

DGMK

International Conference

**Challenges for Petrochemicals and Fuels:
Integration of Value Chains
and Energy Transition**

October 10 – 12, 2018
Berlin, Germany



German Society for Petroleum and Coal
Science and Technology

Petrochemistry Division

Integration of value chains in petrochemistry and fuels is nowadays a major issue in the use of hydrocarbon sources. This international conference provides a forum for chemists and engineers from refinery, petrochemistry and from the chemical industry as well as from academia to discuss the resulting challenges and opportunities.

Ten Keynote Lectures, 16 Lectures and 17 Posters will be presented at the conference. Additional "last minute posters" are welcome. Authors who intend to present a "last minute poster" are kindly requested to contact the Scientific Chairmen at or before the conference.

The best poster of the conference will be selected by the attendees for the "Best Poster Award".

This international conference is organised by the DGMK *German Society for Petroleum and Coal Science and Technology* in association with the *Società Chimica Italiana* (SCI), the Austrian ÖGEW *Österreichische Gesellschaft für Erdölwissenschaften* and Leibniz-Institut für Katalyse e.V. (LIKAT), Rostock.

Scientific Chairmen:

Prof. Dr. Stefan Ernst, Technische Universität Kaiserslautern
Prof. Dr. Matthias Beller, Leibniz-Institut für Katalyse e.V., LIKAT, Rostock
Dr. Michael Bender, BASF SE, Ludwigshafen
Dr. Harald Häger, Evonik Performance Materials GmbH, Marl
Prof. Dr. Andreas Jess, Universität Bayreuth
Prof. Dr. Johannes A. Lercher, Technische Universität München
Dr. Mario Marchionna, Saipem S.p.A.,
San Donato Milanese
Prof. Dr. Dieter Vogt, Technische Universität Dortmund

Programme

Wednesday, October 10, 2018

12.00 **Registration at the Conference Desk**

13.00 **Opening and Welcome Address**
Stefan Ernst

Session Chairman: Dieter Vogt

13.30 *Keynote Lecture:* J.-P. Lange
Shell Global Solutions International B.V., Shell Technology
Centre Amsterdam, The Netherlands
Petrochemicals – An Industry in Transition

14.15 M. Marchionna
Saipem, Technology Innovation and Development, San
Donato Mil., Italy
**Sustainable Innovation Approaches of an Oil and
Gas Contractor through the Energy Transition**

14.45 G. Bachmann
OMV Refining & Marketing GmbH, Vienna, Austria
Energy Management in OMV Refineries

15.15 I. Rossetti*, A. Tripodi*, D. Cespi**/**, F. Passarini**,
F. Cavani**, G. Ramis****
*Chemical Plants and Industrial Chemistry Group,
Università degli Studi di Milano, Italy, **Dip. Chimica
Industriale "Toso Montanari", Università di Bologna, Italy,
***Environmental Management and Consulting (EMC)
Innovation Lab Srl, Rimini, Italy, ****Dipl. Ing. Chimica,
Civile ed Ambientale, Università degli Studi di Genova,
Italy
**Fossil vs. Renewable Sources for Chemicals
Production: A new Process for the Production of
Acetonitrile from Bioethanol Compared with the
Sohio Process**

15.45 **Coffee Break**

Wednesday, October 10, 2018

- 16.15 *Keynote Lecture:* C.-P. Hälsig
Fluor B.V., Haarlem, The Netherlands
Refineries - Stranded Assets or a Chance for a Second Career?
- 17.00 *Keynote Lecture:* K. Büker*, R. Kleinschmidt*,
W. Lüke*, M. Oles**
*thyssenkrupp Industrial Solutions AG, Dortmund,
**thyssenkrupp AG, Essen
Carbon2Chem® – A Cross-Industrial Network
- 17.45 M. Onkarnath Garg*, M.R. G. Rao*, A. Jha*,
A. Sapre*, P. Ghosh**, S. Kuma**, S.M. Nanoti**,
B.R. Nautiyal**
*Reliance Industries Limited, Navi Mumbai, India, **Indian
Institute of Petroleum, Dehradun, India
**Simultaneous Production of Benzene and
Gasoline from C-6 Heart Cut of FCC Gasoline**

Next Conference:

Circular Economy - A Fresh View on Petrochemistry

October 9 – 11, 2019
in Dresden, Germany

Save the Date!

