaal		
Chair:	<i>M. Nilles</i>		
14:00 – 15:00	PLENARY LECTURE What happens inside? Spatial resolution techniques for catalytic reactors O. Deutschmann, Karlsruhe Institute of Technology/D		
Room:	Stadtsaal	Säulensaal	Kleiner Saal
	Reaction Engineering Fundamentals	Biomass Conversion	Polymer Reaction Engineering
Chairs:	<i>G.B. Marin</i>	<i>J. Levec</i>	<i>A. Renken</i>
15:05 – 15:25	U. Nieken	V. Tschedanoff	E. Mehravar
15:25 – 15:45	E. Mohammadzadeh-Moghaddam	M. Rose	F. Habla
15:45 – 16:05	T. Heidig	M. Vezzoli	C. Rost
16.05:16:30	COFFEE BREAK		
	Reaction Engineering Fundamentals	Photo- and Electrochemical Engineering	Multiphase Systems
Chairs:	<i>R. Leiberich</i>	<i>T. Turek</i>	<i>J. Sauer</i>
16:30 – 16:50	H. Grénman	KEYNOTE C. Ampelli	M.M. De Beer
16:50 – 17:10	N. Moazami		M. Schöß
17:10 – 17:30	F. Pöhlmann	D. Kopljär	I. Mohammed
17:30 – 17:50	Y. Bie	M. Schwarze	R. Otterstätter
Room:	Stadtsaal		
18:00 – 18:30	HANN S HOFMANN AWARD 2015 – AWARD CEREMONY AND LECTURE		
18:30 – 19:00	EFCE 2015 EXCELLENT AWARD AND LECTURE		
Room:	Tenne		
19:00 – 21:00	POSTER PARTY		

Thursday, 29 October 2015

Room:	Stadtsaal		
Chair:	<i>B. Kraushaar-Czarnetzki</i>		
9:00 – 10:00	<p>PLENARY LECTURE Novel trends in catalytic reaction engineering D. Murzin, Åbo Akademi University, Turku/Abo/FIN</p>		
10:00 – 10:30	COFFEE BREAK		
Room:	Stadtsaal	Säulensaal	Kleiner Saal
	Catalytic Engineering	Reactor Engineering	Multiphase Systems
Chairs:	<i>B. Kraushaar-Czarnetzki</i>	<i>A. Gavriilidis</i>	<i>A. Jess</i>
10:30 – 10:50	M. Türk	M. Petkovska	A. Nistor
10:50 – 11:10	B. J. M. Etzold	H. Eilers	T. Salmi
11:10 – 11:30	I. Gräf	M. Hussainy	J. von Langermann
11:30 – 11:50	A.O. Odunsi	A. Constantinou	T. Salmi
11:50 – 12:10	H. Robota	B. de Groot	D. Hickman
Room:	Tenne		
12:10 – 14:00	LUNCH, POSTERS & EXHIBITION		
Room:	Stadtsaal		
Chair:	<i>A. Seidel-Morgenstern</i>		
14:00 – 15:00	<p>PLENARY LECTURE Fabrication and surface reaction studies of transition metal nanoparticles on nanoparticle metal oxide supports J.C. Hemminger, University of California, Irvine, CA/USA</p>		
Room:	Stadtsaal	Säulensaal	Kleiner Saal
	Catalytic Engineering	Reactor Engineering	Micro Reaction Engineering
Chairs:	<i>A. Seidel-Morgenstern</i>	<i>M. Siebenhofer</i>	<i>L. Kiwi-Minsker</i>
15:05 – 15:25	S. Illies	<p>KEYNOTE T.J. Schildhauer</p>	G. Kolb
15:25 – 15:45	R. Horn		A. Avci
15:45 – 16:05	C. de Araujo Filho	M. Pantzali	M. Siebert
16:05 – 16:30	COFFEE BREAK		
	Catalytic Engineering	Reactor Engineering	Micro Reaction Engineering
Chairs:	<i>D. Yu. Murzin</i>	<i>T. Salmi</i>	<i>E. Klemm</i>
16:30 – 16:50	A.R. Fahami	M. Siebenhofer	<p>KEYNOTE D.W. Agar</p>
16:50 – 17:10	S.K. Wilkinson	F. Haseidl	
17:10 – 17:30	Z. Zhang	M. Schubert	D. Schurr
17:30 – 17:50	K. Glowienka	C. Hecht	D. Boskovic
19:00 – 23:00	<p>BAVARIAN EVENING at the Augustiner-Keller, Arnulfstr. 52, 80335 München</p>		

Friday, 30 October 2015

Room:	Stadtsaal		
Chair:	U. Kragl		
9:00 – 10:00	PLENARY LECTURE Reaction engineering challenges related to hydrogen storage in Liquid Organic Hydrogen Carriers (LOHCs) P. Wasserscheid, Universität Erlangen-Nürnberg/D		
10:00 – 10:30	COFFEE BREAK		
	Stadtsaal	Säulensaal	Kleiner Saal
	Industrial Frontiers	CO ₂ Utilization	Reaction Engineering of Fossil Fuels
Chairs:	D. Hickman	H. Vogel	R. Horn
10:30 – 10:50	KEYNOTE F. Gärtner	F. Koschany	L.P. de Oliveira
10:50 – 11:10		G. Baldauf-Sommerbauer	T.H.T. Nguyen
11:10 – 11:30	D. Heitmann	L.C. Buelens	N. Olahova
11:30 – 11:50	Z. Urban	H.R. Godini	J. Rischard
11:50 – 12:15	C.Minnich	S.A. Schunk	A.A. Munera Parra
Room:	Tenne		
12:15 – 14:00	LUNCH, POSTERS & EXHIBITION		
Room:	Stadtsaal		
Chair:	J. Sauer		
14:00 – 15:00	PLENARY LECTURE Engineering for a sustainable energy future R. Agrawal, Purdue University, West Lafayette, IN/USA		
15:00	CLOSING CEREMONY O. Hinrichsen, TU München/D POSTER PRIZE AWARD donated by ProcessNet subject division Chemical Reaction Engineering		



Unsere Zukunftsexperten beherrschen das Ideen-Kamasutra: in 43 Stellungen zur besten Idee.

Evonik ist der kreative Industriekonzern. Mit Leidenschaft und Know-how entwickeln unsere Experten die Lösungen von morgen – von Leichtbau bis Medizintechnik. Unsere strategische Innovationseinheit Creavis eröffnet als Impulsgeber unseren Kunden neue Märkte und schafft so die Grundlage für eine langfristig erfolgreiche Partnerschaft. Besuchen Sie uns in der Zukunft unter www.creavis.de.

Evonik. Kraft für Neues.



PLENARY LECTURES

Tuesday, 27 October 2015

- 17:10 – 18:10 **Reactor Engineering for tomorrow's challenges?**
Johan Hoorn, DSM Chemical Technology R&D B.V., Geleen/NL

Wednesday, 28 October 2015

- 09:00 – 10:00 **Recent trends in modeling of polymerization reactors**
Kim B. Mc Auley, Queen's University, Kingston, Ontario/CDN
- 14:00 – 15:00 **What happens inside? Spatial resolution techniques for catalytic reactors**
Olaf Deutschmann, Karlsruhe Institute of Technology (KIT)/D

Thursday, 29 October 2015

- 09:00 – 10:00 **Novel trends in catalytic reaction engineering**
Dmitry Yu. Murzin, Åbo Akademi University, Turku/Åbo/FIN
- 14:00 – 15:00 **Fabrication and surface reaction studies of transition metal nanoparticles on nanoparticle metal oxide supports**
John C. Hemminger, University of California, Irvine, CA/USA

Friday, 30 October 2015

- 09:00 – 10:00 **Reaction engineering challenges related to hydrogen storage in Liquid Organic Hydrogen Carriers (LOHCs)**
Peter Wasserscheid, Universität Erlangen-Nürnberg/D
- 14:00 – 15:00 **Engineering for a sustainable energy future**
Rakesh Agrawal, Purdue University, West Lafayette, IN/USA

KEYNOTE LECTURES

Wednesday, 28 October 2015

- 10:30 – 11:10 **Microkinetic Model Development for Oxidative Coupling of Methane**
A. Obradović¹; J. Thybaut¹; G. Marin¹, ¹ Ghent University, Ghent/B
- 11:30 – 12:10 **From laboratory to industrial continuous production of low residual monomer polylactic acid**
L. Costa¹; F. Codari¹; F. Tancini¹; U. Trommsdorff¹, ¹ Sulzer Chemtech, Winterthur/CH
- 16:30 – 17:10 **Photo-electrochemical production of solar fuels by reducing CO₂: catalytic electrodes and cell design**
C. Ampelli¹; S. Perathoner¹; G. Centi¹, ¹ University of Messina/I

Thursday, 29 October 2015

- 15:05 – 15:45 **Pilot scale investigations to support modelling of fluidised bed methanation reactors for biomethane and power-to-gas**
T. Schildhauer¹; F. Schillinger¹; S. Maurer¹; J. Witte¹; S. Teske¹; S. Biollaz¹, ¹ Paul Scherrer Institut, Villigen/CH
- 16:30 – 17:10 **Suspension catalysis with biphasic slug flow in microchannels**
D. Agar¹; F. Scheiff², ¹ TU Dortmund/D; ² BASF SE, Ludwigshafen/D

