

DGMK

International Conference

**Petrochemistry and Refining
in a Changing Raw Materials Landscape**

October 9 – 11, 2017
Dresden, Germany



Società Chimica Italiana



Österreichische Gesellschaft
für Erdölwissenschaften



German Society for Petroleum and Coal
Science and Technology

Petrochemistry Division

This international conference provides a forum for chemists and engineers from refinery, petrochemistry and the chemical industry as well as from academia to discuss novel developments in petrochemistry and refining in a changing raw materials landscape.

Ten Keynote Lectures, 16 Lectures and 26 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)* and the Austrian ÖGEW *Österreichische Gesellschaft für Erdölwissenschaften*

Scientific Chairmen:

Prof. Dr. Stefan Ernst, Technische Universität
Kaiserslautern

Dr. Ulrich Balfanz, BP Europa SE, Bochum

Dr. Michael Bender, BASF SE, Ludwigshafen

Dr. Harald Häger, Evonik Performance Materials GmbH,
Marl

Prof. Dr. Johannes A. Lercher, Technische Universität
München

Dr. Mario Marchionna, Saipem S.p.A.,
San Donato Milanese

Programme

Monday, October 9, 2017

12.00 **Registration at the Conference Desk**

13.00 **Opening and Welcome Address**
Stefan Ernst

Carl-Zerbe-Award Ceremony

Session Chairman: Mario Marchionna

13.30 *Keynote Lecture:* D. Kratz
BASF SE, Ludwigshafen, Germany
**Chemical Production Technologies in a Changing
Raw Material Landscape**

14.15 E. Baráth*, C. Denk*, S. Foraita*, Yue Liu*,
J. A. Lercher*/**
*Technische Universität München, Germany
**Institute for Integrated Catalysis Pacific Northwest
National Laboratory, Richland, USA
**Hydrodeoxygenation of Stearic Acid on Bimetallic
Ni_xCu_{1-x} Catalysts Supported on ZrO₂**

14.45 M. Compagnoni*, A. Tripodi*, E. Mostafavi**,
N. Mahinpey**, I. Rossetti*
*Dep. of Chemistry, Università degli Studi di Milano,
Milano, Italy
**Dep. of Chemical and Petroleum Engineering, Schulich
School of Engineering, University of Calgary, Canada
**Hydrogen Production by Steam Reforming of Bio-
ethanol: Catalytic Tests and Process Design**

15.15 P. Kolb, A. Haas, T. Kaltschmitt
hte GmbH, Heidelberg, Germany
**Methanol Synthesis in a Fixed Bed Recycle-
reactor System: Effect of once - Through and
Recycle Operation on Activity and Productivity**

15.45 **Coffee Break**

Monday, October 9, 2017

Session Chairman: Mario Marchionna

- 16.15 *Keynote Lecture:* J. Bricker
Honeywell UOP, Des Plaines, IL, USA
Shale Gas Components and their Use
- 17.00 *Keynote Lecture:* H. Schwarz
Institut für Chemie, TU Berlin, Germany
Elementary Steps in the Oxidative Alkane Activation
- 17.45 D. Melzer*, J. Tseglakova*, K. Wanninger**,
G. Mestl**, Y. Zhu***, N.D. Browning***, M. Sanchez-Sanchez*, J.A. Lercher*/****
*Department Chemie & Catalysis Research Center,
TU München, Garching, Germany
**Clariant Produkte (Deutschland) GmbH, Bruckmühl,
Germany
***Physical & Computational Sciences Directorate, Pacific
Northwest National Laboratory, Richland, USA
****Institute for Integrated Catalysis, Pacific Northwest
National Laboratory, Richland, USA
Scalable Synthesis for Increasing Activity of MoVTenb Oxides in Oxidative Dehydrogenation of Ethane

Next Conference:

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

October 10 – 12, 2018
in Berlin, Germany

Save the Date!