Thursday, October 11, 2018

Session Chairman: Mario Marchionna

- 8.30 *Keynote Lecture:* P. Wasserscheid*/**
*Lehrstuhl für Chemische Reaktionstechnik, Friedrich-Alexander-Universität Erlangen-Nürnberg, Erlangen, Germany, **Forschungszentrum Jülich, Helmholtz-Institut Erlangen-Nürnberg, Germany
Liquid Organic Hydrogen Carriers (LOHCs) – Hydrogen Storage in Fuel-Like Manner
- 9.15 *Keynote Lecture:* C. Brasse
Claudia Brasse Consulting, Köln, Germany
The Future Fuel for Mobility – Will Electric Vehicles Lead the Transition?
- 10.00 J. Albert*, A. Jess**, C. Kern**, F. Pöhlmann**, K. Glowienka**, P. Wasserscheid*/***
*Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany, **Universität Bayreuth, Germany, ***Forschungszentrum Jülich GmbH, Helmholtz-Institut Erlangen-Nürnberg for Renewable Energy, Erlangen, Germany
Formic Acid-Based Fischer-Tropsch Synthesis for Green Fuel Production from Wet Waste Biomass and Renewable Excess Energy
- 10.30 **Coffee Break**
- 11.00 *Keynote Lecture:* F. Lippert
BASF SE, Ludwigshafen, Germany
Key Trends in Petrochemicals
- 11.45 S. Haag*, F. Castillo-Welter*, T. Schuhmann*, B. Williams**, T. Oelmann**, M. Gorny**
*Air Liquide Forschung & Entwicklung GmbH, **Air Liquide Global Engineering & Construction
How to Convert CO₂ to Green Methanol
- 12.15 A.-N. Parvulescu*, A. Gordillo*/**, A. Kuschel**, P. Czajka*, M. Hübner*, M. Weber*, U. Müller*
*BASF SE, Ludwigshafen, Germany, **hte GmbH, Heidelberg, Germany
Bi-Functional Catalyst for Gas-Phase Acrylates Synthesis
- 12.45 **Lunch Break**

Thursday, October 11, 2018

Session Chairman: Johannes A. Lercher

- 13.45 *Keynote Lecture:* J. Dehmel, F. Kublik
Shell Deutschland Oil GmbH, Rhineland Refinery,
Cologne, Germany
Hydrogen Electrolysis in Refineries
- 14.30 E. Reichelt, G. Herz, M. Schaller, M. Jahn
Fraunhofer IKTS, Fraunhofer Institute for Ceramic
Technologies and Systems, Dresden, Germany
**Highly Efficient Production of Valuable
Hydrocarbons from CO₂ and H₂O via an Integrated
co-Electrolysis-Based Synthesis Process**
- 15.00 C. Heinze, J. May, J. Peters, J. Ströhle, B. Epple
Institut für Energiesysteme und Energietechnik,
TU Darmstadt, Darmstadt
**Environmental and Techno-Economic
Assessment of Co-Generation of Power and Fuels
Based on Fluidized Bed Gasification**

The conference is jointly organized by DGMK and



Società Chimica Italiana



Österreichische Gesellschaft
für Erdölwissenschaften



Thursday, October 11, 2018

15.30 **Poster Session and Coffee**

Survey of Posters on Display: Andreas Jess

The Posters are on display during the whole conference.

1 P. Garbis, C. Kern, A. Jess

Department of Chemical Engineering, Center of Energy Technology (ZET), University of Bayreuth, Germany

Kinetic of CO Methanation over a Ru Supported on Al₂O₃ Catalyst

2 I. Rossetti*, E. Bahadori*, A. Tripodi*, G. Ramis**

*Chemical Plants and Industrial Chemistry Group, Università degli Studi di Milano, Italy, **Dip. Ing. Chimica, Civile ed Ambientale, Università degli Studi di Genova, Italy

Modelling of Photoreactors for Water Treatment

3 N. Pfriem*, H. Shi*, J. A. Lercher*, G. L. Haller**

*Department of Chemistry and Catalysis Research Center, TU München, Garching, Germany