Friday, 30 October 2015

- 10:30 – 11:10 **Alternative butadiene production by oxidative dehydrogenation of butene feedstocks**
F. Gärtner¹; G. Stochniol²; H. Zanthoff²; S. Peitz²; F. Heinroth³, ¹ Evonik Technology & Infrastructure GmbH, Marl/D; ² Evonik Industries AG, Marl/D; ³ Evonik Industries AG, Hanau/D

Tuesday, 27 October 2015

Stadtsaal

15:00	MITGLIEDERVERSAMMLUNG der Fachgruppe Reaktionstechnik <i>Chair: K. Hinrichsen, TU München, Garching bei München/D</i>
17:00	OPENING AND WELCOME BY THE SYMPOSIUM CHAIRMAN
17:10	PLENARY LECTURE Reactor engineering for tomorrow's challenges? <i>J. Hoorn, DSM Chemical Technology R&D B.V., Geleen/NL</i>
18:10 – 21:00	COME TOGETHER

Poster – Exhibition Area

»You can't eat straw.
That's why we're
making fuel out of it.«
**WHAT IS PRECIOUS
TO YOU?**



**THIS IS CLARIANT:
SPECIALTY CHEMICALS
CREATING VALUE**

Energy from renewable resources is only valuable if no foodstuffs are used to make it. That's why Clariant developed a process that turns agricultural waste into carbon-neutral ethanol biofuel. That is precious to us. **what is precious to you?**

Wednesday, 28 October 2015

Stadtsaal

Chair: M. Busch, TU Darmstadt/D

09:00	PLENARY LECTURE Recent trends in modeling of polymerization reactors K. McAuley, Queen's University, Kingston, Ontario/CDN
10:00	COFFEE BREAK
	Reaction Engineering Fundamentals
	Chair: O. Wachsen, Clariant Produkte Deutschland GmbH, Frankfurt am Main/D
10:30	KEYNOTE LECTURE Microkinetic Model Development for Oxidative Coupling of Methane A. Obradović ¹ ; J. Thybaut ¹ ; G. Marin ¹ , ¹ Ghent University, Ghent/B
11:10	Single-event kinetic model for 1-pentene cracking on ZSM-5 T. von Aretin ¹ ; S. Schallmoser ¹ ; J. Lercher ¹ ; K. Hinrichsen ¹ ; S. Standl ¹ , ¹ TU München, Garching bei München/D
11:30	DFT-based modeling of benzene hydrogenation on Pt at industrially representative coverage M. Sabbe ¹ ; M. Reyniers ¹ ; G. Marin ¹ , ¹ Ghent University, Ghent/B
11:50	Simulation of open-cell foams with computational fluid dynamics M. Bracconi ¹ ; M. Maestri ¹ ; G. Groppi ¹ ; E. Tronconi ¹ , ¹ Politecnico di Milano/I
12:10	LUNCH, POSTERS & EXHIBITION

Stadtsaal

Chair: M. Nilles, BASF SE, Ludwigshafen/D

14:00	PLENARY LECTURE What happens inside? Spatial resolution techniques for catalytic reactors O. Deutschmann, Karlsruhe Institute of Technology, Eggenstein-Leopoldshafen/D
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Stadtsaal

Reaction Engineering Fundamentals

Chair: G. Marin, Ghent University/B

15:05	Oxygen storage based reaction kinetics for three-way catalyst modeling J. Bickel ¹ ; U. Niekem ¹ ; G. Eigenberger ¹ , ¹ University of Stuttgart/D
15:25	A novel approach in modelling narrow-tube fixed bed reactors: the role of tortuous structure on transport properties E. Mohammadzadeh-Moghaddam ¹ ; A. Farbod ² , ¹ London South Bank University, Mashhad/IR; ² Sahand University of Technology, Sahand/Tabriz/IR
15:45	Parallel particle tracking: detailed mass transport simulation in periodic cellular structures T. Heidig ¹ ; T. Zeiser ¹ ; W. Schwieger ¹ ; H. Freund ¹ , ¹ Universität Erlangen-Nürnberg, Erlangen/D
16:05	COFFEE BREAK
	Reaction Engineering Fundamentals
	Chair: R. Leiberich, Lanxess Deutschland GmbH, Leverkusen/D
16:30	Modelling of chemical reactions in liquid films around solid particles T. Salmi ¹ ; H. Grénman ¹ ; T. Kilpiö ¹ ; D. Murzin ¹ , ¹ Åbo Akademi University, Turku-Åbo/FIN
16:50	Mathematical modelling and chemical kinetic study of Fischer-Tropsch synthesis on a cobalt-silica catalyst N. Moazami ¹ ; M. Wyszynski ¹ ; H. Mahmoudi ¹ ; A. Tsolakis ¹ ; K. Rahbar ¹ ; P. Panahifar ¹ , ¹ University of Birmingham/UK
17:10	Effect of intraparticle diffusion on Fischer-Tropsch synthesis with a cobalt catalyst F. Pöhlmann ¹ ; A. Jess ¹ , ¹ University of Bayreuth/D
17:30	Hydrodeoxygenation of methyl palmitate over zirconia supported rhodium catalyst: kinetic modelling and reaction mechanism
17:50	Y. Bie ¹ ; J. Lehtonen ² ; J. Kanervo ² , ¹ Aalto University, Espoo/FIN; ² Aalto University, Aalto/FIN

Stadtsaal

18:00	HANNS HOFMANN AWARD 2015 – award ceremony and lecture
18:30	EFCE 2015 excellent award and lecture
19:00	POSTER PARTY at the Exhibition Area (19:00 – 21:00)

Wednesday, 28 October 2015

Stadtsaal

Chair: M. Busch, TU Darmstadt/D

09:00	PLENARY LECTURE Recent trends in modeling of polymerization reactors K. McAuley, Queen's University, Kingston, Ontario/CDN
10:00	COFFEE BREAK

Säulensaal

Biomass Conversion*Chair: S. Palkovits, RWTH Aachen University/D*

10:30	Kinetic model of lignocellulosic biomass solvolysis in glycerol and ionic liquids with subsequent catalytic hydrodeoxygenation M. Grilc ¹ ; B. Likozar ¹ ; J. Levec ² , ¹ National Institute of Chemistry, Ljubljana/SLO; ² National Institute of Chemistry and Faculty of Chemistry and Chemical Technology, Ljubljana/SLO
10:50	The Ru-containing polymeric catalyst for the process of cellulose conversion into polyols O. Manaenkova ¹ ; A. Filatova ¹ ; O. Kislitza ¹ ; V. Matveeva ¹ ; V. Doluda ¹ ; A. Sidorov ¹ , ¹ Tver State Technical University, Tver/RUS
11:10	Valeric biofuel by selective hydrogenation of levulinic acid derived from lignocellulosic biomass using supported mono- and bimetallic catalysts M. Al-Najji ¹ ; R. Gläser ¹ ; A. Yopez ² ; A. Romero ² ; A. Balu ² ; R. Luque ² ; C. Zhihao ¹ ; N. Wilde ¹ , ¹ Universität Leipzig, Leipzig/D; ² Universidad de Córdoba, Córdoba/E
11:30	Catalytic hydrodeoxygenation of Chlorella microalgae biodiesel into green diesel over nickel nanoparticle catalyst I. Hachemi ¹ ; P. Mäki-Arvela ¹ ; N. Kumar ¹ ; D. Murzin ¹ , ¹ Åbo Akademi University, Turku-Åbo/FIN
11:50	Lignocellulosic biomass conversion to high value bioproducts A. Karapatsia ¹ ; G. Penloglou ¹ ; I. Pappas ² ; C. Kiparissides ¹ , ¹ Aristotle University of Thessaloniki, Thessaloniki/GR; ² Centre for Research and Technology Hellas, Thessaloniki/GR
12:10	LUNCH, POSTERS & EXHIBITION

Stadtsaal

Chair: M. Nilles, BASF SE, Ludwigshafen/D

14:00	PLENARY LECTURE What happens inside? Spatial resolution techniques for catalytic reactors O. Deutschmann, Karlsruhe Institute of Technology, Eggenstein-Leopoldshafen/D
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Säulensaal

Biomass Conversion*Chair: J. Levec, National Institute of Chemistry and Faculty of Chemistry and Chemical Technology, Ljubljana/SLO*

15:05	New approach for C_xH_y hydrogenation kinetics determination for large scale fluidised bed methanation design V. Tshedanoff ¹ ; T. Schildhauer ¹ ; S. Biollaz ¹ ; A. Wokaun ¹ , ¹ Paul Scherrer Institute, Villigen/CH
15:25	Heterogeneously catalyzed aqueous phase amination of biogenic isohexides M. Rose ¹ ; R. Pfitzenreuter ¹ , ¹ RWTH Aachen University, Aachen/D with award ceremony of the DECHEMA-Hochschullehrer-Nachwuchspreis
15:45	Terpenes as renewable feedstock: continuous synthesis of green paracetamol M. Vezzoli ¹ ; K. Smug ¹ ; P. Plucinski ¹ , ¹ University of Bath/UK
16:05	COFFEE BREAK

