

DGMK

International Conference

**Catalysis –
Innovative Applications in
Petrochemistry and Refining**

October 4 – 6, 2011
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 innovative applications of catalysis in petrochemistry and refining.

Eight Invited Lectures, 16 Lectures and 22 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 one of 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

Prof. Dr. Andreas Jess, Universität Bayreuth

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

Dr. Josef Lichtscheidl, OMV Refining & Marketing GmbH,
Schwechat

Dr. Mario Marchionna, Eni SpA, San Donato Milanese

Dr. Friedbert Nees, BASF SE, Ludwigshafen

Prof. Elio Santacesaria, Università “Federico II”, Napoli

Programme

Tuesday, October 4, 2011

13.30 **Registration at the Conference Desk**

14.00 **Opening and Welcome Address**
Stefan Ernst

Session Chairman: Mario Marchionna

14.15 *Invited Lecture:* P. Barger
UOP LLC, Des Plaines, USA
**UOP Technologies for Producing Olefins:
FCC, Oleflex™ and MTO Processes**

15.00 A. Meiswinkel, A. Wöhl, W. Müller, H. Bölt
Linde AG, Pullach, Germany
**Developing Linear α -Olefins Technology – From
Laboratory to a Commercial Plant**

15.30 C. Altwicker, J. Popp, K.-U. Wemhöner, A. Griebel
OMV Refining & Marketing GmbH, Vienna, Austria
Added Value by Catalytic Upgrade of C₄ Streams

16.00 **Coffee Break**

16.30 *Invited Lecture:* F. Rosowski
BASF SE, Ludwigshafen, Germany
New Developments in Oxidation Catalysis

17.15 E. Santacesaria, G. Carotenuto, R. Tesser,
M. Di Serio
University of Naples "Federico II", Department of
Chemistry, Naples, Italy
**Study of the Performance of Vanadium Based
Catalysts Prepared by Grafting in the Oxidative
Dehydrogenation of Propane**

17.45 **1st Poster Session**

Survey of Posters on Display: Andreas Jess
List of Posters see page 7-8

19.00 **End of the first Poster Session**

Wednesday, October 5, 2011

Session Chairman: Josef Lichtscheidl

- 8.30 *Invited Lecture:* F. Bertoncini
IFP Energies nouvelles, Solaize, France
Hydrocracking for Oriented Conversion of Heavy Oils: Recent Trends for Catalyst and Process Development
- 9.15 W. A. Groten
Lummus Technology, Pasadena, TX, USA
Continuing Development in Catalytic Distillation
- 9.45 C. Meyer*, C. Kohr*, M. Haumann**,
P. Wasserscheid*
*Lehrstuhl für Chemische Reaktionstechnik, Universität Erlangen-Nürnberg, Germany, **Chemical Reaction Engineering, FAU Busan Campus, Republic of Korea
Acidic Ionic Liquids for n-Alkane Isomerization in a Liquid-Liquid or Slurry-Phase Reaction Mode
- 10.15 **Coffee Break**
- 10.45 *Invited Lecture:* G. Bellussi
Eni S.p.A., San Donato Milanese, Italy
Dual Catalyst System for the Hydrocracking of Heavy Oils and Residues
- 11.30 J. Hein, A. Hrabar, O. Y. Gutiérrez, J. A. Lercher
Department of Chemistry, Catalysis Research Center, Technische Universität München, Germany
Understanding Hydrodenitrogenation on Novel Unsupported Sulfide Mo-W-Ni Catalysts
- 12.00 M. Adam, O. Busse, W. Reschetilowski
Institute for Industrial Chemistry, TU Dresden, Germany
Hydrocracking of Ethyllaurate on Bifunctional Micro-/Mesoporous Composite Materials
- 12.30 **Lunch Break**