Acid Site Properties of Tungstate Zirconia in Alcohol Dehydration Reactions

4 A. Ehrmaier*, L. Löbber*, Y. Liu*, M. Sanchez-Sanchez*, R. Bermejo de Val*, S. Peitz**, G. Stochniol**, J. A. Lercher*

*Lehrstuhl für Technische Chemie, TU München, Garching, Germany, **Evonik Performance Materials GmbH, Marl, Germany

The Effect of Co-Cations on the Catalytic Performance of Ni Based Catalysts for Butene Dimerization

5 A. Ehrmaier*, L. Löbber*, Y. Liu*, M. Sanchez-Sanchez*, R. Bermejo-Deval*, S. Peitz**, G. Stochniol**, J. A. Lercher*

*Lehrstuhl für Technische Chemie, TU München, Garching, Germany, **Evonik Performance Materials GmbH, Marl, Germany

Isomerization and Dimerization – A Mechanistic Discrimination of Two Competitive Reactions Occurring on Highly Dispersed Ni²⁺ Catalysts

6 E.R. Babayev*, V.M.Farzaliev*, P. Sh. Mamedova**, M. Streek**, O. Yu Poletaeva***, G.Yu. Kolchina***, E.M. Movsumzade***

*Academician A.M. Guliyev Institute of Chemistry of Additives NAS of Azerbaijan, Baku, Azerbaijan, **Schülke & Mayr GmbH, Norderstedt, Germany, *** Ufa State Petroleum Technological University, Ufa, Russia

New Biocidal Compositions for Oil, Oil Products and Oilfield Fluids

7 M. Aigner, M. Ranieri, R. Bermejo de Val, J. A. Lercher
Lehrstuhl für Technische Chemie II, TU München, Garching, Germany

Ni and Co Based Catalysts Supported on Mordenite

8 G.Yu. Kolchina*, E.M. Movsumzade**, A.Yu. Bakhtina**, E.R. Babayev***

*Sterlitamak branch of the Bashkir State University, Sterlitamak, Russia, **Ufa State Petroleum Technological University, Ufa, Russia, ***Institute of Chemistry of Additives after Academician A.M. Guliyev, Baku, Azerbaijan

Quantum-Chemical Modeling of S- and Se-Containing Derivatives of Sterically-Hindered Phenols and their Interaction with Peroxides

9 G. Yu. Kolchina*, E.M. Movsumzade**, V.A. Adigezalova***, O.Yu. Poletaeva**

*Sterlitamak branch of the Bashkir State University, Sterlitamak, Russia, ** Ufa State Petroleum Technological University, Ufa, Russia, *** Azerbaijan State Academy of Physical Culture and Sport, Baku, Azerbaijan

Theoretical and Experimental Study of the Reactivity of Naftalan Petroleum Biomarkers

10 V. Höpfl, T. Schachtl, Y. Liu, J. A. Lercher

Lehrstuhl für Technische Chemie II; TU München, Garching, Germany

Impact of Activation Temperature on Product Selectivity in Isobutane / 2-Butene Alkylation over Zeolites

11 T. Schachtl, V. Höpfl, Y. Liu, J. A. Lercher

Lehrstuhl für Technische Chemie II, TU München, Garching, Germany

Synthesis of Mesoporous Zeolite LaX by Sequential Steaming and Acid Leaching

12 N. Müller, G. Herz, E. Reichelt, M. Jahn

Fraunhofer IKTS, Dresden, Germany

CO₂ Emission Reduction Potential in the Steel Industry by Integration of a Direct Reduction Process into Existing Steel Mills

13 E. Borovinskaya, F. Alscher, C. Breilkopf

Dresden University of Technology, Dresden, Germany

Modified Zirconium Oxide Catalysts for Effective Conversion of Carbon Dioxide into Useful Liquid Compounds

14 F. Alscher*, F. Nadolny*, S. Peitz**, E. Borovinskaya*, C. Breilkopf**, W. Reschetilowski**

*Dresden University of Technology, Dresden, Germany,

**Evonik Performance Materials GmbH, Marl, Germany

Highly Selective Dimerization of n-Butenes over Promising Ni-Modified Al-MCM-41/ZSM-5 Catalyst Systems