Photo- and Electrochemical Engineering*Chair: T. Turek, TU Clausthal, Clausthal-Zellerfeld/D*

16:30	KEYNOTE LECTURE Photo-electrochemical production of solar fuels by reducing CO₂: catalytic electrodes and cell design C. Ampelli ¹ ; S. Perathoner ¹ ; G. Centi ¹ , ¹ University of Messina/I
17:10	Electrochemical reduction of CO₂ using gas diffusion electrodes: from batch to conti D. Kopljari ¹ ; E. Klemm ¹ ; N. Wagner ² ; N. Frangos ³ ; R. Scholz ³ ; H. Winterbauer ⁴ , ¹ University of Stuttgart/D; ² German Aerospace Center (DLR), Stuttgart/D; ³ Invenios Europe GmbH, Langen/D; ⁴ Plinke GmbH, Bad Homburg/D
17:30 - 17:50	Sun light driven H₂-evolution with carbon nitride photocatalysts M. Schwarze ¹ ; M. Schröder ¹ ; J. Borgmeyer ¹ ; K. Kailasam ¹ ; A. Thomas ¹ ; R. Schomäcker ¹ , ¹ TU Berlin, Berlin/D

Stadtsaal

18:00	HANNIS HOFMANN AWARD 2015 – award ceremony and lecture
18:30	EFCE 2015 excellent award and lecture
19:00	POSTER PARTY at the Exhibition Area (19:00 – 21:00)

Wednesday, 28 October 2015

Stadtsaal

Chair: M. Busch, TU Darmstadt/D

09:00	PLENARY LECTURE Recent trends in modeling of polymerization reactors K. McAuley, Queen's University, Kingston, Ontario/CDN
10:00	COFFEE BREAK

Kleiner Saal

Polymer Reaction Engineering

Chair: M. Busch, TU Darmstadt/D

10:30	Investigation of radical polymerizations for spray processes in levitated single droplets T. Hellwig ¹ ; R. Sedelmayer ¹ ; A. Halfar ¹ ; B. Schröter ¹ ; K. Francke ¹ ; W. Pauer ¹ ; H. Moritz ¹ , ¹ University of Hamburg/D
10:50	Ring-opening synthesis of polyethylene furanoate J. Rosenboom ¹ ; G. Storti ¹ ; M. Morbidelli ¹ , ¹ ETH Zurich/CH
11:10	Multi-stage polymerization of ethylene in a single reactor setup T. Höchfurtner ¹ ; C. Paulik ¹ , ¹ Johannes Kepler University, Linz/A
11:30	KEYNOTE LECTURE From laboratory to industrial continuous production of low residual monomer polylactic acid L. Costa ¹ ; F. Codari ¹ ; F. Tancini ¹ ; U. Trommsdorff ¹ , ¹ Sulzer Chemtech, Winterthur/CH
12:10	LUNCH, POSTERS & EXHIBITION

Stadtsaal

Chair: M. Nilles, BASF SE, Ludwigshafen/D

14:00	PLENARY LECTURE What happens inside? Spatial resolution techniques for catalytic reactors O. Deutschmann, Karlsruhe Institute of Technology, Eggenstein-Leopoldshafen/D
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Kleiner Saal

Polymer Reaction Engineering

Chair: A. Renken, Ecole Polytechnique Fédérale de Lausanne/CH

15:05	Comb-like acrylic-based polymer latexes containing nano-sized crystalline domains E. Mehravar ¹ ; J. Asua ¹ ; J. Leiza ¹ , ¹ University of Basque Country, San Sebastián/E
15:25	CFD simulation of partially filled twin-screw extruder including viscoelastic material behavior and non-isothermal effects F. Habla ¹ ; O. Hinrichsen ¹ , ¹ TU München, Garching/D
15:45	Investigation of phase changes and thermodynamic coefficients under high pressure C. Rost ¹ ; M. Busch ¹ , ¹ TU Darmstadt/D
16:05	COFFEE BREAK

Multiphase Systems

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

16:30	Integrated condensation and evaporation in a stator-rotor-stator spinning disc reactor M. De Beer ¹ ; J. Keurentjes ¹ ; J. Schouten ¹ ; J. van der Schaaf ¹ , ¹ Technische Universiteit Eindhoven/NL
16:50	Kinetic studies of non-catalytic gas-solid reactions at high temperature in a downer reactor M. Schöb ¹ ; F. Schulenburg ² ; T. Turek ¹ , ¹ TU Clausthal, Clausthal-Zellerfeld/D; ² H.C. Starck GmbH, Goslar/D
17:10	Gas-liquid mass transfer in a tubular reactor with solid foam packing I. Mohammed ¹ ; T. Bauer ¹ ; M. Schubert ² ; R. Lange ¹ , ¹ TU Dresden, Dresden/D; ² Helmholtz-Zentrum Dresden-Rossendorf, Dresden/D
17:30	Three phase heterogeneously catalysed oxidative esterification – Relevance of oxygen mass transport R. Otterstätter ¹ ; E. Klemm ¹ ; H. Zanthoff ² ; A. Lygin ³ , ¹ University of Stuttgart, Stuttgart/D; ² Evonik Industries AG, Marl/D; ³ Evonik Industries, Darmstadt/D

Stadtsaal

18:00	HANNS HOFMANN AWARD 2015 – award ceremony and lecture
18:30	EFCE 2015 excellent award and lecture
19:00	POSTER PARTY at the Exhibition Area (19:00 – 21:00)

Thursday, 29 October 2015

Stadtsaal

Chair: B. Kraushaar-Czarnetzki, Karlsruhe Institute of Technology (KIT), Karlsruhe/D

09:00	PLENARY LECTURE Novel trends in catalytic reaction engineering D. Murzin, Åbo Akademi University, Turku-Åbo/FIN
10:00	COFFEE BREAK

Stadtsaal

Catalytic Engineering

Chair: B. Kraushaar-Czarnetzki, Karlsruhe Institute of Technology (KIT), Karlsruhe/D

10:30	Supercritical CO₂ based synthesis of supported metallic nanoparticles M. Türk ¹ ; M. Crone ¹ , ¹ Karlsruhe Institute of Technology (KIT), Karlsruhe/D
10:50	Preparation of carbon supported nickel catalysts by ion adsorption impregnation B. Etzold ¹ ; A. Kern ¹ ; B. Zierath ¹ ; T. Fey ¹ , ¹ Universität Erlangen-Nürnberg, Erlangen/D
11:10	Monitoring and modelling of spatial temperature fields in catalytic sponge packings upon exothermal reaction in a cooled-wall reactor I. Gräff ¹ ; B. Kraushaar-Czarnetzki ¹ , ¹ Karlsruhe Institute of Technology (KIT), Karlsruhe/D
11:30	Intensification of heat transport in Fischer-Tropsch fixed bed reactors using Phase Change Material (PCM) A. Odunsi ¹ ; T. O'Donovan ¹ ; D. Reay ¹ , ¹ Heriot-Watt University, Edinburgh/UK
11:50	An initial assessment of water's potential impact in an intensified Fischer-Tropsch synthesis process based on microchannel H. Robota ¹ ; F. Letellier ¹ ; A. Ciric ² , ¹ Velocys, Plain City/USA; ² University of Dayton, Dayton/USA
12:10	LUNCH, POSTERS & EXHIBITION

Stadtsaal

Chair: A. Seidel-Morgenstern, Max-Planck-Institut für Dynamik komplexer technischer Systeme, Magdeburg/D

14:00	PLENARY LECTURE Fabrication and surface reaction studies of transition metal nanoparticles on nanoparticle metal oxide supports J. Hemminger, University of California, Irvine/USA
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Stadtsaal

Catalytic Engineering

Chair: A. Seidel-Morgenstern, Max-Planck-Institut für Dynamik komplexer technischer Systeme, Magdeburg/D

15:05	Pilot plant processing of methacrolein to methacrylic acid: searching for causes of the HPA catalyst deactivation S. Illies ¹ ; B. Kraushaar-Czarnetzki ² , ¹ Institute of Chemical Process Engineering (CVT), KIT, Karlsruhe/D; ² Karlsruhe Institute of Technology (KIT), Karlsruhe/D
15:25	Catalytic methane combustion on a platinum-gauze: experimental reactor profiles, spatially resolved laser induced fluorescence spectroscopy and numerical reactor simulations R. Horn ¹ ; H. Schwarz ² , ¹ TU Hamburg, Hamburg/D; ² Fritz Haber Institute of the Max Planck Society, Berlin/D
15:45	Comparison of reactor designs on the mass transfer and kinetics of glycerol hydrochlorination: towards innovative tubular reactors C. de Araujo Filho ¹ ; K. Eränen ¹ ; J. Mikkola ¹ ; T. Salmi ¹ , ¹ Åbo Akademi University, Turku/FIN
16:05	COFFEE BREAK