Tuesday, October 10, 2017

Session Chairman: Harald Häger

- 8.30 *Keynote Lecture:* A. Meiswinkel
Linde AG, Pullach, Germany
Oxidative Dehydrogenation of Short Chain Alkanes
- 9.15 *Keynote Lecture:* J. Sherman, P. Stoimenov, P. Grosso
Reaction 35, LLC, Santa Barbara, USA
Selective Conversion of Propane and Butane to Corresponding Olefins
- 10.00 J. Titus*, M. Goepel*, S. Schunk**, N. Wilde*, R. Gläser*
*Institute of Chemical Technology, Universität Leipzig, Germany
**hte GmbH, Heidelberg, Germany
The Role of Acid/Base Properties of NiO-MgO-ZrO₂ Catalysts for the Dry Reforming of Methane
- 10.30 **Coffee Break**
- 11.00 *Keynote Lecture:* W. Leitner
Institut für Technische und Makromolekulare Chemie, RWTH Aachen, Germany
Tailor-made Fuels for Sustainable Mobility
- 11.45 J. Sauer
Institut für Katalysatorforschung und -technologie, Karlsruher Institut für Technologie, Germany
Fuels from Renewable Raw Materials: OME Synthesis and Properties
- 12.15 N. Schmitz*, E. Ströfer**, J. Burger*, H. Hasse*
*Laboratory of Engineering Thermodynamics, TU Kaiserslautern, Germany
**OME Technologies GmbH, Kaiserslautern, Germany
Development of a Novel Process for the Large-scale Production of OME Fuels from Formaldehyde and Methanol
- 12.45 **Lunch Break**

Tuesday, October 10, 2017

Session Chairman: Mario Marchionna

13.45 *Keynote Lecture:* M. Beller
Leibniz Institute for Catalysis at the
University Rostock e. V., LIKAT, Rostock, Germany
**Applications of Homogeneous Catalysis in a
Changing Raw Materials Landscape**

14.30 D. Vogelsang, J. M. Dreimann, A. J. Vorholt
Department of Bio- and Chemical Engineering,
Technical University Dortmund, Germany
**Process Intensification via Organic Solvent
Nanofiltration – Recent Developments in
Homogeneous Catalyst Recovery**

15.00 J. Velasquez Ochoa, A. Malmusi, F. Cavani
Dipartimento di Chimica Industriale "Toso Montanari",
Università di Bologna, Italy
**Valorization of Ethanol by Anaerobic
Transformation over Vanadium Containing
Catalyst**

15.30 **Poster Session and Coffee**
Survey of Posters on Display: Andreas Jess

The Posters are on display during the whole conference.

1 A. Olivo, M. Signoretto, E. Ghedini
Dept. of Molecular Sciences and Nanosystems, Ca' Foscari
University Venice and Consortium INSTM, Venezia, Italy
**CO₂ Photoreduction to Solar Fuels: Basis Effect on TiO₂
Photocatalysts**

2 G. Tauer, C. Kern, A. Jess
Department of Chemical Engineering, Center of Energy Technology
(ZET), University of Bayreuth, Germany
**Effects of a Changing Volume Flow on the Transient
Methanation of CO₂ in a Wall-Cooled Fixed Bed Reactor**

3 T. Gille*, O. Busse*, S. Peitz**, G. Stochniol**,
W. Reschetilowski*, J. J. Weigand*
*Technische Universität Dresden, Germany
**Evonik Performance Materials GmbH, Marl, Germany
**Effects of NiMo-loading on Al-MCM-41/ZSM-5 Composite
Materials During Hydrogen-assisted Catalytic Cracking of
Ethyl Laurate**

4 K. Künnemann, R. Kuhlmann, A. Behr
Lehrstuhl für Technische Chemie, Fakultät Bio- und
Chemieingenieurwesen, Technische Universität (TU) Dortmund,
Germany
**Ruthenium Catalyzed Hydrogenation of Carbon Dioxide
to N,N-dimethylformamide in Miniplant Scale – Potential
and Challenges**