Photo: Wikimedia

Semper Opera House in Dresden

Wednesday, October 5, 2011

Session Chairman: Ulrich Balfanz

13.30 *Invited Lecture:* M. Peters*, W. Leitner**,
C. Gürtler***, T. E. Müller****, A. Wolf*
*Bayer Technology Services GmbH, Leverkusen, **RWTH
Aachen, ***Bayer MaterialScience AG, Leverkusen,
****CAT Catalytic Center, RWTH Aachen, Germany
CO₂ – From Waste to Value

14.15 *Invited Lecture:* F. Plantenga
Albermarle Catalysts Company BV, Amsterdam,
The Netherlands
**Catalytic Processing of Biogenic Feedstocks in
the Refinery**

15.00 Zhu Ying
Shanghai Research Institute of Petrochemical
Technology, Shanghai, People's Republic of China
Catalytic Use of Bioethanol to Ethylene

15.30 2nd **Poster Session and Coffee**
List of Posters see page 9-10

Session Chairman: Ulrich Balfanz

16.30 B. Jäger*, M. Bärz*, J. Schemel**, B. Kolbe**
Evonik Industries, Hanau, Germany, **Uhde GmbH,
Dortmund/Bad Soden, Germany
**The Evonik-Uhde HPPO Process for Propylene
Oxide Production**

17.00 F. Cavani*, R. Pino*, K. Raabova*, E. Rozhko*,
S. Alini**, P. Accorinti**, G. Babini**
*Dipartimento di Chimica Industriale e dei Materiali, ALMA
MATER STUDIORUM Università di Bologna, Italy, **Radici
Chimica SpA, Novara, Italy
**A Green and Sustainable Two-Step Process for
Adipic Acid Production from Cyclohexene**

17.30 R. Buzzoni
Eni S.p.A., Research Center for Non-Conventional
Energies, Istituto Eni Donegani, Novara, Italy
**DISY: The Direct Synthesis of Hydrogen Peroxide,
a Bridge for Innovative Applications**

20.00 **Conference Dinner: Festungsmauern**
Am Brühlschen Garten 4 in Dresden

Thursday, October 6, 2011

Session Chairman: Stefan Ernst

- 8.30 *Invited Lecture:* A. Jess
Universität Bayreuth, Germany
**Solid Catalyst with Ionic Liquid Layer (SCILL) –
A Concept to Improve the Selectivity of Selective
Hydrogenations**
- 9.15 C.L. Bianchi*, C. Pirola*, D.C. Boffito*, A. Di Fronzo*,
A. Di Michele**, R. Vivani***, M. Nocchetti***,
M. Bastianini***, S. Gatto***
*Università degli Studi di Milano, Dipartimento di Chimica
Fisica ed Elettrochimica, Milano, Italy, **Università degli
Studi di Perugia, Dipartimento di Fisica, Perugia, Italy,
***Università degli Studi di Perugia, Dipartimento di
Chimica, Perugia, Italy
**Co-Zn-Al Based Hydrotalcites as Catalysts for
Fischer-Tropsch Process**
- 9.45 C. G. Visconti*, E. Tronconi*, G. Groppi*, L. Lietti*,
M. Iovane**, R. Zennaro**
*Politecnico di Milano, Dipartimento di Energia, Milano,
Italy, **Eni S.p.A., Divisione Exploration & Production,
San Donato Milanese, Italy
**Honeycomb Supports with High Thermal
Conductivity for the Fischer-Tropsch Synthesis**
- 10.15 L. Fischer*, J.-P. Héraud*, A. Forret*, J. Gazarian*,
U. Cornaro**, A. Carugati***
*IFP Energies nouvelles, Solaize, France, **Eni S.p.A.,
R&M Division, San Donato Milanese, Italy, ***Eni S.p.A.,
San Donato Milanese, Italy
**How to Make Fischer-Tropsch Catalyst Scale-up
Fully Reliable?**
- 10.45 **Coffee Break**
- 11.15 *Invited Lecture:* C. P. Kelkar
BASF Research & Development, Iselin, NJ, USA
New Developments in FCC Catalysis
- 12.00 F. Bager, S. Ernst
Department of Chemistry, Chemical Technology,
University of Kaiserslautern (TU), Germany
**The Potential of Medium-Pore Zeolites for
Improved Propene Yields from Catalytic Cracking**
- 12.30 S. Brandt
Grace GmbH & Co. KG, Worms
**Development of Low and Zero Rare-Earth
Containing FCC Catalysts**
- 13.00 **Concluding Remarks and Conference Summary**
Stefan Ernst