Stadtsaal

Catalytic Engineering

Chair: D. Murzin, Åbo Akademi University, Turku-Åbo/FIN

16:30	A redox kinetic model of NO oxidation over a commercial Cu-zeolite catalyst for diesel exhaust aftertreatment A. Fahami ¹ ; I. Nova ¹ ; E. Tronconi ¹ , ¹ Politecnico di Milano, Milano/I
16:50	A tale of two sites? Steady state and transient kinetic analysis studies to elucidate evolution of surface site populations in emissions control catalysts during their lifetime S. Wilkinson ¹ ; J. Münch ² ; I. Hitchcock ³ ; M. Simmons ⁴ ; A. York ³ ; H. Stitt ¹ , ¹ Johnson Matthey, Billingham/UK; ² Johnson Matthey Catalysts GmbH, Redwitz/D; ³ Johnson Matthey Technology Centre, Reading/UK; ⁴ University of Birmingham/UK
17:10	Development of a dual circulating fluidized bed reactor system for non-oxidative aromatization of methane over Mo/HZSM-5 catalyst Z. Zhang ¹ ; Y. Suzuki ¹ ; Y. Xu ¹ ; Y. Song ¹ , ¹ National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba/J
17:30	Formic acid as flexible CO and H₂ source in synthesis gas production K. Glowienka ¹ ; J. Thiessen ¹ ; C. Kern ¹ ; A. Jess ¹ , ¹ University of Bayreuth/D
19:00	BAVARIAN EVENING at the Augustiner Keller in Munich (19:00 – 23:00)

Thursday, 29 October 2015

Stadtsaal

Chair: B. Kraushaar-Czarnetzki, Karlsruhe Institute of Technology (KIT), Karlsruhe/D

09:00	PLENARY LECTURE Novel trends in catalytic reaction engineering D. Murzin, Åbo Akademi University, Turku-Åbo/FIN
10:00	COFFEE BREAK

Säulensaal

Reactor Engineering

Chair: A. Gavriilidis, University College London/UK

10:30	Evaluation of possible performance improvement through periodic operation for the reaction of acetic acid anhydride hydrolysis – Nonlinear frequency response approach D. Nikolic ¹ ; M. Felischak ² ; A. Seidel-Morgenstern ³ ; M. Petkovska ¹ , ¹ University of Belgrade, Belgrade/SRB; ² Otto-von-Guericke-Universität Magdeburg, Magdeburg/D; ³ Max-Planck-Institut für Dynamik komplexer technischer Systeme, Magdeburg/D
10:50	Analysis of three-phase Fischer-Tropsch reactors under transient operation H. Eilers ¹ ; G. Schaub ¹ , ¹ Karlsruhe Institute of Technology (KIT), Karlsruhe/D
11:10	Structural and operational optimality of adsorptive reactors M. Hussainy ¹ ; D. Agar ¹ , ¹ TU Dortmund, Dortmund/D
11:30	Continuous heterogeneous oxidation of benzyl alcohol using a packed bed ceramic membrane reactor A. Constantinou ¹ ; G. Wu ¹ ; S. Kuhn ² ; G. Hutchings ³ ; P. Ellis ⁴ ; D. Bethell ⁵ ; A. Gavriilidis ¹ , ¹ University College London/UK; ² KU Leuven/B; ³ Cardiff University, Cardiff/UK; ⁴ Johnson Matthey, Reading/UK; ⁵ University of Liverpool/UK
11:50	Design and scale-up of a high-performance multitubular reactor for propylene oxide B. de Groot ¹ ; A. Cano ¹ ; Z. Urban ¹ ; M. Matzopoulos ¹ , ¹ Process Systems Enterprise Ltd, London/UK
12:10	LUNCH, POSTERS & EXHIBITION

Stadtsaal

Chair: A. Seidel-Morgenstern, Max-Planck-Institut für Dynamik komplexer technischer Systeme, Magdeburg/D

14:00	PLENARY LECTURE Fabrication and surface reaction studies of transition metal nanoparticles on nanoparticle metal oxide supports J. Hemminger, University of California, Irvine/USA
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Säulensaal

Reactor Engineering

Chair: M. Siebenhofer, TU Graz/A

15:05	KEYNOTE LECTURE Pilot scale investigations to support modelling of fluidised bed methanation reactors for biomethane and power-to-gas T. Schildhauer ¹ ; F. Schillinger ¹ ; S. Maurer ¹ ; J. Witte ¹ ; S. Teske ¹ ; S. Biollaz ² , ¹ Paul Scherrer Institut, Villigen/CH
15:45	Guidelines for selecting gas-solid vortex reactor operating conditions based on hydrodynamic characteristics M. Pantzali ¹ ; J. Kovacevic ¹ ; G. Heynderickx ¹ ; G. Marin ¹ , ¹ Ghent University, Ghent/B
16:05	COFFEE BREAK

Säulensaal

Reactor Engineering

Chair: T. Salmi, Åbo Akademi University, Turku-Åbo/FIN

16:30	The Taylor-Couette disc reactor E. Aksamija ¹ ; M. Siebenhofer ¹ , ¹ TU Graz, Graz/A
16:50	Characterization of a spinning disc reactor of the rotor-stator type for gas-liquid multiphase operation F. Haseidl ¹ ; J. Pottbäcker ¹ ; K. Hinrichsen ¹ , ¹ TU München, Garching bei München/D
17:10	The inclined rotating tubular fixed bed reactor for process intensification of heterogeneous catalytic multiphase reactions H. Härting ¹ ; M. Schubert ¹ ; R. Lange ² , ¹ Helmholtz-Zentrum Dresden-Rossendorf, Dresden/D; ² TU Dresden, Dresden/D
17:30	A model-based method to scale trickle bed reactors C. Hecht ¹ ; M. Grünwald ¹ ; C. Willems ² ; R. Leiberich ² , ¹ Ruhr-Universität Bochum, Bochum/D; ² Lanxess Deutschland GmbH, Leverkusen/D
19:00	BAVARIAN EVENING at the Augustiner Keller in Munich (19:00 – 23:00)

Thursday, 29 October 2015

Stadtsaal

Chair: B. Kraushaar-Czarnetzki, Karlsruhe Institute of Technology (KIT), Karlsruhe/D

09:00	PLENARY LECTURE Novel trends in catalytic reaction engineering D. Murzin, Åbo Akademi University, Turku-Åbo/FIN
10:00	COFFEE BREAK

Kleiner Saal

Multiphase Systems

Chair: A. Jess, Universität Bayreuth/D

10:30	Micro-structured polymer foams formed by spinodal decomposition A. Nistor ¹ ; J. Kosek ¹ ; M. Vonka ¹ ; A. Rygl ¹ ; M. Voclova ¹ , ¹ University of Chemistry and Technology Prague/CZ
10:50	Kinetics of H₂O₂ direct synthesis in multiphase reactors: batch, semibatch and trickle bed N. Gemo ¹ ; A. Bernardini ² ; P. Biasi ¹ ; J. Mikkola ¹ ; T. Salmi ¹ , ¹ Åbo Akademi University, Turku-Åbo/FIN; ² Università di Padova/I
11:10	Application of a biocatalytic cascade reaction with contrary reaction specifications J. von Langermann ¹ ; D. Uhrich ¹ ; J. Peinemann ¹ ; S. Wapenhensch ¹ , ¹ University of Rostock, Rostock/D
11:30	Kinetic modelling strategy for an exothermic multiphase reactor system J. Zheng ¹ ; S. Leveueur ¹ ; B. Taouk ¹ ; F. Burel ¹ ; T. Salmi ² , ¹ INSA de Rouen, Saint-Etienne-du-Rouvray/F; ² Åbo Akademi University, Turku-Åbo/FIN
11:50	Reaction-diffusion modeling of polyolefin fiber functionalization D. Hickman ¹ ; E. Hukkanen ¹ ; H. Wang ² ; M. Behr ¹ ; L. Brehm ¹ ; B. Haskins ¹ ; M. Ferries ¹ , ¹ The Dow Chemical Company, Midland/USA; ² The Dow Chemical Company, Freeport/USA
12:10	LUNCH, POSTERS & EXHIBITION

Stadtsaal

Chair: A. Seidel-Morgenstern, Max-Planck-Institut für Dynamik komplexer technischer Systeme, Magdeburg/D

14:00	PLENARY LECTURE Fabrication and surface reaction studies of transition metal nanoparticles on nanoparticle metal oxide supports J. Hemminger, University of California, Irvine/USA
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Kleiner Saal

Micro Reaction Engineering

Chair: L. Kiwi-Minsker, Ecole Polytechnique Federale de Lausanne/CH

15:05	Operation of a complete pilot plant for biodiesel synthesis under supercritical conditions G. Kolb ¹ ; J. Schürer ¹ ; R. Thiele ¹ ; O. Wiborg ¹ ; A. Ziogas ¹ , ¹ Fraunhofer ICT-IMM, Mainz/D
15:25	Microchannel enabled reforming of glycerol to hydrogen over Ni-based catalysts S. Koc ¹ ; A. Avcı ¹ , ¹ Bogazici University, Istanbul/TR
15:45	Inkjet printing and magnetron sputtering of intermetallic catalyst into micro channels for selective hydrogenation of acetylene M. Siebert ¹ ; R. Zimmermann ² ; M. Armbrüster ³ ; R. Dittmeyer ¹ , ¹ Karlsruhe Institut für Technologie (KIT), Eggenstein-Leopoldshafen/D; ² Max Planck Institute of Chemical Physics of Solids, Dresden/D; ³ TU Chemnitz/D
16:05	COFFEE BREAK

