



Final Program

Sustainability in Chemistry

Biannual meeting of the Division
„Sustainable Chemistry“

September 28-30, 2014

Friedrich-Alexander-Universität
Erlangen-Nürnberg (FAU):
Organic Chemistry
Henkestr. 42, Erlangen

www.chemie.fau.de/suschem2014

Topics

- **Sustainable Synthesis Including Catalysis & Biotechnology**
- **Renewable Feedstocks**
- **Sustainable Macromolecular Chemistry**
- **Assessment and Politics**
- **Green Chemistry Education**

Invited Speaker

Shu Kobayashi, University of Tokyo, J

Ulf Hanefeld, TU Delft, NL

Konrad Hungerbühler, ETH Zürich, CH

Cor Koning, TU Eindhoven, NL

Bert Sels, University of Leuven, BE

Matthias Beller, University of Rostock, D

Michael Dreja, Henkel, Düsseldorf, D

Harald Gröger, University of Bielefeld, D

Burkhard König, University of Regensburg, D

Andreas Künkel, Biopolymers, BASF, D

Uwe Lahl, University of Darmstadt, D

Alexander Vyhnal, STAEDTLER, Nürnberg, D

find more information:
www.chemie.fau.de/suschem2014

Poster prize - “Green Chemistry” (RSC)

The conference program is accompanied by a poster session, best poster contributions are awarded with a poster prize donated by “Green Chemistry” (RSC).

PhD Award „Sustainability in Chemistry“

The GDCh-division „Sustainable Chemistry“ - with generous support by Evonik Industries AG - awards 2014 a prize for the best PhD thesis in the area of sustainable chemistry.

Sunday, September 28, 2014

16.00 - 16.20 Opening

16.20 - 16.50 Dream Catalysts for Green Sustainable Chemistry
Shu Kobayashi, Tokyo - J

16.50 - 17.20 From sp^2 to sp^3 utilising enzymes
Ulf Hanefeld, Delft - NL

17.20 - 17.50 Symbiosis of Chemistry and Biology:
BASF's Biodegradable and Renewable Polymers
Andreas Künkel, Biopolymers, BASF, D

17.50 - 18.20 **PhD Award „Sustainability in Chemistry“**

short orals:

18.20 - 18.25 Holistic Assessment of Alternative Catalytic
Synthesis Pathways for an Anti-Cancer Drug Production
Denise Ott, Jena - D

18.25 - 18.30 Methyl Formate as Carbonylating Agent for Aniline
to Carbamate: a Carbon Recycling into Chemicals
Mohammad Yalfani, Aachen - D

18.30 **Round table „Sustainability in education“**
Kick-off presentation and moderation:
Burkhard König, Regensburg - D

afterwards **Poster session**
see page 8 - 11
full abstracts are available with separate CD

Monday, September 29, 2014

- 09.00 - 09.30 Chemical photocatalysis using visible light
Burkhard König, Regensburg - D
- 09.30 - 09.50 Combined Metal and Photoredox Catalysis
David Fabry, Aachen - D
- 09.50 - 10.10 Sustainable Organic Synthesis – A Continuous-Flow Approach to Hydrogenation, CO₂-Capture and Photosynthesis
Toma Glasnow, Graz - AT
- 10.10 - 10.30 Solvent-free organic reactions in planetary ball mills: Process design and assessment
Katharina Jacob, Jena - D
- 10.30 - 11.00 Coffee break*
- 11.00 - 11.30 A lignocellulosic biorefinery concept in Leuven: a chemist's view
Bert Sels, Leuven - BE
- 11.30 - 11.50 On Irony Reactions & Sunny Places: Two Sustainable Case Studies of Catalytic C-C Bond Formations
Axel Jacobi von Wangelin, Regensburg - D
- 11.50 - 12.10 Valorization of renewables by isomerizing olefin metathesis
Lukas Gooßen, Kaiserslautern - D
- 12.10 - 12.30 Synthesis of fatty ethers: Catalytic reduction of fatty acid esters
Ursula Biermann, Oldenburg - D
- 12.30 - 13.30 Lunch break*
- 13.30 - 14.00 New developments in sustainable and renewable coating materials
Cor Koning, Eindhoven - NL