Tuesday, October 10, 2017

5 P. Garbis, C. Kern, A. Jess
Department of Chemical Engineering, Center of Energy Technology (ZET), University of Bayreuth, Germany
Investigation of the Kinetic of the Selective CO Methanation

6 S. Rößler, C. Kern, A. Jess
Department of Chemical Engineering, Center of Energy Technology (ZET), University of Bayreuth, Germany
Modeling of Product Formation and Vaporization in Catalyst Pores During Cobalt-catalysed Fischer-Tropsch Synthesis

7 G. Herz, E. Reichelt, M. Jahn
Institute for Ceramic Technologies and Systems, Dresden, Germany
Biogas as an Alternative Carbon Source for the Production of Waxes

8 G. Herz, E. Reichelt, M. Jahn
Institute for Ceramic Technologies and Systems, Dresden, Germany
Design and Evaluation of a Power to Liquid Process for the Production of Valuable Hydrocarbons from CO₂ and H₂O

9 J. Velasquez Ochoa*, T. Tabanelli*, C. Cesari*, F. Puzzo**, G. Innocenti**, C. Lucarelli***, R. Mazzon**, V. Zanotti**, F. Cavani*
*Centro Interdipartimentale di Ricerca Industriale - Energia e Ambiente C.I.R.I.-E.A., Bologna, Italy
**Dipartimento di Chimica Industriale "Toso Montanari", Università di Bologna, Bologna, Italy
***Dipartimento di Scienza e Alta Tecnologia, Università degli studi dell'Insubria, Como, Italy
The Upgrading of Bio-alcohols to Chemicals: The Valsovit Project

10 M. Seifert, T. Gille, D. Däumer, O. Busse, W. Reschetilowski, J. J. Weigand
Technische Universität Dresden, Germany
Shape Selectivity and Pore-mouth Catalysis in Ethanol to Hydrocarbons Process: Control by Postsynthetic Experiments

11 D. Schröder*, J. Thiessen*, A. Jess*, J. Scholz**
*Lehrstuhl für Chemische Verfahrenstechnik, University Bayreuth, Germany
**Evonik Performance Materials GmbH, Marl, Germany
Fischer-Tropsch Process for the Synthesis of Feedstock Materials for the Fine- Chemical Industry

Tuesday, October 10, 2017

12 Y. Liu*, F. M. Kirchberger*, S. Müller*, M. Tonigold**, M. Sanchez-Sanchez*, J.A. Lercher*/***

*Department Chemie & Catalysis Research Center, TU München, Germany

**Clariant Produkte (Deutschland) GmbH, Bruckmühl, Germany,

***Institute for Integrated Catalysis, Pacific Northwest National Laboratory, Richland, USA

Coke Formation and Distribution in Catalytic Conversion of Methanol to Propene

13 E. Kaigarula, J. Schaumlöffel, M. Schulz, S. Ernst
Department of Chemistry, Chemical Technology, Kaiserslautern
University of Technology, Kaiserslautern, Germany

Adsorption of Selected n-and iso-Alkanes on Hierarchical ZSM-5-Type Zeolites

14 M. Schulz, J. Schaumlöffel, S. Ernst

Department of Chemistry, Chemical Technology, Kaiserslautern
University of Technology, Kaiserslautern, Germany

New Approaches for the Synthesis of Zeolites ZSM-5 and ZSM-11 as Catalysts for the Ethylene-to-Propylene Reaction

15 A. De Cuyper, C. Wilhelm, S. Ernst

Department of Chemistry, Chemical Technology, Kaiserslautern
University of Technology, Kaiserslautern, Germany

Conversion of Bio-Ethanol to Olefins and Aromatics over Selected Zeolite Catalysts