Kleiner Saal

Micro Reaction Engineering

Chair: E. Klemm, University of Stuttgart/D

16:30	KEYNOTE LECTURE Suspension catalysis with biphasic slug flow in microchannels D. Agar ¹ ; F. Scheiff ² , ¹ TU Dortmund/D; ² BASF SE, Ludwigshafen/D
17:10	Laser Raman spectroscopy with pulsed laser applied on two-phase reactions D. Schurr ¹ ; G. Rinke ¹ ; R. Dittmeyer ¹ , ¹ Karlsruhe Institute of Technology (KIT), Eggenstein-Leopoldshafen/D
17:30	In-line reaction monitoring of microreaction processes by laser spectroscopy D. Boskovic ¹ ; S. Panic ¹ ; W. Schweikert ¹ ; S. Löbbecke ¹ ; B. Rossmann ¹ ; U. Mitrikevičičūtė ¹ , ¹ Fraunhofer Institute Chemical Technology ICT, Pfinztal/D
19:00	BAVARIAN EVENING at the Augustiner Keller in Munich (19:00 – 23:00)

Friday, 30 October 2015

Stadtsaal

Chair: U. Kragl, Universität Rostock/D

09:00	PLENARY LECTURE Reaction engineering challenges related to hydrogen storage in Liquid Organic Hydrogen Carriers (LOHCs) P. Wasserscheid, Universität Erlangen-Nürnberg, Erlangen/D
10:00	COFFEE BREAK

Stadtsaal

Industrial Frontiers

Chair: D. Hickman, The Dow Chemical Company, Midland/USA

10:30	KEYNOTE LECTURE Alternative butadiene production by oxidative dehydrogenation of butene feedstocks F. Gärtner ¹ ; G. Stochniol ² ; H. Zanthoff ² ; S. Peitz ² ; F. Heinroth ³ , ¹ Evonik Technology & Infrastructure GmbH, Marl/D; ² Evonik Industries AG, Marl/D; ³ Evonik Industries AG, Hanau/D
11:10	Control challenges of surface active components in modular continuous intensified production D. Heitmann ¹ ; S. Werner ¹ ; J. Appel ¹ , ¹ Clariant Produkte (Deutschland) GmbH, Burgkirchen/D
11:30	FT reactor for small-scale GTL technology B. de Groot ¹ ; Z. Urban ¹ , ¹ Process Systems Enterprise, London/UK
11:50	How process analytical technologies support chemical reaction engineering towards efficient processing C. Minnich ¹ , ¹ S-PACT GmbH, Aachen/D
12:15	LUNCH, POSTERS & EXHIBITION

Stadtsaal

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

14:00	PLENARY LECTURE Engineering for a sustainable energy future R. Agrawal, Purdue University, West Lafayette, IN/USA
15:00	POSTER PRIZE AWARD donated by ProcessNet subject division Chemical Reaction Engineering and CLOSING REMARKS of the symposium O. Hinrichsen

Friday, 30 October 2015

Stadtsaal

Chair: U. Kragl, Universität Rostock/D

09:00	PLENARY LECTURE Reaction engineering challenges related to hydrogen storage in Liquid Organic Hydrogen Carriers (LOHCs) P. Wasserscheid, Universität Erlangen-Nürnberg, Erlangen/D
10:00	COFFEE BREAK

Säulensaal

CO₂ Utilization

Chair: H. Vogel, TU Darmstadt/D

10:30	CO₂ methanation: catalyst synthesis and kinetics F. Koschany ¹ ; D. Schlereth ¹ ; K. Hinrichsen ¹ , ¹ TU München, Garching/D
10:50	Methane from carbon dioxide: industrial implementation and technical and economic benefits G. Baldauf-Sommerbauer ¹ ; S. Lux ¹ ; M. Siebenhofer ¹ , ¹ TU Graz/A
11:10	CO₂ capture and conversion by combined chemical looping L. Buelens ¹ ; A. Dharanipragada ¹ ; V. Galvita ¹ ; H. Poelman ¹ ; G. Marin ¹ , ¹ Ghent University, Ghent/B
11:30	Methanol production using reactive-adsorption of carbon dioxide generated in methane oxidative coupling (OCM) reactor H. Godini ¹ ; M. Khadivvia ¹ ; H. Dousti ¹ ; O. Görke ¹ ; L. Thum ¹ ; G. Vetter ¹ ; R. Schomäcker ¹ ; G. Wozny ¹ , ¹ TU Berlin/D
11:50	ACER: novel process concepts for the catalytic synthesis of acrylic acid derivatives from carbon dioxide and ethylene S. Schunk ¹ ; E. Prasetyo ¹ ; M. Lejkowski ¹ ; A. Gordillo ¹ ; C. Futter ¹ ; T. Schaub ² ; M. Limbach ³ ; M. Hunger ⁴ ; E. Klemm ⁴ , ¹ hte GmbH, Heidelberg/D; ² CaRLa (Catalysis Research Laboratory), Heidelberg/D; ³ BASF SE, Ludwigshafen/D; ⁴ University of Stuttgart/D
12:15	LUNCH, POSTERS & EXHIBITION

Stadtsaal

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

14:00	PLENARY LECTURE Engineering for a sustainable energy future R. Agrawal, Purdue University, West Lafayette, IN/USA
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Friday, 30 October 2015

Stadtsaal

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10:00	COFFEE BREAK

Kleiner Saal

Reaction Engineering of Fossil Fuels

Chair: R. Horn, Tu Hamburg-Harburg/D

10:30	Simulating LCO gas oils hydrotreating by means of Monte-Carlo techniques: molecular reconstruction and kinetic modelling M. Lopez Abelairas ¹ ; L. Pereira de Oliveira ¹ ; J. Verstraete ¹ , ¹ IFP Energies Nouvelles, Solaize/F
10:50	Development of molecule-based kinetic lumping model for design and simulation of refinery reactor T. Nguyen ¹ ; S. Teratani ² ; R. Tanaka ² ; M. Hirao ¹ , ¹ The University of Tokyo, Tokyo/J; ² Japan Petroleum Energy Center, Chiba/J
11:10	Unraveling the role of sulfur components on coke formation during steam cracking: kinetic modeling and validation N. Olahova ¹ ; M. Djokic ¹ ; R. Van de Vijver ¹ ; M. Reyniers ¹ ; K. Van Geem ¹ ; G. Marin ¹ , ¹ Ghent University, Ghent/B
11:30	Oxidative dehydrogenation of n-butane in a two-zone fluidized bed reactor over Mo-V catalysts J. Rischard ¹ ; C. Diehm ¹ ; O. Deutschmann ² , ¹ Karlsruhe Institute of Technology (KIT), Karlsruhe/D; ² Karlsruhe Institute of Technology, Eggenstein-Leopoldshafen/D
11:50	Bifurcation analysis of a moving bed reactor for the high temperature pyrolysis of methane A. Munera Parra ¹ ; F. Platte ¹ ; D. Agar ¹ , ¹ TU Dortmund/D
12:15	LUNCH, POSTERS & EXHIBITION

Stadtsaal

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

14:00	PLENARY LECTURE Engineering for a sustainable energy future R. Agrawal, Purdue University, West Lafayette, IN/USA
15:00	POSTER PRIZE AWARD donated by ProcessNet subject division Chemical Reaction Engineering and CLOSING REMARKS of the symposium O. Hinrichsen

POSTER PARTY

The authors are requested to be present at their poster(s) for discussion during the poster party on **Wednesday, 28 October 2015 from 19:00 – 21:00**
Drinks and snacks will be served by invitation of the organiser.

The posters will be displayed continuously throughout the conference.