Monday, September 29, 2014

- 14.00 - 14.20 Regioselective Enzymatic Halogenation of Substituted Tryptophan Derivatives using the FAD-Dependent Halogenase RebH
Marcel Frese, Bielefeld - D
- 14.20 - 14.40 Isomerization of glucose to fructose catalyzed by hydrotalcites
Irina Delidovich, Aachen - D
- 14.40 - 15.00 Introducing new reactions and technologies in industrial synthesis: Challenges, hurdles and opportunities for sustainable chemistry. An SME's Case Study Report about navigating from mgs to multi-kgs
Irene Erdelmeier, Romainville - FR
- 15.00 - 15.20 Organocatalyzed synthesis of cyclic carbonates utilizing CO₂ as a C1 building block
Hendrik Büttner, Rostock - D
- 15.20 - 15.50 *Coffee break*
- 15.50 - 16.20 Sustainability indicators in Chemistry
Konrad Hungerbühler, Zürich - CH
- 16.20 - 16.40 Mass Balances for important Organic Synthesis Reaction
Marco Eissen, München - D
- 16.40 - 17.00 Nanocellulose Gained by Bacteria – A Nano-Structured High Performance Biopolymer with Great Prospect
Dana Kralisch, Jena - D
- 17.00 - 17.20 Sustainable Chemistry – Transform a Holistic Strategic Approach into Applied Best Practice Action
Christopher Blum, Umweltbundesamt, Dessau - D
- 17.20 - 17.40 Evaluation of sustainability in early stages of product development
Peter Saling, BASF/Ludwigshafen - D

Tuesday, September 30, 2014

- 09.00 - 09.30 Sustainable detergents - where are we on our way towards 2030?
Michael Dreja, HENKEL/Düsseldorf - D
- 09.30 - 09.50 WOPEX – A sustainable materials innovation by STAEDTLER
Alexander Vyhna, STAEDTLER/Nürnberg - D
- 09.50 - 10.10 Developing the ‘Benign by Design’ Approach for a Rational Design of Green Derivatives of β -Blockers: Propranolol as an Example
Tushar Rastogi, Lüneburg - D
- 10.10 - 10.30 Reduced Methane Emission in Dairy Production: Eco Footprint of a Feed Additive
Ulla Létinois, Basel - CH
- 10.30 - 11.00 Coffee break*
- 11.00 - 11.30 Combination of the two „worlds“ chemo- and biocatalysis towards one-pot processes in water
Harald Gröger, Bielefeld - D
- 11.30 - 11.50 Renewable Polyamides and Polyesters by straight forward modification of Fatty-Acid Methyl Ester Derivatives
Matthias Winkler, Karlsruhe - D
- 11.50 - 12.10 Amino Acid-derived Imidazolium Zwitterions as Precursors for renewable Ionic Liquids
Sarah Kirchhecker, Golm - D
- 12.10 - 12.30 Sustainable and user friendly olefin metathesis
Andrzej Tracz, Wroclaw - PL
- 12.30 - 13.30 Lunch break*

Tuesday, September 30, 2014

- 13.30 - 13.50 Efficient catalyst systems for alcohol re-functionalization reactions
Rhett Kempe, Bayreuth - D
- 13.50 - 14.10 Selective bond activation in lignin model substrates
Tim den Hartog, Aachen - D
- 14.10 - 14.40 Chemistry goes Green:
Technologies for the Development of a Sustainable Society
Matthias Beller, Rostock - D
- 14.40 - 15.10 Indirect Land Use Change (iLUC)
Uwe Lahl, Stuttgart - D
- 15.10 Closing remarks

P 1

Cobalt-Catalyzed C–H Arylation and Alkylation of (Hetero)Arenes
Marc Moselage, Weifeng Song, and Lutz Ackermann*