Business Lunch

Posters

All Posters are on display during the whole conference.
Two Poster Sessions will allow for ample discussion time
with the authors:

Tuesday from 17:45 to 19:00 and

Wednesday from 15:30 to 16:30.

First Poster Session

Tuesday, October 4 from 17:45 to 19:00

1. L. Schilder, W. Korth, A. Jess
Department of Chemical Engineering, University of Bayreuth,
Germany
**Alkyl-halogenide Promoted Ionic Liquid Catalysis of
Isobutane/butene-alkylation**
2. S. J. Aschauer, A. Jess
Department of Chemical Engineering, University of Bayreuth,
Germany
**Influence of Mass Transport Towards Deactivation in
tert-Butyl-Source Driven Isobutane/2-Butane
Alkylation**
3. A. S. Vilesov *, V. A. Ostroumova**, S. V. Baranova **,
S. V. Lysenko**, A. B. Kulikov*, A. L. Maximov *,
E. A. Karakhanov**
*A.V.Topchiev Institute of Petrochemical Synthesis of the
Russian Academy of Sciences, **Lomonosov Moscow State
University, Chemistry Department
**Catalysts Based on Mesoporous Aluminosilicates
for the Hydroisomerization and
Hydrodearomatization Processes**
4. Hui Shi, O. Y. Gutiérrez, J. A. Lercher
Department of Chemistry, Catalysis Research Center,
Technische Universität München, Germany
**A Detailed Kinetic Study of the Direct Ring Opening
of Cyclohexane and Methylcyclohexane over
Monofunctional Ir/Al₂O₃ Catalysts**
5. M. Galinsky, C. Breitkopf
Technische Universität Dresden, Fakultät Maschinenwesen,
Institut für Energietechnik, Dresden, Germany
**Transient TAP Approach to Investigate Adsorption
and Diffusion of Small Alkanes in Porous Sulfated
Zirconia**

6. U. Sénéchal, C. Breitkopf
Technische Universität Dresden, Fakultät Maschinenwesen,
Institut für Energietechnik, Dresden, Germany
**Theoretical and Numerical Investigations of TAP
Experiments – New Approaches for Variable
Pressure Conditions**

7. S. Arndt*, U. Simon*, S. Heitz*, B. Uysal**, A. Berthold*,
B. Beck*, O. Görke*, J.D. Epping*, T. Otremba*,
Y. Aksu*, E. Irran*, G. Laugel***, M. Driess*,
H. Schubert*, R. Schomäcker*
*Technische Universität Berlin, Berlin, Germany, **Akdeniz
University, Department of Chemistry, Antalya, Turkey,
***LASYRO, UMR 7177 – Institut de Chimie de Strasbourg,
Strasbourg, France
**Overview on the Diverse Forms of MgO as Catalyst
for the Oxidative Coupling of Methane**

8. M. Yildiz, S. Arndt, U. Simon, Y. Aksu, H. Schubert,
R. Schomäcker
Technische Universität Berlin, Germany
**The Support Effect of the Mn/Na₂WO₄ Catalyst in the
Oxidative Coupling of Methane**

9. C. Pirovano, E. Schönborn, N. Kalevaru, S. Wohlrab,
B. Lücke, A. Martin
Leibniz Institute for Catalysis at University Rostock e.V.,
Rostock, Germany
**Catalytic Partial Oxidation of Methane over Porous
Silica Supported VO_x Catalysts**