Reaction Engineering Fundamentals

- 01.01 **Kinetic investigation of CO₂ conversion with transient testing methods**
S. Ewald¹; K. Hinrichsen¹, ¹ TU München, Garching/D
- 01.02 **On the temperature programmed desorption of hydrogen from polycrystalline copper**
M. Fichtl¹; S. Ewald¹; K. Hinrichsen¹, ¹ TU München, Garching/D
- 01.03 **Identification, thermodynamics and kinetic behavior of complex decene isomer mixtures used in homogeneous rhodium catalysis**
A. Jörke¹; E. Kohls²; S. Triemer¹; A. Seidel-Morgenstern²; M. Stein²; C. Hamel³, ¹ Otto von Guericke Universität, Magdeburg/D; ² Max Planck Institute for Dynamics of Complex Technical Systems, Magdeburg/D; ³ Hochschule Anhalt, Köthen/D
- 01.04 **One night in a reactor – an instructive example to explain reaction engineering to the public**
V. Kolb¹; A. Munera Parra²; J. Kuschnerow³; P. Haltenort⁴; M. Selinsek⁵; S. Elsayed⁵, ¹ Universität Erlangen-Nürnberg, Erlangen/D; ² TU Dortmund, Dortmund/D; ³ Hammann GmbH, Annweiler am Trifels/D; ⁴ TU Kaiserslautern, Kaiserslautern/D; ⁵ Karlsruher Institut für Technologie (KIT), Eggenstein-Leopoldshafen/D
- 01.05 **Mass transfer in diluted and undiluted packed beds**
E. Reichelt¹; I. Grünberg²; M. Jahn²; R. Lange¹, ¹ TU Dresden/D; ² Fraunhofer IKTS, Dresden/D
- 01.06 **Experimental study on bubbly flows – boundary layer dynamics, influence on mass transfer and chemical reaction**
J. Timmermann¹; M. Schlüter¹; M. Hoffmann¹, ¹ TU Hamburg-Harburg, Hamburg/D
- 01.07 **Modelling of methyl chloride purification by condensation**
T. Kilpiö¹; S. Schmidt¹; K. Eränen¹; T. Salmi¹, ¹ Åbo Akademi University, Turku/FIN
- 01.08 **Isotope marked transient experiments to survey the role of lattice oxygen of Mn_xO_y-Na₂WO₄/SiO₂ in OCM**
S. Parishan¹; V. Fleischer¹; R. Schomäcker¹, ¹ TU Berlin/D
- 01.09 **A model for the residence time distribution of convection dominated laminar flows with near-wall diffusion effects**
M. Wörner¹, ¹ Karlsruhe Institute of Technology (KIT), Karlsruhe/D
- 01.10 **Importance of fixed-bed kinetic measurements for thermo-chemical energy storage**
M. Deutsch¹; C. Aumeyr¹; T. Fellner¹; F. Winter¹, ¹ Vienna University of Technology, Vienna/A
- 01.11 **In-situ FT-IR reaction monitoring using standard detector**
M. Kleimann¹, ¹ ABB Automation GmbH, Frankfurt/D
- 01.12 **Volume-to-surface ratio effects on methane oxidative coupling**
V. Alexiadis¹; J. Thybaut¹; T. Serres²; Y. Schuurman²; C. Mirodatos²; G. Marin¹, ¹ Ghent University, Ghent/B; ² Institut de Recherches sur la Catalyse et l'Environnement de Lyon/F
- 01.13 **Single step synthesis of dimethyl ether – comparison of kinetic data obtained in two reactor types**
T. Henrich¹; J. Abeln¹; J. Sauer¹, ¹ Karlsruher Institut für Technologie (KIT), Eggenstein-Leopoldshafen/D
- 01.14 **New models for substitution of cellulose and depolymerisation of polysaccharides**
T. Salmi¹; S. Teerikoski¹, ¹ Åbo Akademi University, Turku-Åbo/FIN
- 01.15 **Nitric oxide reduction in heavy-duty diesel off-gas by NH₃-SCR in front of the turbocharger (Pre-Turbo SCR)**
T. Rammelt¹; J. Böhm²; R. Gläser¹, ¹ Universität Leipzig/D; ² Universität Leipzig/Fakultät für Physik und Geowissenschaften, Leipzig/D
- 01.16 **Influence of reaction parameters on seed precipitation of hematite from sulfuric acid media**
M. Quade¹; W. Pauer¹; A. Heidel²; H. Kadereit²; H. Moritz¹, ¹ University of Hamburg/D; ² Aurubis AG, Hamburg/D

Multiphase Systems

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A. Fischer¹; K. Müller¹; W. Arlt¹, ¹ Universität Erlangen-Nürnberg, Erlangen/D
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- 02.05 **Microemulsion systems as reaction media for the rhodium-catalyzed hydroformylation of long-chain olefins**
T. Pogrzeba¹; R. Schomäcker¹, ¹ TU Berlin/D
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- 02.06 **Experimental study and predictions by PCP-SAFT on solvent effects for the hydroformylation of 1-dodecene in a multiphase system**
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A. Zellner¹; R. Suntz¹; O. Deutschmann¹, ¹ Karlsruhe Institute of Technology, Eggenstein-Leopoldshafen/D
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Y. Zhang¹; W. Schwieger¹; T. Herrmann¹; D. Schmidt¹; T. Hensler¹; K. Wirth¹, ¹ Universität Erlangen-Nürnberg, Erlangen/D
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A. Reinsdorf¹; W. Korth¹; A. Jess¹; K. Florian², ¹ Universität Bayreuth/D; ² Evonik Industries AG, Marl/D
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W. Suprun¹; T. Rammelt¹; R. Gläser¹, ¹ Universität Leipzig/D
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A. van Veen¹; M. Chaar²; M. Muhler², ¹ University of Warwick, Coventry/UK; ² Ruhr-Universität Bochum/D
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C. Sun¹; P. Pfeifer¹; R. Dittmeyer¹, ¹ Karlsruhe Institute of Technology(KIT), Eggenstein-Leopoldshafen/D
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P. Hermann¹; D. Ziegenbalg¹; M. Rupp¹; E. Klemm¹; T. Cents², ¹ University of Stuttgart/D; ² Sasol Technology Netherlands B.V, Enschede/NL
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A. Georg¹; D. Altenburger², ¹ Fluitex mixing + reaction solutions AG, Neftenbach/CH; ² Fluitec AG, Neftenbach/CH
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S. Aworinde¹; A. Lapkin¹, ¹ University of Cambridge/UK

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C. Wagner¹; G. Rabsch¹; R. Dittmeyer¹; P. Pfeifer¹, ¹ Karlsruhe Institute of Technology (KIT), Eggenstein-Leopoldshafen/D
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A. Eberhardt¹; S. Löbbecke¹, ¹ Fraunhofer ICT, Pfinztal/D
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Y. Khan¹; M. Marin²; R. Karinen²; J. Kanervo²; J. Lehtonen², ¹ Aalto University, Espoo/FIN; ² Aalto University, Aalto/FIN
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D. Eckes¹; M. Busch¹, ¹ TU Darmstadt/D
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J. Kettner¹; T. Sell²; M. Dietrich²; M. Bartke¹, ¹ Martin-Luther-University Halle-Wittenberg, Halle/D; ² Lummus Novolen Technology GmbH, Mannheim/D
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M. Balyschewa¹; M. Busch¹, ¹ TU Darmstadt/D
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M. Kroupa¹; M. Vonka¹; M. Soos¹; J. Kosek¹, ¹ University of Chemistry and Technology Prague/CZ
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E. Laryea¹; M. Kind¹, ¹ Karlsruher Institute of Technology (KIT), Karlsruhe/D
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P. Pladis¹; O. Kotrotsiou²; C. Kiparissides², ¹ Centre for Research and Technology Hellas, Thessaloniki/GR; ² Aristotle University of Thessaloniki/GR
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- 05.15 **Process intensification with respect to control of an emulsion copolymerization in a continuous smart scale reactor**
K. Rossow¹; W. Pauer¹; H. Moritz¹, ¹ University of Hamburg/D
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F. Kubannek¹; U. Krewer¹, ¹ TU Braunschweig/D
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P. Mazur¹; J. Pocedic¹; J. Vrana²; J. Dundalek²; J. Kosek², ¹ University of West Bohemia in Pilsen, Plzen/CZ; ² University of Chemistry and Technology Prague/CZ
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S. Moshtarikhah¹; N. Oppers¹; T. de Groot²; J. Keurentjes¹; J. Schouten¹; J. van der Schaaf¹, ¹ Technische Universiteit Eindhoven/NL; ² Akzo Nobel Industrial Chemicals B.V., Amersfoort/NL
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M. Neumann¹; R. Schomäcker¹; P. Strasser¹, ¹ TU Berlin/D
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A. Michalik-Onichimowska¹; T. Beitz²; J. Riedel¹; U. Panne¹; H. Löhmannsröben², ¹ BAM Federal Institute for Materials Research and Testing, Berlin/D; ² Universität Potsdam/D
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L. Kiewidt¹; J. Thöming¹, ¹ Universität Bremen/D
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S. Matthischke¹; S. Rönsch¹; R. Güttel², ¹ Deutsches Biomasseforschungszentrum gGmbH, Leipzig/D; ² TU Clausthal, Clausthal-Zellerfeld/D
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V. Fleischer¹; R. Schomäcker¹, ¹ TU Berlin/D
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G. Kiedorf¹; T. Wolff¹; A. Seidel-Morgenstern²; C. Hamel³, ¹ Max Planck Institute, Magdeburg/D; ² Max-Planck-Institut für Dynamik komplexer technischer Systeme, Magdeburg/D; ³ Hochschule Anhalt, Köthen/D
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H. Becker¹; R. Güttel¹; T. Turek¹, ¹ TU Clausthal, Clausthal-Zellerfeld/D
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H. Zander¹; J. Schlichting¹; V. Göke¹, ¹ Linde AG, Pullach/D
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M. Müller¹; A. Bösmann¹; P. Wasserscheid¹, ¹ Universität Erlangen-Nürnberg, Erlangen/D
- 08.08 **Catalytic dehydrogenation of liquid organic hydrogen carriers in a continuous tubular reactor**
R. Brehmer¹; P. Preuster¹; A. Bösmann¹; P. Wasserscheid¹, ¹ University Erlangen-Nürnberg, Erlangen/D
- 08.09 **Reforming of natural gas with SOFC anode off-gas on thermodynamic carbon formation region**
N. Kaisalo¹; J. Kihlman¹; F. Vidal Vazquez¹; P. Simell¹, ¹ VTT Technical Research Centre of Finland, Espoo/FIN