16 D. Kahsnitz, S. Ernst

Department of Chemistry, Chemical Technology, Kaiserslautern
University of Technology, Kaiserslautern, Germany

Facing the Gas Flaring Issue via Disproportionation of Saturated Hydrocarbons on Bifunctional Catalysts

17 E.M. Movsumzade, O.Yu. Poletaeva, G.Yu. Kolchina, A.Yu. Leontev

Ufa State Petroleum Technological University, Ufa, Russia

Research of Geometric and Electronic Structure of Heavy Oil Components and its Influence on the Preparation for Transportation and Processing

18 E.M. Movsumzade, O.Yu. Poletaeva, A.V. Borodin, I.I. Khasanov, S.A. Vertyagin

Ufa State Petroleum Technological University, Ufa, Russia

Synthesis of Products from Dry Stripped Gas, Obtained During the Processing of Associated Petroleum Gas

Tuesday, October 10, 2017

19 IG. Yu. Kolchina*, E.M. Movsumzade**,
V.A. Adigezalova***
*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
**Investigation of The Properties of Naftalan Oil
Biomarkers' Structure and Revealing the Features of its
Biological Effect**

20 EG.Yu. Kolchina*, E.M. Movsumzade**,
R.R. Tukhvatullin**, 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
**Effect of α -Methylbenzylphenol Derivatives on the
Antioxidant and Anticorrosion Characteristics of
Lubricating Oils**

21 J. M. Dreimann, D. Vogelsang, A. J. Vorholt
Department of Bio- and Chemical Engineering, Technical University
Dortmund, Germany
**Novel Application of a PEEK Membrane Reactor –
Highly Stable Continuous Operation of Hydroamination
Reaction of b-Myrcene with Morpholine**

22 N. Herrmann, T. Seidensticker, T. Gaide,
M. R. L. Furst, A. Behr, A. J. Vorholt
Department of Bio- and Chemical Engineering, Technical University
Dortmund, Germany
**Recycling Strategies for Homogeneous Catalysts in the
Convention of Oleochemicals – Two Innovative
Approaches**

23 M. Terhorst, T. A. Faßbach, T. Gaide, A. Behr,
A. J. Vorholt
Department of Bio- and Chemical Engineering, Technical University
Dortmund, Germany
**Hydroaminomethylation of 1,3-Dienes – Surfactant
Precursors on Basis of Renewable Raw Materials**

24 J. Bianga, T. Gaide, K. E. Schlipkoeter, A. Behr,
A. J. Vorholt
Department of Bio- and Chemical Engineering, Technical University
Dortmund, Germany
**Isomerization / Hydroformylation of Fatty Acid Methyl
Esters – Development of a New Bimetallic Tandem
Catalytic System**

Tuesday, October 10, 2017

25 V. K. A. Söderholm, D. Vogt
Lehrstuhl für Technische Chemie, Fakultät Bio- und
Chemieingenieurwesen, Technische Universität (TU) Dortmund,
Germany
**Synthesis of POSS Modified Xantphos Ligands for Their
Application in a Continuous Flow Nanofiltration Loop-
Reactor**

26 M. Jennerwein*/**/***, U. Käfer*/**, M. Sarji****,
D.Harrison****, J. Wendt*****, T. Wilharm**,
R. Zimmermann*/**, T. Gröger*
*Comprehensive Molecular Analytics (CMA), Helmholtz-Zentrum
München, **Chair for Analytical Chemistry, University of Rostock,
ASG Analytik Service GmbH, *Photonion GmbH, *****VUV
Analytics, Inc., Cedar Park, Texas, USA, *****LECO European
Application & Technology Centre
**State-of-the-art Analytical Techniques for a Changing
Feed- and Products Landscape in Petrochemistry**