15 A. Carrasco, M. Süß, O. Busse, J. J. Weigand

Technische Universität Dresden, Germany

Agglomeration Behaviour of FCC – Catalyst-Particles in Spray Drying

16 M. Marschall, E. Schwab, O. Busse, J. J. Weigand
Technische Universität Dresden, Germany

**Dissolution of Spent Fluid Catalytic Cracking Catalyst
(FCC Catalyst): Investigation of Dissolution Behaviour for
Production of Synthesis Matrices**

17 M. W. Schreiber, M. Baumgärtl, A. Jentys, R. Bermejo
de Val, J. A. Lercher

Catalysis Research Center, Technische Universität München,
Garching, Germany

**Brønsted-Lewis Acid Pairs in Ga/H-ZSM-5 for Alkane
Conversion**



Entrance of
Berlin-Brandenburgische Akademie der Wissenschaften

Thursday, October 11, 2018

Session Chairman: Johannes A. Lercher

- 16.30 *Keynote Lecture:* H. Olivier-Bourbigou
IFP Energies nouvelles, Solaize, France
**Strategies to Maximize Light Olefins Production
and Conversion in a Oil-to-Chemical Scenario**
- 17.15 C. Antonetti, D. Licursi, S. Fulignati, A. M. Raspolli
Galletti
Department of Chemistry and Industrial Chemistry,
University of Pisa, Pisa, Italy
**Biofuels from Waste Biomass: A Cascade
Strategy for the Sustainable Production of
2-Methyl-Tetrahydrofuran and 2-Butanol**
- 17.45 L. Milakovic, Y. Liu, E. Baráth, J. A. Lercher
Lehrstuhl für Technische Chemie II, TU München,
Garching, Germany
**Conversion of Microalgae Oil to Biokerosene over
WO₃/ZrO₂ Supported Metal Catalysts**

20.00 **Conference Dinner**
„Brauhaus Lemke am Hackeschen Markt“
Dircksenstraße / S-Bahn-Bogen 143/144



Hackescher Markt (wikipedia)

Friday, October 12, 2018

Session Chairman: Matthias Beller

- 8.30 *Keynote Lecture:* R. Franke*, J. Haßelberg**, F. Stenger**
*Evonik Performance Materials GmbH, Marl,
**Evonik Technology & Infrastructure GmbH, Marl
ROMEO – A Major Step Toward Heterogeneous Hydroformylation
- 9.15 H. Neumann, K. Dong, R. Jackstell, M. Beller
Leibniz-Institut für Katalyse e.V., Rostock, Germany
A High active Catalyst System for the Hydromethoxycarbonylation of Olefins
- 9.45 D. Bianchi*, F. Spadavecchia**
*Eni S.p.A. Renewable Energy and Environmental R&D Center–Istituto eni Donegani, Novara, Italy, **Eni S.p.A. Downstream Research & Technological Innovation - San Donato Milanese Research Centre, Italy
Sustainable Feedstock for Hydrogenated Vegetable Oil (HVO) Based Biorefineries
- 10.15 O. Busse*, V. X. Hoan**, D. T. Tung**, J. J. Weigand*
*Technische Universität Dresden, Germany, **Vietnam Petroleum Institute
Production of ZSM-5 – Based Industrial Catalysts by Educts and Residues from Vietnam for Preferred Propene Production in the FCC-Process
- 10.45 **Coffee Break**

Session Chairman: Harald Häger

- 11.15 *Keynote Lecture:* N. Nesterenko
Total Research & Technology Feluy, Seneffe, Belgium
Opportunity and Challenges for Zeolites in the Energy Transition
- 12.00 F. Nadolny*, S. Peitz*, R. Franke*, W. Reschetilowski**
*Evonik Performance Materials GmbH, Marl, Germany,
**TU Dresden, Germany
Determination of Active Sites for Oligomerization in Heterogeneous Catalysts with Nitrogenous Compounds as Probe Molecules
- 12.30 F. M. Kirchberger*, Y. Liu*, Markus Tonigold**
M. Sanchez-Sanchez*, J. A. Lercher*
*Department of Chemistry and Catalysis Research Center, Technische Universität München, Garching, Germany, **Clariant Produkte (Deutschland) GmbH, Bruckmühl, Germany
Difference in the Reactivity of Methanol and Dimethylether in ZSM-5 and its Role in the Autocatalytic Formation of Olefins
- 13.00 **Concluding Remarks and Conference Summary**
Stefan Ernst

