PROGRAM

20th EUROPEAN SYMPOSIUM ON ORGANIC CHEMISTRY

ESOC 2017

JULY 2 – 6

COLOGNE | GERMANY

150 Years GDCh

University of Cologne

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Welcome Note

Dear participants,

it is our great pleasure to welcome you to the 20th European Symposium on Organic Chemistry here in the heart of the historic city of Cologne – in the center of one of the largest "chemistry regions" of Europe.
In the good tradition of previous conferences of this series, the ESOC 2017 was designed to attract scientists from Europe and other parts of the world to share their interests in the broad and exciting field of Organic Chemistry. We are very happy about more than 600 participants, the majority of them being young researchers, postdocs and PhD students. But also a large number of renowned colleagues, both from academia and industry, are among the participants.
Scientifically, the ESOC 2017 program spans the full spectrum of Organic Chemistry. Organic synthesis – the art of making organic molecules in an efficient and sustainable fashion – will again be in the focus of the conference. The essential impact of organic chemistry on the life sciences and the material sciences will also become apparent.
We have selected the following thematic focus areas for this year's conference:

- Synthesis (natural products synthesis, synthetic methodology, reaction technology)
- Catalysis (metal-, organo-, bio-, photoredox-)
- C-H Bond Activation
- Medicinal Chemistry and Chemical Biology
- Organic Materials and Supramolecular Chemistry
- Physical and Computational Organic Chemistry

These topics have also been used to organize the 400 posters which will be presented during all days of the conference. Two dedicated poster sessions form an important part of the scientific program. The excellent lecture program comprises 12 plenary and 12 invited lectures as well as 20 short oral presentations selected by the scientific committee. We are particularly grateful to all speakers who have followed our invitation, most of them even staying at the conference for the full time. Thus, we are looking forward to an inspiring ESOC 2017 conference with a lot of scientific discussion and exchange.
Last, but not least, we would like to sincerely thank all those who have contributed to the organizational set-up of this conference and all financial supporters.

We hope that you enjoy the conference, and the city of Cologne.

Hans-Günther (Hagga) Schmalz (Chair)
Albrecht Berkessel and Axel Griesbeck (Co-Chairs)

Special Thanks

International ESOC Committee:
President: Prof. Pat Guiry | Ireland – UK
Vice-President: Prof. Adriaan Minnaard | The Netherlands

Prof. Valentin Ananikov | Russia
Prof. Cinzia Chiappe | Italy
Prof. Jesús Jiminez-Barbero | Spain – Portugal
Prof. Ivo Stary | Czech Republic
Prof. Manolis Stratakis | Greece
Prof. Thorsten Bach | Germany
Prof. Lise-Lotte Gundersen | Scandinavia
Prof. Jean Rodriguez | France
Prof. Doron Shabat | Israel
Prof. Helma Wennemers | Switzerland

National Scientific Program Committee:
Hans-Günther Schmalz | University of Cologne (Chair)
Albrecht Berkessel, Axel Griesbeck | University of Cologne (Co-Chairs)

Bernd Goldfuß | University of Cologne
Stefan Grimme | University of Bonn
Klaus Müllen | Max Planck Institute Mülheim and University Mainz
Timo Fleßner | Bayer Health Care, Wuppertal
Benjamin List | Max Planck Institute, Mülheim
Martin Oestreich | TU-Berlin (Representative of Liebig Foundation)

We are grateful for the support from all people of the **Local Organizing Committee:**

Antje Hannebauer, Kerstin Kattwinkel, Silvia Kirrwald, Martina Losch | Gesellschaft Deutscher Chemiker e.V. (GDCh)