Session Chairman: Mario Marchionna

- 16.30 *Keynote Lecture:* M. H. Kopf
BASF SE, Ludwigshafen, Germany
**Competitive Bio-based Production of Platform
Molecules from Renewable Raw Materials –
A Challenging Task!**
- 17.15 R. Turco*, M. Di Serio*, M. Mazzocca*, V. Russo*,
R. Tesser*, R. Vitiello*, D. Cimini**, C. Schiraldi**
*University of Naples Federico II, Department of Chemical
Sciences, Complesso Universitario di Monte Sant'Angelo,
Naples, Italy, **University of Campania Luigi Vanvitelli,
Department of Experimental Medicine, Naples, Italy
**Production of Succinic Acid from Arundo Donax
Hydrolysate for Bio-based Polymers Synthesis**
- 17.45 H. Gómez Bernal*, T. Funaioli*, A. Ricciardi*,
E. Bertolucci**, C. Antonetti*, J. M. Lopez Nieto***,
P. Concepcion***, J. Velasquez Ochoa****,
F. Cavani****, A. M. Raspolli Galletti*
*Department of Chemistry and Industrial Chemistry,
University of Pisa, Pisa, Italy, **Scuola Normale Superiore
di Pisa, Pisa, Italy, ***Instituto de Tecnologia Quimica,
Universitat Politècnica de València-CSIC, Valencia, Spain,
****Dipartimento di Chimica Industriale, Università di
Bologna, Bologna, Italy
**Novel Palladium Magnetic Catalysts for
5-Hydroxymethylfurfural Oxidation**
- 20.00 **Conference Dinner**
Wenzel Prager Bierstuben
Königstraße 1, 01097 Dresden

Wednesday, October 11, 2017

Session Chairman: Johannes Lercher

- 8.30 *Keynote Lecture:* Xiulian Pan, Xinhe Bao
State Key Laboratory of Catalysis, Dalian Institute of
Chemical Physics, Chinese Academy of Sciences, Dalian,
China
**Selectivity Control in Syngas Conversion to Light
Olefins**
- 9.15 M. Schaller*, E. Reichelt*, N. Fischer**, M. Claeys**,
M. Jahn*
*Fraunhofer Institute for Ceramic Technologies and
Systems IKTS, Dresden, Germany
**University of Cape Town, South Africa
Fischer-Tropsch to Higher Alcohols
- 9.45 M. Heuchel, Y. Traa, E. Klemm
Institute of Chemical Technology, University of Stuttgart,
Germany
**Co-Catalytic Cracking of n-Decane and
2-Ethylphenol over Various Zeolites for the
Co-Conversion of Fossil- and Bio-Based Feeds in
Co-FCC**
- 10.15 A. Matayeva*, F. Basile*, F. Cavani*, D. Bianchi**,
G. Chiaberge**
*Dipartimento di Chimica Industriale, University of Bologna,
Bologna, Italy
**Renewable Energy & Environmental R&D Eni spa,
Novara, Italy
**Characterization of Bio-oil Produced by HTL of
Binary Mixture of Phenylalanine and Glucose**
- 10.45 **Coffee Break**

Session Chairman: Ulrich Balfanz

- 11.15 *Keynote Lecture:* E. Schwab
BASF SE, Ludwigshafen; Germany
**Carbon2Chem: Synfuels from Coal in a
Renewable Energy World**
- 12.00 S. A. Schunk*, L. Alvarado Rupflin*, J. Mormul*,
M. Lejkowski*, S. Titlbach*, R. Papp**, R. Gläser***,
M. Dimitrakopoulou****, X. Huang****,
A. Trunschke****, R. Schlögl****/*****,
M. Willinger****, F. Rosowski**/****
*hte GmbH, Heidelberg, Germany
**BASF SE, Ludwigshafen, Germany
***Universität Leipzig, Leipzig, Germany
****Department of Inorganic Chemistry, Fritz-Haber-
Institute, of the Max-Planck-Gesellschaft, Berlin, Germany,
*****BasCat, UniCat BASF Jointlab, Technische Universität
Berlin, Berlin, Germany
**New Horizons for Heterogeneously Catalyzed CO
Insertion Reactions: From Molecular Sieves to
Extended Complex Solids**