- 08.10 **Ceramic foil structures as supports for highly exothermic reactions**
M. Schaller¹; E. Reichelt²; W. Beckert³; U. Scheithauer³; U. Kragl¹; M. Jahn³, ¹ Universität Rostock/D; ² TU Dresden/D; ³ Fraunhofer IKTS, Dresden/D
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- 08.11 **Handling contact points in reactive DEM-CFD simulations of heterogeneous catalytic fixed bed reactors**
S. Rebughini¹; A. Cuoci¹; M. Maestri¹, ¹ Politecnico di Milano/I
-
- 08.12 **Design of an intensified reactor and kinetic modeling of catalyst for methanation in power-to-gas applications**
F. Vidal Vazquez¹; P. Simell¹; M. Reinikainen¹, ¹ VTT Technical Research Centre of Finland, Espoo/FIN
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- 08.13 **Statistical activity variations in diluted catalyst beds**
G. Ganzer¹; A. Daniel¹; T. Heidig¹; H. Freund¹, ¹ Universität Erlangen-Nürnberg, Erlangen/D
-
- 08.14 **A new membrane microreactor for direct synthesis of hydrogen peroxide – a step towards realization of a dream reaction?**
M. Selinsek¹; M. Kraut¹; R. Dittmeyer¹, ¹ Karlsruhe Institute of Technology (KIT), Eggenstein-Leopoldshafen/D
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- 08.15 **Application of a gas-lift loop-reactor for the dehydrogenation of dibenzyltoluene**
G. Do¹; P. Wasserscheid¹; P. Preuster¹; A. Bösmann¹, ¹ University Erlangen-Nürnberg, Erlangen/D
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- 08.16 **Model-based optimization of reaction and process conditions for the chemical absorption of CO₂ using monoethanolamine**
M. Xie¹; H. Freund¹, ¹ Universität Erlangen-Nürnberg, Erlangen/D
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- 08.17 **Cellular supports for catalytic reactors: interaction of structuring and transport processes**
H. Freund¹; A. Inayat¹; M. Klumpp¹; T. Heidig¹; E. Bianchi¹; W. Schwieger¹, ¹ Universität Erlangen-Nürnberg, Erlangen/D
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- 08.18 **Cellular supports for catalytic reactors: design of hierarchical zeolites for catalytically active composites**
W. Schwieger¹; A. Machoke¹; A. Inayat¹; T. Selvam¹; A. Inayat¹; M. Klumpp¹; H. Freund¹, ¹ Universität Erlangen-Nürnberg, Erlangen/D
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- 08.19 **Fundamental experimental and modeling study of triboelectric charging**
L. Konopka¹; S. Jantač¹; J. Kosek¹, ¹ University of Chemistry and Technology Prague/CZ
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- 08.20 **CFD simulation of the fluidized-bed and packed-bed membrane reactors for methane oxidative coupling**
H. Godini¹; M. Salehi¹; M. Askarishahi¹; G. Wozny¹; R. Schomäcker¹, ¹ TU Berlin/D
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- 08.21 **Highly conductive “packed foams” for the intensification of strongly endo- and exo-thermic catalytic processes**
C. Visconti¹; G. Groppi¹; E. Tronconi¹, ¹ Politecnico di Milano/I
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- 08.22 **1D and 2D simulation of mass transfer effects in an automotive catalytic converter**
N. Papayannakos¹; C. Templis¹, ¹ National Technical University of Athens, Zografos, Athens/GR
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- 08.23 **Periodic open cellular structures as catalyst carriers for the partial oxidation of methanol to formaldehyde**
C. Busse¹; H. Freund¹; W. Schwieger¹, ¹ Friedrich-Alexander-Universität Erlangen-Nürnberg/D
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- 08.24 **Experimental investigation of gas-liquid-distribution in periodic open cellular structures**
M. Lämmermann¹; M. Bertelshofer¹; W. Schwieger¹; H. Freund¹, ¹ Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU), Erlangen/D

CO₂ Utilization

- 09.01 **Highly active, silica supported low loaded nickel catalysts for CO₂ methanation prepared in a fluidized bed**
C. Schüler¹; K. Hinrichsen¹, ¹ TU München, Garching bei München/D
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- 09.02 **CO₂-methanation: deactivation due to sulfur poisoning**
M. Wolf¹; K. Hinrichsen¹, ¹ TU München, Garching bei München/D
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- 09.03 **First-principles insights into CO₂ activation on metals**
L. Dietz¹; S. Piccinin²; M. Maestri¹, ¹ Politecnico di Milano/I; ² CNR-Democritos c/o SISSA, Trieste/I
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- 09.04 **The route to the CO₂ valorisation for the synthesis of high-added value biochemicals via the cultivation of microalgae**
A. Karapatsia¹; G. Penloglou¹; C. Chatzidoukas¹; C. Kiparissides¹, ¹ Aristotle University of Thessaloniki/GR
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- 09.05 **Technology evaluation method for CO₂-utilizing chemical reactions**
A. Zimmermann¹; R. Schomäcker¹; C. Gürtler², ¹ TU Berlin/D; ² Bayer MaterialScience AG, Leverkusen/D
-
- 09.06 **Activation of carbon dioxide with ionic liquids**
M. Wild¹; A. Stark²; B. Abel³; K. Siefermann³, ¹ Universität Leipzig/D; ² University of KwaZulu-Natal, Durban/ZA; ³ Leibniz Institute of Surface Modification, Leipzig/D
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- 09.07 **Iron-catalyzed hydrogenation of carbon dioxide to hydrocarbons/fuels in condensed phase**
C. Mokou¹; H. Vogel²; L. Beisswenger², ¹ TU Darmstadt, Ernst-Berl-Institut für Technische und Makromolekulare Chemie, Darmstadt/D; ² TU Darmstadt/D

Biomass Conversion

- 10.01 **Lignocellulosic biofuels**
N. Schwaiger¹; H. Pucher¹; R. Feiner¹; J. Ritzberger²; P. Pucher²; M. Siebenhofer¹, ¹ TU Graz/A; ² BDI – BioEnergy International AG, Grambach/Graz/A
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- 10.02 **Hydrogenation of aqueous succinic acid from renewable resources**
J. Diedenhoven¹; C. Jensen²; H. Gehrke²; T. Turek¹, ¹ TU Clausthal, Clausthal-Zellerfeld/D; ² ThyssenKrupp Industrial Solutions AG, Essen/D
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- 10.03 **Biomass oxidation to formic acid in aqueous media using polyoxometalate catalysts (O_xFA process) – Boosting FA selectivity by in-situ extraction**
J. Albert¹; J. Reichert¹; P. Wasserscheid¹, ¹ Universität Erlangen-Nürnberg, Erlangen/D
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- 10.04 **Optimal temperature control of enzymatic batch reactor: Implications of the equilibrium model of enzyme inactivation**
C. Kirse¹; H. Briesen¹, ¹ TU München, Freising/D
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- 10.05 **Low-temperature tar catalyst for the conditioning of synthesis gas in decentralized small gasifiers**
G. Straczewski¹; H. Leibold¹, ¹ Karlsruhe Institute of Technology (KIT), Eggenstein-Leopoldshafen/D
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- 10.06 **Gasification of microalgae in supercritical water**
S. Elsayed¹; N. Boukis¹; J. Sauer¹, ¹ Karlsruhe Institute of Technology, Eggenstein-Leopoldshafen/D
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- 10.07 **Continuous aqueous phase hydrogenolysis of bio-derivable furfuryl alcohol to 1,2-pentanediol using a trickle bed reactor**
D. Götz¹; M. Lucas¹; P. Claus¹, ¹ TU Darmstadt/D
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- 10.08 **The conversion of furfuryl alcohol into 2-methylfuran at room temperature using Pd/TiO₂ catalysts.**
P. Miedziak¹; S. Iqbal¹; J. Edwards¹; G. Brett¹; D. Morgan¹; G. Hutchings¹; D. Knight¹; T. Davies²; O. Aldosari¹, ¹ Cardiff University, Cardiff/UK; ² University of Liverpool/UK
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- 10.09 **Simulation of particle flow in a twin-screw mixing reactor for fast pyrolysis of biomass residues**
R. Grandl¹; A. Funke¹; N. Dahmen¹; J. Sauer¹, ¹ Karlsruher Institut für Technologie (KIT), Eggenstein-Leopoldshafen/D
-
- 10.10 **Modelling and process intensification of continuous homogeneously and heterogeneously catalysed transesterification**
B. Likozar¹; A. Pohar¹; J. Levec², ¹ National Institute of Chemistry, Ljubljana/SLO; ² National Institute of Chemistry and Faculty of Chemistry and Chemical Technology, Ljubljana/SLO