Thomas Leder, Roger Wangen | Veranstaltungsservice Gürzenich

Filiz Ük, Christian Woronka | Cologne Convention Bureau

Ulrike Kersting | University of Cologne

and all the people from the Department of Chemistry:
Albrecht Berkessel, Dirk Blunk, Martin Breugst, Ralf Giernoth, Bernd Goldfuß, Sibylle Grandel, Axel Griesbeck, Jörg Neudörfl, Martin Prechtl, Mathias Schäfer, Hans-Günther Schmalz,
Dominik Albat, Benjamin Albrecht, Animesh Biswas, Anja Bitners, Eric Brüllingen, Judith Bruns, Diana But, Slim Chiha, Florian Dato, Thomas Dautert, Eric Detmar, Stephan Dohmen, Judith Drop, Hauke Engler, Julian Erver, Angelika Eske, Severin Fabian, Moritz Fischer, Falco Fox, Florian Gaida, Eleonora Gianolio, Anna-Lena Göderz, Vanessa Grote, Wacharee Harnying, Leo Heim, Sven Hohenberg, Linda Jütten, Marco Klein, Jonas König, Hannelore Konnerth, Darius Kootz, Jens Lefarth, Tobias Leuther, Andreas Maaßen, Amin Minakar, Murat Atar, Banu Öngel, Mathias Paul, Katrin Peckelsen, Daniel Pekel, Frederike Ratsch, Martin Reiher, Waldemar Schlundt, Julie Schmauck, Tim Schreiner, Daniel Schunkert, Hanna Sebode, Petra Sprengart, Andreas Stein, Panyapon Sudkaow, Ömer Taspinar, Kanokrat Trongchit, Moritz Vollmer, Daniel von der Heiden, Xiaochen Wang, Alina Wessels, Julia Westphal, Florian Wolf

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Detailed Program

Sunday | July 2, 15:30 – 22:00

13:00 – 15:30 | **Registration**

15:30 – 16:15 | **Opening Ceremony** framed by Triologisches Quartett

Addresses of welcome

Hans-Günther Schmalz
Chair of the 20th ESOC Conference, Department of Chemistry, University of Cologne

Pat Guiry
President of the International ESOC Committee, University College Dublin, Ireland

Thisbe Lindhorst
President of the Gesellschaft Deutscher Chemiker e.V. (GDCh)

Bettina Rockenbach
Vice President University of Cologne

16:15 – 17:15 | **Opening Lecture – Ben Feringa,** U Groningen, NL

Molecules in Motion, from Switches to Motors

Chair: **Albrecht Berkessel**

17:15 – 18:15 | **Patai-Rappoport Lecture – Peter Schreiner,** U Gießen, DE

London Dispersion Effects in Molecular Chemistry – Reconsidering Steric Effects

Chair: **Ilan Marek**

17:15 – 17:25 | Presentation of the Patai-Rappoport Award – Ilan Marek

"The Patai-Rappoport Lecture celebrates the vision of Saul Patai and Zvi Rappoport in creating and advancing the series ***The Chemistry of Functional Groups*** *providing chemists with a highly valuable tool for advancing their research. The Lecture is supported by John Wiley & Sons."*

18:15 – 18:45 | **Coffee break**

18:45 – 19:45 | **Kurt Alder Lecture – Antonio Echavarren,** ICIQ Tarragona, ES

Total Syntheses with a Golden Touch

Chair: **Albrecht Berkessel**

19:45 – 20:00 | **Award Ceremony – Albrecht Berkessel,** U Cologne, DE

20:00 – 22:00 | **Welcome Reception** sponsored by EurJOC / Wiley-VCH

Monday | July 3, 09:00 – 20:00

09:00 – 10:25 | **Session 1** Chair: **Axel Griesbeck**

09:00 – 09:50 | **Plenary Lecture – Richmond Sarpong**, UC Berkeley, US
Strategies and Methods for Chemical Synthesis Inspired by Natural Products

09:50 – 10:25 | **Invited Lecture – Christof Sparr**, U Basel, CH
Stereoselective Arene-Forming Aldol Condensation

10:25 – 10:50 | **Coffee break** partially sponsored by Georg Thieme Verlag KG

10:50 – 12:25 | **Session 2** Chair: **Axel Jacobi von Wangelin**

10:50 – 11:25 | **Invited Lecture – Thibault Cantat**, U Saclay, FR
Activation and Conversion of CO_2 and SO_2 under Metal-free Conditions

11:25 – 11:45 | **Oral Communication – Volker Derdau**, Sanofi-Aventis GmbH, DE
Iridium-catalyzed Hydrogen Isotope Exchange (HIE) and Applications of Isotopically Labelled Compounds for Drug Discovery

11:45 – 12:05 | **Oral Communication – Till Opatz**, U Mainz, DE
Xylochemistry – using Wood-Based Starting Materials for Chemical Synthesis