10. A. Qiao, V. N. Kalevaru, A. Martin, A. Srihari,
N. Lingaiah, P.S. Sai Prasad
Leibniz-Institute for Catalysis at University Rostock e.V.,
Rostock, Germany
**Oxidative Dehydrogenation of Ethane to Ethylene
Using Vanadia Based Catalysts**

11. C. Gärtner, A. C. van Veen, J. A. Lercher
Department of Chemistry, Catalysis Research Center,
Technische Universität München, Germany
**Highly Selective Oxidative Dehydrogenation of
Ethane with Supported Molten Chloride Catalysts**

12. A.L. Lapidus, Yu.A. Agafonov, R.M. Kunusova,
N.A. Gaidai, N.V. Nekrasov
N.D. Zelinsky Institute of Organic Chemistry, Russian
Academy of Sciences, Moscow, Russia
**Dehydrogenation of Propane in the Presence of
Carbon Dioxide over Chromium and Gallium Oxide
Catalysts**

Second Poster Session

Wednesday, October 5 from 15:30 to 16:30

13. B. Frank, R. Blume, A. Rinalidi, A. Trunschke,
R. Schlögl
Department of Inorganic Chemistry, Fritz Haber Institute of the
Max Planck Society, Berlin, Germany
**Nanocarbons as Catalyst for Selective Oxidation of
Acrolein to Acrylic Acid**
14. M. Baerns*, E. Wagner**
*Fritz-Haber Institut der Max-Planck Gesellschaft, Berlin,
Germany, **G.I.A.N.T. AG, Wiesbaden, Germany
**Hydrogenation of CO₂ to Liquid-fuel Hydrocarbons –
Catalyst Development and Process Scheme**
15. Yu. Strizhakova*, T. Avakyan**, A. Lapidus**
*Samara State University, Samara, Russia, **I.M. Gubkin
Russian State University of Oil and Gas, Moscow, Russia
**Oil-Shale Gasification for Obtaining of Gas for
Synthesis of Aliphatic Hydrocarbons**
16. O. L. Eliseev*, M. V. Tsapkina*, P. E. Davydov*,
R. V. Kazantsev*, O. S. Belousova**, A. L. Lapidus**
*N. D. Zelinsky Institute of Organic Chemistry, Russian
Academy of Sciences, Moscow, Russia, **Gubkin
Russian State University of Oil and Gas Moscow, Russia
**Alkali Promotion Effect in Fischer-Tropsch Cobalt-
Alumina Catalyst**
17. A. Baudry, G. Schaub
Engler-Bunte-Institut, Karlsruhe Institute of Technology
(KIT) Karlsruhe, Germany
**Preparation, Characterization and Testing of SiC-
Based Catalytic Sponges as Structured Catalysts for
Fischer-Tropsch Synthesis**
18. M. Minnermann*, S. Pokhrel**, K. Thiel***, V. Zielasek*,
L. Mädler*, M. Bäumer*
*Institute of Applied and Physical Chemistry (IAPC),
University of Bremen, Germany, **Foundation Institute
of Materials Science (IWT), University of Bremen,
Germany, ***Fraunhofer Institute for Manufacturing
Technology and Applied Materials Research, Bremen,
Germany
**The Role of Palladium in Iron Based Fischer-
Tropsch Catalysts Prepared by Flame Spray
Pyrolysis**

19. K. McBride, T. Turek, R. Güttel
Institute of Chemical Process Engineering,
Clausthal University of Technology, Germany
**Direct Dimethyl-Ether (DME) Synthesis by Spatial
Patterned Catalyst Arrangement: A Modeling and
Simulation Study**

20. W. Suprun, R. Gläser, H. Papp
Institute of Chemical Technology, Universität Leipzig,
Germany
**Reaction Pathways for Catalytic Gas-Phase
Oxidation of Glycerol over Mixed Metal Oxides**

21. H. van Rensburg, R. P. Tooze, D. F. Foster
Sasol Technology UK, St Andrews, Scotland
**Cobalt Catalyzed Hydroesterification of a Wide
Range of Olefins**