Industrial Frontiers

- 11.01 **The well-equipped industrial reaction engineering laboratory**
D. Hickman¹; R. Dixit²; E. Hukkanen¹; P. Witt¹, ¹ The Dow Chemical Company, Midland/USA; ² The Dow Chemical Company, Freeport/USA
-
- 11.02 **Simultaneous esterification of formic acid and acetic acid and separation by reactive distillation**
D. Painer¹; S. Lux¹; M. Siebenhofer¹, ¹ TU Graz/A
-
- 11.03 **Accelerate product and process innovation through data mining and simulation**
J. Appel¹; V. Souza¹; E. Akgün¹; S. Thomas¹, ¹ Clariant Produkte (Deutschland) GmbH, Burgkirchen/D
-
- 11.04 **Pervaporation-assisted reaction concepts in ester synthesis**
S. Lux¹; T. Winkler¹; D. Painer¹; M. Siebenhofer¹, ¹ TU Graz/A

Last Minute Posters

- LMP 1 **Operando spectroscopic kinetic analysis of methanol to olefins conversion over H-SAPO-34 molecular sieves**
L. Negahdar¹; B. Weckhuysen¹, ¹ Utrecht University, Utrecht/NL
- LMP 2 **Study of pH effect on acetaldehyde-ammonia reaction**
E. Moiolli¹; S. Aghalale²; L. Schmid³; F. Enzenberger²; P. Wasserscheid²; H. Freund², ¹ FAU Erlangen-Nürnberg, Fuerth/D; ² Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU), Erlangen/D; ³ Lonza AG, Visp/D
- LMP 3 **A kinetic experiment study on partial oxidation of ethanol using fixed bed tubular reactor**
E. Behraves¹; T. Kilpio¹; K. Eranen¹; N. Kumar¹; A. Aho¹; T. Salmi¹; D. Yu. Murzin¹, ¹ Abo Akademi University, Turku/FIN
- LMP 4 **Partial oxidation of CH₄ on reduced and doped CeO₂ – A combined DFT, XRD, and NMR study**
R. Kerber¹; M. Dunstan¹; D. Halat¹; M. Gaultois¹; F. García-García²; J. Dennis³; I. Metcalfe²; C. Grey¹, ¹ University of Cambridge, Department of Chemistry, Cambridge/UK; ² Newcastle University, School of Chemical Engineering and Advanced Materials, Newcastle/UK; ³ University of Cambridge, Department of Chemical Engineering and Biotechnology, Cambridge/UK
- LMP 5 **Effect of Pressure on Methane Homogeneous Oxidation and Catalytic Oxidative Coupling**
V. Lomonosov¹; M. Sinev¹; Y. Tulenin¹; V. Makhlin², ¹ Semenov Institute of Chemical Physics, Moscow/RUS; ² ZAO Schag Company, Moscow/RUS
- LMP 6 **Theoretical Study on the Mechanism of the Reaction of Acetonitrile with its Radical Form**
G. Zorludemir¹; C. Taeschler²; N. McCann²; P. Wasserscheid³; H. Freund³, ¹ Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU), Fuerth/D; ² Research and Technology, Lonza AG, Visp/CH; ³ Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU), Erlangen/D
- LMP 7 **Numerical Optimization Study on Catalytic Dry Reforming of Methane in Packed Bed Reactors**
T. Eppinger¹; N. Jurtz¹; R. Aglave², ¹ CD-adapco, Nürnberg/D; ² CD-adapco, Houston/D
- LMP 8 **Multiphasic Hydroformylation with Polymer-Latices as Catalyst Carriers and Phase Transfer Agents**
B. Bibouche¹; D. Peral¹; R. Schomäcker¹; D. Vogt², ¹ Technische Universität Berlin/D; ² School of Chemistry, University of Edinburgh/UK
- LMP 9 **Model description of an industrial turbulent fluidized bed reactor for maleic anhydride (MA) production**
P. Foscolo¹, ¹ University of L'Aquila/I
- LMP 10 **Prediction of transport characteristics in industrial tank reactor; effect of a draft tube**
T. Moucha¹; L. Labik¹; M. Kordac¹, ¹ University of Chemistry and Technology, Prague/CZ
- LMP 11 **On the dynamic measurements of gas-liquid mass transfer; effect of oxygen probe dynamics**
T. Moucha¹; L. Labik¹, ¹ University of Chemistry and Technology, Prague, Prague/CZ
- LMP 12 **Coupling catalyst/sorbent particle and fluidized bed reactor models to simulate sorption enhanced steam methane reforming**
P. Foscolo¹, ¹ University of L'Aquila/I
- LMP 13 **Direct oxidation of methane to formic acid over HZSM-5 catalyst**
M. Alotaibi¹, ¹ KACST, Riyadh/SAR
- LMP 14 **Homogenous and Heterogenous Kinetic for Enzymes Reactor with Bio-Inspired Structured Material**
I. Mohammed¹; A. Werner¹, ¹ TU Dresden/D
- LMP 15 **Catalytic hydrogenation of phthalate esters by fixed-bed reactors---effect of flow mode.**
C. Chen¹; H. Hsu¹; C. Lee¹; C. Huang¹; J. Wu¹, ¹ Industrial Technology Research Institute, Hsinchu/RC
- LMP 16 **CFD modelling of a modular Fischer-Tropsch synthesis reactor with microchannel based cooling system**
J. Park¹; Y. Woo¹; M. Park¹; K. Jun², ¹ Ajou University, Suwon/ROK; ² Korea Research Institute of Chemical Technology, Daejeon/ROK
- LMP 17 **Optimization Sampling Reactor for Precise, Repeatable Reaction Chemistry**
J. de Keijzer¹; J. Fisher¹; R. Sidler¹; P. Sun¹, ¹ Freeslate, Sunnyvale/USA
- LMP 18 **Investigations of the pyrolysis of waste tyres in a laboratory reactor**
R. Cherbański¹; K. Wróblewski¹; E. Molga¹, ¹ Warsaw University of Technology, Warsaw/PL
- LMP 19 **Carbon dioxide absorption of amine activated aqueous N-methyldiethanolamine solutions**
Y. Kim¹; J. Choi¹; S. Yun¹; S. Nam¹; S. Park¹; Y. Yoon¹, ¹ Korea institute of energy research, Daejeon/ROK
- LMP 20 **CO₂ absorption characteristics of new chemical phase transition (CPT) absorbent**
S. Yun¹; Y. Kim¹; J. Choi¹; S. Nam¹; I. Chun¹; Y. Yoon¹, ¹ Korea institute of energy research, Daejeon/ROK
- LMP 21 **Mass transfer of carbon dioxide in aqueous amine solutions**
J. Choi¹; Y. Kim¹; S. Yun¹; S. Nam¹; S. Park¹; Y. Yoon¹; J. Lee², ¹ Korea institute of energy research, Daejeon/ROK; ² Korea university, seoul/ROK
- LMP 22 **Photo-Fenton Oxidation of Amoxicillin in Pharmaceutical Wastewaters**
A. Amirov¹; S. Pouloupoulos¹, ¹ Kazakh-British Technical University, Almaty/KZ

- LMP 23 **Physico-chemical Interactions between Impurities for Abnormal Pressure-Drop Rise in Hydrotreaters**
 S. Das Sharma¹; A. Deshmukh²; J. Nehemiah²; A. Jha¹; V. Balachandran²; A. Das¹, ¹ Reliance Industries Ltd., Jamnagar/IND;
² Reliance Industries Ltd., Navi Mumbai/IND
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- LMP 24 **Hydrodynamics and mass transfer in 3D-printed reactor geometries for multiphase flow**
 M. Gelhausen¹; D. Agar¹, ¹ TU Dortmund/D
-
- LMP 25 **Package “Cantera” as a tool in the simulation of gas phase reactions during Ammonia the oxidation**
 P. Hernandez-Arango¹; H. Vogel²; A. Drochner²; M. Votsmeier³, ¹ TU Darmstadt Ernst-Berl-Institut, Darmstadt/D;
² Technische Universität Darmstadt/D; ³ Umicore AG & Co. KG, Hanau/D
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- LMP 26 **SNG production from gasified biomass, electrolytic H₂ and captured CO₂**
 M. Vogt¹; S. Fendt²; H. Spliethoff², ¹ Technische Universität München, Garching/D; ² Institute for Energy Systems, Technische Universität München, Garching/D
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- LMP 27 **Bio-oil upgrading process development**
 C. Liebold¹, ¹ hte GmbH, Heidelberg/D
-
- LMP 28 **Reaction engineering challenges for selective hydrogenolysis of sugar derivatives**
 B. Kühne¹, ¹ Technische Universität Darmstadt/D
-
- LMP 29 **The intensification processes as a strategy for palm oil with high acid index conversion in biodiesel**
 K. Gabriel¹; A. Barros¹; M. Correia²; I. Watson³, ¹ Instituto Superior Politécnico de Tecnologias e Ciências, Luanda/ANG;
² Instituto Superior Tecnico, Lisboa/P; ³ University of Glasgow, Glasgow/UK
-
- LMP 30 **Combined steam- and CO₂-gasification of dry biomass in an allothermal fluidised bed gasifier**
 F. Fischer¹; S. Fendt¹; S. Herrmann¹; H. Spliethoff¹, ¹ Institute for Energy Systems, Technische Universität München, Garching/D
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- LMP 31 **Hydroprocessing of vegetable oil**
 C. Liebold¹, ¹ hte GmbH, Heidelberg/D



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