12:05 – 12:25 | **Oral Communication – Annette Bayer**, U Tromsø, NO
Total Synthesis of Breitfussin A and B

12:25 – 14:00 | **Lunch break**

14:00 – 15:35 | **Session 3** Chair: **Manolis Stratakis**

14:00 – 14:35 | **Invited Lecture – Mariola Tortosa**, UA Madrid, ES
Nucleophilic Boron for the Synthesis of Versatile Synthetic Intermediates

14:35 – 14:55 | **Oral Communication – Jan Paradies**, U Paderborn, DE
Frustrated Lewis Pairs: Chemistry beyond Hydrogen Activation

14:55 – 15:15 | **Oral Communication – Kostiantyn Chernichenko**, U Helsinki, FI
Metal-free C-H Borylation with Frustrated Lewis Pairs

15:15 – 15:35 | **Oral Communication – Xiang Ma**, ANU Canberra, AUS
A *Total Synthesis of (±)-3-O-Demethylmacronine Through Rearrangement of a Precursor Embodying the Haemanthidine Alkaloid Framework*

15:35 – 16:00 | **Coffee break** partially sponsored by BASF SE

16:00 – 18:05 | **Session 4** Chair: **Adriaan Minaard**

16:00 – 16:50 | **Plenary Lecture – Cristina Nevado**, U Zurich, CH
Transformative Catalysis: Rational Design and Unexpected Surprises

16:50 – 17:25 | **Invited Lecture – Didier Bourissou**, U Paul Sabatier Toulouse, FR
Transition Metal Catalysis under Ligand Control

17:25 – 17:45 | **Oral Communication – Thomas Netscher**, DSM Basel, CH
Catalysis with and without Metals towards the Total Synthesis of Tocopherols

17:45 – 18:05 | **Oral Communication – Chuang-Chuang Li**, SUSTC Shenzhen, CN
Type II Intramolecular [5+2] Cycloaddition

18:05 – 20:00 | **Poster session (with beer and pretzels)** sponsored by Bayer AG and Lanxess Deutschland GmbH

Tuesday | July 4, 09:00 – 13:35

09:00 – 10:45 | **Session 1** Chair: **Lise-Lotte Gundersen**

09:00 – 09:50 | **Plenary Lecture – Stefan Matile**, U Geneva, CH
Functional Supramolecular Chemistry

09:50 – 10:25 | **Invited Lecture – AnnMarie O'Donoghue**, Durham, UK
From Bench-Stable Carbenes to Blatter-type Radicals

10:25 – 10:45 | **Oral Communication – Damien Bonne**, U Aix Marseille, FR
Enantioselective Syntheses of Furan Atropisomers by an Oxidative Central-to-Axial Chirality Conversion Strategy

10:45 – 11:10 | **Coffee break** partially sponsored by DSM Nutritional Products Ltd.

11:10 – 13:35 | **Session 2** Chair: **Doron Shabat**

11:10 – 11:45 | **Invited Lecture – Georgios Vassilikogiannakis**, U Crete, GR
Advancing the Sustainable Chemistry of Singlet Oxygen and Applying it to Synthetic Challenges

11:45 – 12:05 | **Oral Communication – Martin Breugst**, U Cologne, DE
Why is Molecular Iodine an Outstanding Catalyst?

12:05 – 12:25 | **Oral Communication – Stefan M. Huber**, U Bochum, DE
Multidentate *Halogen Bonding Organocatalysts in Molecular Recognition Studies*

12:25 – 12:45 | **Oral Communication – Mario Waser**, U Linz, AT
Design, Synthesis and Applications of Bifunctional Chiral Urea-Quaternary Ammonium Salt Catalysts

12:45 – 13:35 | **Plenary Lecture – Tanja Weil**, MPI Mainz, DE
Dynamic Bioactive Macromolecules by Reversible Chemistry

14:00 – 19:00 | **Excursions (optional)**

19:00 – 23:00 | **Conference Dinner – Brauhaus Gaffel am Dom**

Wednesday| July 5, 09:00 – 20:30

09:00 – 10:25 | **Session 1** Chair: **Adriaan Minaard**

09:00 – 09:50 | **Plenary Lecture – Corinne Aubert**, UPMC Paris, FR
Transition Metal-Catalyzed [2+2+2] Cycloadditions and Cycloisomerizations: An Overview