Institut für Organische und Biomolekulare Chemie, Georg August Universität, Tammannstraße 2,
37077 Göttingen, Germany; *Lutz.Ackermann@chemie.uni-goettingen.de

P 2

Green Materials: Organocatalytic Copolymerization of
Formaldehyde and CO₂

J. Diebler¹, M. Reckers¹, I. Peckermann², C. Gürtler², T. Werner¹

¹Leibniz-Institut für Katalyse, Albert-Einstein-Str. 29a, 18059 Rostock/D;

²Bayer Technology Services GmbH, Bayer Material Science AG, Leverkusen/D

P 3

Organic polymer mesofibers as novel dispensers for sustainable
treatment with insect pheromones against Lobesia botrana in
precision viticulture

Hans E. Hummel^{1,2}, S. S. Langner¹, M. Breuer³, D. F. Hein¹,
G. Leithold¹

¹Justus-Liebig-University Giessen, Chair of Organic Agriculture, Giessen, Germany, D-35394,

²University of Illinois, Illinois Natural History Survey, Prairie Research Institute, Champaign, USA,

³State Institute for Viticulture and Enology Freiburg, Dept. of Ecology, Freiburg, GER, D-79100

P 4

Application of biopesticides in sustainable plant protection: Neem
(Azadirachta indica) as an example for use in modern agriculture
and medicine

Hans E. Hummel^{1,2}, S. S. Langner¹, H. Schmutterer³, G. Leithold¹

¹Justus-Liebig-University Giessen, Chair of Organic Agriculture, Giessen, Germany, D-35394,

²University of Illinois, Illinois Natural History Survey, Prairie Research Institute, Champaign, USA,

IL.61820, ³Justus-Liebig-University Giessen, Institute of Phytopathology and Applied Zoology,
Giessen, Germany, D-35392

P 5

Ruthenium-Catalyzed Site-Selective C–H Oxygenation on
Benzamides

J. Hubrich, V. Thirunavukkarasu and L. Ackermann*

Institut für Organische und Biomolekulare Chemie, Georg-August-Universität, Tammannstraße 2,
D-37077 Göttingen, Germany; *Lutz.Ackermann@chemie.uni-goettingen.de

P 6

Deep Eutectic Solvents as Green Metal-Extraction Media

A. Kolb, B. König

University of Regensburg, Institute of Organic Chemistry, Regensburg/D

P 7

Terpenoids - Smells like chemistry: The thermal conversion of monoterpenoids as a synthetic method for the synthesis of fine chemicals

J. Leiner¹, A. Stolle¹

¹Friedrich-Schiller University Jena, Institute for Technical Chemistry and Environmental Chemistry, Jena/D

P 8

Micro-/Mesoporous TS-1 as Efficient Catalyst for the Synthesis of Plant Oil-Derived Epoxides

N. Wilde, M. Pelz, R. Gläser

Universität Leipzig, Institute of Chemical Technology, Leipzig, Germany

P 9

Immobilization of P450 BM3 on Functionalized Mesocellular Foams

K. Thiele^a, S. Biemann^b, W.-D. Einicke^a, V. Urlacher^b, R. Gläser^a

^aUniversität Leipzig, Inst. of Chemical Technology, Leipzig, GER

^bHeinrich-Heine-Universität Düsseldorf, Institute of Biochemistry, Düsseldorf, Germany

P 10

Sustainable Utilization of Lignin for Fine Chemical Production

D. Schmitt¹, C. Regenbrecht², M. Hartmer¹, S. R. Waldvogel¹

¹Univ. of Mainz, Inst. for Organic Chemistry, Mainz/GER,

²BASF SE; GCN/ES – M311, Ludwigshafen/GER

P 11

Application of Ionic Liquids in the Conversion of CO₂ into Hydrocarbons via Heterogeneous Photoreduction

D. D. Konieczna¹, A. Kleine², U. Hilleringmann², R. Wilhelm¹

¹University of Paderborn, Department of Chemistry, Paderborn/33098,

²University of Paderborn; Department of Electrical Engineering, Paderborn/33098

P 12

High molecular weight polyglycolide from fast ring-opening polymerization in bulk with diphenyl bismuth bromide as catalyst