22. M. Fischer, M. Hartmann
Erlangen Catalysis Resource Center, Universität
Erlangen-Nürnberg, Germany
**Amino-Functionalized Metal-Organic Frameworks as
Tunable Heterogeneous Basic Catalysts**

Announcement:

20th World Petroleum Congress

**Energy Solutions for All:
Promoting Cooperation, Innovation & Investment**

December 4 – 8, 2011, Doha, Qatar



Further information: <http://20wpc.com/>

General Information

Venue of the Conference:

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	email:	jenke@dgmk.de

On-site Conference Secretariat at the DreiKönigsKirche

Tuesday, October 4, 2011	12.00 – 18.00
Wednesday, October 5, 2011	8.00 – 18.00
Thursday, October 6, 2011	8.00 – 14.00

Phone: 0176 5121 1298

Conference Language:

English

Associated Societies:

SCI – Società Chimica Italiana,
Divisione di Chimica Industriale

ÖGEW – Österreichische Gesellschaft für
Erdölwissenschaften

Next Conference:



Reducing the Carbon Footprint of Fuels and Petrochemicals

October 8 - 10, 2012
in Berlin, Germany



Photo: Wikimedia

The Venue: Dreikönigskirche in Dresden

Registration:

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

September 1, 2011

Registration Fee:	<i>registration</i>	
	by	after
	01.09.11	01.09.11
Individual Members of DGMK, SCI or ÖGEW (Industry)	€ 390,00	€ 430,00
Individual Members of DGMK, SCI or ÖGEW (University)	€ 220,00	€ 250,00
Students - Individual Members of DGMK, SCI or ÖGEW (copy of student card requested)	free	€ 50,00
Non-Members (Industry)	€ 490,00	€ 530,00
Non-Members (University)	€ 330,00	€ 360,00
Students - Non-Members (copy of student card requested)	€ 150,00	€ 170,00

The registration fee includes:

- participation in the conference
- conference preprints (DGMK-Tagungsbericht)
- coffee/tea/cold drinks during the coffee breaks
- business lunches on Wednesday, October 5 and Thursday, October 6, 2011
- Conference Dinner on Wednesday, October 5, 2011

Payment:

Payment is requested after receipt of the invoice.

Refunds:

Refunds will be made for cancellation received in writing until September 1, 2011. 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 handed out to each conference participant upon registration at the conference desk to be the basis for efficient discussions.

Hotel Reservation:

Participants are requested to make their own hotel reservation.
There will be no hotel reservation by DGMK.

However, DGMK has made room allocations for the time of conference in three hotels close to the venue as follows:

Hotel Martha Hospiz

Nieritzstr. 11

D-01097 Dresden

Phone: +49 351 8176 333

Telefax: +49 351 8176 222

Email: rezeption@marthahospiz-dresden.com

Rate: Single room €79,00/night incl. breakfast

Please make your hotel reservation not later than

September 6, 2011

Park Inn Dresden

Melanchthonstr. 2

D-01099 Dresden

Phone: +49 351 8061 0

Telefax: +49 351 8061 444

Email: reservierung.dresden@provenhotels.com

Rate: Single room €73,00/night incl. breakfast

Please make your hotel reservation not later than

September 6, 2011

Hotel Bayerischer Hof Dresden

Antonstr. 33-35

D-01097 Dresden

Phone: +49 0351 829 370

Telefax: +49 0351 801 48 60

Email: info@bayerischer-hof-dresden.de

Rate: Single room €90,00/night incl. breakfast

Please make your hotel reservation not later than

September 1, 2011.

Please use the name of "**DGMK**" to profit from the special DGMK-rate.

Further hotels of all categories can be booked online at, e.g.,
www.hrs.de

Registration

Fax: +49 40 639004 50

for the
DGMK / SCI / ÖGEW- Conference
“Catalysis – Innovative Applications in
Petrochemistry and Refining”
Dresden, October 4-6, 2011

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

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