

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 CO<sub>2</sub> 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 CO<sub>2</sub> and H<sub>2</sub>O 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 Al<sub>2</sub>O<sub>3</sub> Catalyst**

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**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**

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**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**

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**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**

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**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 Ni<sup>2+</sup> Catalysts**

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**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**

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**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**

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**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**

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**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**

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**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**

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**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**

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

Fraunhofer IKTS, Dresden, Germany

**CO<sub>2</sub> Emission Reduction Potential in the Steel Industry by Integration of a Direct Reduction Process into Existing Steel Mills**

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**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**

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**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**

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

Technische Universität Dresden, Germany

**Agglomeration Behaviour of FCC – Catalyst-Particles in Spray Drying**

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**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**

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**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**

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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. Raspolti  
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  
WO<sub>3</sub>/ZrO<sub>2</sub> 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](mailto: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](mailto: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](mailto: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](mailto: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**

<b>Registration Fee:</b>	<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 639004 50

**for the DGMK / SCI / ÖGEW- Conference**

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

**October 10 – 12, 2018 in Berlin**

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Title, First Name, Name

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Company/Institution

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Address

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Telefon

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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

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Date / Signature