Yiyang Lu, Christian Schmidt, Sabine Beuermann

Institute of Technical Chemistry, Clausthal University of Technology,
Arnold-Sommerfeld-Straße 4, 38678 Clausthal-Zellerfeld, Germany

P 13

Synthesis of sustainable iron-carbon-nanocomposites through hydrothermal carbonization

B. Weiner, P. S. C. Schulze, V. M. Heineck, R. Köhler, F.-D. Kopinke

Helmholtz-Centre for Environmental Research – UFZ, Department of Environmental Engineering,
Permoserstr. 15, D-04107 Leipzig, Germany

P 14

The Synthesis of Pyrroles via Acceptorless Dehydrogenative Condensation of Secondary Alcohols and 1,2-Amino Alcohols Mediated by a Robust and Recyclable Catalyst Based on Nanometer Sized Iridium Particles
Daniel Forberg¹, Johannes Obenauf¹, Martin Friedrich¹,
Sven-Martin Hühne², Werner Mader², Günter Motz³ and Rhett Kempe¹

¹University of Bayreuth; Department of Inorganic Chemistry II, 95440 Bayreuth (Germany),

²University of Bonn; Department of Inorganic Materials Science, 53117 Bonn (Germany),

³University of Bayreuth; Department of Ceramic Materials, 95440 Bayreuth (Germany)

P 15

Application of Ionic Liquids (ILs) in a new pulping process for wood – separation of cellulose, lignin and hemicellulose

S. Tussetschläger¹, S. Saur¹, W. Kantlehner¹

¹Aalen University, Department of Chemistry, Aalen (Germany)

P 16

Investigating photocatalytic H₂-production mechanism with a Cobalt based catalyst

M. Oraziotti, A. Rodenberg, M. Guttentag, C. Bachmann,
R. Alberto, P. Hamm

Institut für Chemie, University of Zürich, Winterthurerstr. 190 CH-8057 Zürich, Switzerland

P 17

Regioselective catalytic acetoxylation of limonene

Marc v. Czapiewski and Michael A. R. Meier

Karlsruhe Institute of Technology (KIT), Institute of Organic Chemistry, (Germany)

E-mail: m.a.r.meier@kit.edu; web: www.meier-michael.com

P 18

Selective Esterification of Itaconic Acid and its Derivatives

P. Rakowski, A. Fleckhaus, G. Klaassen, H. Meyer, M. Rüschen, Klaas

University of Applied Sciences Emden/Leer, 26723 Emden/Germany

P 19

Synthesis of a Tsetse fly attractant from Cashew Nutshell Liquid via isomerising metathesis

B. Erb¹, S. Baader¹, P. E. Podsiadly¹, L. J. Gooßen¹

¹University of Kaiserslautern, Department of Organic Chemistry, D-67663 Kaiserslautern

P 20

Efficient one-pot metal-free synthesis of 2,5-diformylfuran from biomass

Q. Girka^{1,2}, N. Hoffmann¹, S. Marinkoviæ², B. Estrine², J. Le Bras¹, J. Muzart¹

¹Institut de Chimie Moléculaire de Reims, UMR-CNRS 7312, Université de Reims Champagne-Ardenne,

UMR des Sciences Exactes et Naturelles, Reims 51100 (France); ²Green Chemistry Departement, Agro-Industrie Recherches et Développement, Route de Bazancourt, Pomacle 51110 (France)

P 21

Removal of ruthenium residues from after olefin metathesis using
T-responsive polymer

A. Zieliński¹, K. Greła¹

¹Biological and Chemical Research Centre of University of Warsaw, wirki i Wigury 101, 02-089 Warsaw

P 22

Catalytic C-H Carboxylation of Terminal Alkynes with Carbon Dioxide

T. Wendling¹, E. Risto¹, Dr. M. Arndt¹, L. J. Gooßen¹

¹University of Kaiserslautern, Department of Chemistry, D-67663 Kaiserslautern

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Mechanistic Investigation of the Catalyzed Trimerization of Isocyanate