Lunch

General Information

Venue:

Berlin-Brandenburgische Akademie der Wissenschaften

Markgrafenstraße 38 / Gendarmenmarkt

D-10117 Berlin

Phone: +49 30 203 70 200, Fax: +49 30 203 70 666

Venue: Leibniz-Saal

Conference Secretary: Christa Jenke

DGMK Phone: +49 40 639004 12

Überseering 40 Telefax: +49 40 639004 50

D-22297 Hamburg email: jenke@dgmk.de

On-Site Conference Secretariat at the

Berlin-Brandenburgische Akademie der Wissenschaften

Wednesday, October 10, 2018 12.00 – 18.30

Thursday, October , 11, 2018 8.00 – 18.30

Friday, October 12, 2018 8.00 – 14.00

Phone: +49 152 34127868

Conference Language: English

Hotel Reservation:

Participants are requested to make their own hotel reservation. **There will be no hotel reservation by DGMK.** Special **DGMK-rates** (under the heading “DGMK”) are offered at:

Select Hotel Berlin The Wall

Zimmerstr. 88, D-10117 Berlin

Phone: +49 30 308 777 0

E-Mail: empfang.wall@select-hotels.com

Fax: +49 30 308 777 111

Rate: Single room € 149,80/night incl. breakfast.

Make room reservation not later than **August 10, 2018**

(under the heading of DGMK_101018)

Hotel Allegra Dependance

Albrechtstr. 17, 10117 Berlin

Phone: +49 30 30 88 6 0

E-Mail: allegra@albrechtshof-hotels.de

Rate: Single room € 94,88/night, incl. breakfast

Make room reservation not later than **September 14, 2018**

Hotel Albrechtshof

Albrechtstr. 8, 10117 Berlin

Phone: +49 30 30 88 6 0

E-Mail: albrechtshof@albrechtshof-hotels.de

Rate: Single room € 100,60/night, incl. breakfast

Make room reservation not later than **September 14, 2018**

Registration:

Please fill in the enclosed registration form and return it to the Conference Secretary. One registration form is requested for each participant. Registration should be done by

September 12, 2018

Registration Fee:	<i>registration</i>	
	by	after
	12.09.18	12.09.18
Individual Members of DGMK, SCI or ÖGEW (Industry)	€ 570,00	€ 610,00
Individual Members of DGMK, SCI or ÖGEW (University)	€ 310,00	€ 340,00
Students* - Individual Members of DGMK, SCI or ÖGEW	free	€ 110,00
Non-Members (Industry)	€ 600,00	€ 640,00
Non-Members (University)	€ 340,00	€ 370,00
Students* - Non-Members	€ 150,00	€ 180,00

*up to the age of 30; copy of student card requested

The registration fee includes:

- participation in the conference
- conference preprints (DGMK-Tagungsbericht)
- coffee/tea/cold drinks during the coffee breaks
Lunch on Thursday, October 11, 2018
- Conference dinner on Thursday, October 11, 2018
- Lunch on Friday, October 12, 2018

Payment:

Payment is requested after receipt of the invoice.

Refunds:

Refunds will be made for cancellation received in writing until September 12, 2018. Substitutions may be made at any time for registered participants unable to attend.

Conference Preprints:

Lectures and posters presented at the DGMK-Conference are published in full length in the DGMK-Tagungsbericht. These publications are registered under ISBN-Numbers and ISSN-Number and are sold on the book market after the conference. The book will be given to each conference participant upon registration at the conference desk to be the basis for efficient discussions.

Registration

email: petrochemistry@dgmk.de

fax.: +49 40 845 057 80

for the DGMK / SCI / ÖGEW- Conference**“Challenges for Petrochemicals and Fuels: Integration of Value Chains and Energy Transition”****October 10 – 12, 2018 in Berlin**

Title, First Name, Name

Company/Institution

Address

Telefon

e-mail

I register for the conference

as a member of DGMK

SCI / ÖGEW

LIKAT

as a non-member

I am employed in the

Industry

Academia

I am a Student

under the age of 30 years

I shall pay after confirmation of the registration form and receipt of an invoice

Date / Signature