Wednesday, October 11, 2017

12.30 J. Hannes*, A. Meiswinkel**, S. Boucher***,
J. Becker****
*RWE Generation SE, Essen, Germany, **Linde AG,
Pullach, Germany, ***Axens, Rueil-Malmaison Cedex,
France, ****LyondellBasell, Basell Polyolefine GmbH,
Wesseling, Germany

**Fischer-Tropsch Products as Feedstock for
Petrochemistry**

13.00 **Concluding Remarks and Conference Summary**
Stefan Ernst

Lunch



Photo: Wikimedia

The Venue: Dreikönigskirche in Dresden

General Information

Venue:

DreiKönigsKirche Dresden - Haus der Kirche
Hauptstraße 23
D-01097 Dresden
Phone: +49 351 8124 103

The venue is located in the city centre of Dresden (Neustadt)

Conference Secretary: Christa Jenke

DGMK	Phone:	+49 40 639004 12
Überseering 40	Telefax:	+49 40 639004 50
D-22297 Hamburg	E-Mail:	jenke@dgmk.de

On-site Conference Secretariat at the Venue

Monday, October 9, 2017	12.00 – 18.30
Tuesday, October 10, 2017	8.00 – 18.30
Wednesday, October 11, 2017	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.

Hotel Bayerischer Hof Dresden

Antonstr. 33-35, D-01097 Dresden
Phone: +49 351 829 370
E-Mail: info@bayerischer-hof-dresden.de
Rate: Single room € 80,00/night incl. breakfast

Hotel Martha Dresden

Nieritzstr. 11, D-01097 Dresden
Phone: +49 351 81 76 333
E-Mail: rezeption@hotel-martha-dresden.de
Rate: Single room € 84,00/night incl. breakfast

Motel One

Palaisplatz 1, D-01097 Dresden
Phone: +49 351 65 57 38 0
E-Mail: dresden-palaisplatz@motel-one.com
Rate: Single room € 59,00/night + € 9,50 breakfast

Please make your hotel reservation not later than
August 28, 2017 (Motel One and Bayerischer Hof),
September 1, 2017 (Hotel Martha Dresden)
and use keyword “**DGMK**” for getting the special rate.

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 preferably by

September 1, 2017

Registration Fee:	<i>registration</i>	
	by	after
	01.09.17	01.09.17
Individual Members of DGMK, SCI or ÖGEW (Industry)	€ 560,00	€ 600,00
Individual Members of DGMK, SCI or ÖGEW (University)	€ 300,00	€ 330,00
Students* - Individual Members of DGMK, SCI or ÖGEW	free	€ 100,00
Non-Members (Industry)	€ 590,00	€ 630,00
Non-Members (University)	€ 330,00	€ 360,00
Students* - Non-Members	€ 140,00	€ 170,00

*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 Tuesday, October 10, 2017
- Conference dinner on Tuesday, October 10, 2017
- Lunch on Wednesday, October 11, 2017

Payment:

Payment is requested after receipt of the invoice.

Refunds:

Refunds will be made for cancellation received in writing until September 1, 2017. 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

Fax: +49 40 639004 50

for the **DGMK / SCI / ÖGEW-Conference**
**“Petrochemistry and Refining in a Changing Raw
Materials Landscape”**
October 9 – 11, 2017 in Dresden

Title, First Name, Name

Company/Institution

Address

Telefon

E-Mail

I register for the conference

as a member of DGMK
or SCI or ÖGEW

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

Please return to:

DGMK
Deutsche Wissenschaftliche Gesellschaft
für Erdöl, Erdgas und Kohle e.V.
Mrs. Christa Jenke
Überseering 40
D-22297 Hamburg