A. Y. Al Nabulsi¹, D. Cozzula¹, T. Hagen², T. E. Müller¹

¹CAT Catalytic Center, RWTH-Aachen University, Aachen /DE, ²Bayer Material Science, Leverkusen /DE

P 24

Cleavage of Carbamates as Green Route for the Synthesis of Isocyanates

D. Cozzula¹, D. Rivillo Perez¹, S. Wershofen², T. E. Müller¹

¹CAT Catalytic Center, RWTH Aachen University / DE, ²Bayer MaterialScience, Leverkusen / DE

P 25

Rational Design of Green, (Bio) Degradable α Adrenergic Receptor
Blocker Derivatives through Non-Targeted Synthesis:
Atenolol as an Example

Tushar Rastogi, Christoph Leder, Klaus Kümmerer

Leuphana University Lüneburg, Institute of Sustainable and Environmental Chemistry, DE-21335

P 26

Oxidative radical arylation of anilines with arylhydrazines and
dioxygen from air

Josefa Hofmann, Hannelore Jasch, Markus R. Heinrich

Department of Chemistry and Pharmacy, Pharmaceutical Chemistry,
Friedrich-Alexander-Universität Erlangen-Nürnberg, Schuhstraße 19, 91052 Erlangen, Germany

P 27

Suzuki Cross-Coupling Reaction in Aqueous Media

I. Hoffmann, B. Blumenröder, J. Schatz

Department of Chemistry and Pharmacy, Friedrich-Alexander University Erlangen-Nuremberg,
Henkestraße 42, 91054, Erlangen, Germany, Presenting author: ina.ih.hoffmann@fau.de

P 28

Aqueous Metathesis reaction Improved by Supramolecular Additives

J. Tomasek, M. Seßler, J. Schatz

Department of Chemistry and Pharmacy, Friedrich-Alexander-University Erlangen-Nuremberg,
Henkestraße 42, 91054 Erlangen, Germany, Presenting author: Jasmine.Tomasek@fau.de

Meeting of the GDCh subgroup „Sustainable Chemistry“

The meeting will take place directly after the lecture program
on **Monday, September 29th, 2014: 17.40 - 18.00 h**
at the lecture hall

(Organic Chemistry, Henkestraße 42, 91054 Erlangen).

Scientific Board

Klaus Kümmerer, Lüneburg

Jürgen O. Metzger, Oldenburg

Jürgen Schatz, Erlangen

Peter Wasserscheid, Erlangen

Local Organization / Contact

Prof. Dr. Jürgen Schatz

Organic Chemistry 1

Friedrich-Alexander-Universität Erlangen-Nürnberg

Henkestraße 42, D-91054 Erlangen

T +49 9131 85-25766, Juergen.schatz@fau.de

Social program

Conference dinner on Monday, September 29th, 2014

18:00-19:00 guided tour through
Kitzmann Brewery (www.kitzmann.de)

19:30 Franconian style dinner buffet
at „Kitzmann Bräuschänke“

ticket per person: €30,--

pay cash at conference site
(dinner, offered drinks and
guided tour included)

Please register for conference dinner
until September 20th by mail to
miriam.schatz@ems-online.de



Welcome Mixer

on Sunday, September 28th, 2014

19.00 during the poster session

„Fränkische Bratwurst“

free admission

as long as supplies last

Accommodation via www.erlangen-marketing.de/uni/



Industrial and Institutional Support

Without the generously support of our industrial and institutional partners, this meeting would not be possible.

We say thank you very much for all support!



Important deadlines and information



During the meeting



kunstvolle Eventbegleitung
art meets science

Atelier
Manuela Keller-Denzler
www.manueladenzler.de
Brüsseler Weg 3
91325 Adelsdorf
Phone: +49 9195 929481
e-Mail: mk@kun.de

A business card for 'kunstvolle Eventbegleitung' featuring a portrait painting of a woman with dark hair and a contemplative expression. The card includes contact information for Manuela Keller-Denzler, including a website, address, phone number, and email.