09:50 – 10:25 | **Invited Lecture – Maurizio Benaglia**, U Milano, IT
Enabling Technologies-Assisted Stereoselective Organic Synthesis: (Organo)Catalysis, Catalytic and 3D-Printed Reactors

10:25 – 10:50 | **Coffee break** partially sponsored by Sanofi-Aventis Deutschland GmbH

10:50 – 12:25 | **Session 2** Chair: **Cinzia Chiappe**

10:50 – 11:25 | **Invited Lecture –- M. Ángeles (Tati) Fernández-Ibáñez**, U Amsterdam, NL
Ligand-Accelerated C-H Functionalization Reactions

11:25 – 11:45 | **Oral Communication – Olga García Mancheño**, U Regensburg, DE
Chiral Triazole H-Donors in Anion-Binding Catalysis: Novel Catalysts for the Enantioselective Dearomatization of N-Heteroarenes

11:45 – 12:05 | **Oral Communication – Christoforos G. Kokotos**, U Athens, GR
Green Organocatalytic Oxidations Mediated by Hydrogen Peroxide: New Catalysts, One-pot Transformations and Mechanistic Insights

12:05 – 12:25 | **Oral Communication – Erik V. Van der Eycken**, KU Leuven, BE
Gold Nanoparticles Catalyzing Spirocyclizations under Microflow Conditions

12:25 – 14:00 | **Lunch break**

14:00 –15:35 | **Session 3** Chair: **Bernd Goldfuß**

14:00 – 14:35 | **Invited Lecture – Franziska Schoenebeck**, RWTH Aachen, DE
Adventures in Catalysis: From Mechanisms to Applications

14:35 – 14:55 | **Oral Communication – Balaji V. Rokade**, UC Dublin, IE
Diastereofacial π-stacking as an Approach to Access an Axially Chiral P,N-ligand for Asymmetric Catalysis

14:55 – 15:15 | **Oral Communication – Matt L. Clarke**, U St. Andrews, UK
Branched-selective and Enantioselective Hydroformylation of Alkyl-alkenes: From Fragrances and Commodities to Pharmaceutical Intermediates and Chiral Heterocycles

15:15 – 15:35 | **Oral Communication – Charles de Koning**, U Witwatersrand, ZA
Light and Metal-Mediated Syntheses of Oxygen and Nitrogen Heterocycles

15:35 – 16:00 | **Coffee break** partially sponsored by Covestro Deutschland AG

16:00 –18:05 | **Session 4** Chair: **Hagga Schmalz**

16:00 – 16:50 | **Plenary Lecture – Shu-Li You**, SIOC Shanghai, CN
Catalytic Asymmetric Dearomatization (CADA) reactions

16:50 – 17:25 | **Invited Lecture – Olivier Riant**, UC Louvain, BE
A Quest for Bio-Orthogonal Transition Metal Catalysis in Living Cells

17:25 – 17:35 | **Flash Oral Communication – Zhiguo Zhang**, U Zhejiang Hangzhou, CN
Thiourea-Catalyzed Cross-Dehydrogenative Coupling of sp^3 C-H with Nucleophiles: Mechanism and Scope

17:35 – 18:05 | **Special Presentation – Christine Courillon**, ERC Brussels, BE
ERC Individual Grants and Funding Scheme

18:05 –19:40 | **Poster session (with beer and pretzels)** sponsored by Bayer AG and Lanxess Deutschland GmbH
19:30 – 19:40 Poster Awards

19:40 –20:30 | **Plenary Lecture – Matthew Gaunt**, U Cambridge, UK Chair: **Pat Guiry**
New Catalytic Strategies for Chemical Synthesis

Thursday | July 6, 09:00 – 13:20

09:00 – 10:45 | **Session 1** Chair: **Willem van Otterlo**

09:00 – 09:50 | **Plenary Lecture – Gert-Jan Boons**, U Utrecht, NL
Complex Glycans in Health and Disease

09:50 – 10:25 | **Invited Lecture – Uli Kazmaier**, U Saarbrücken, DE
Stereoselective Peptide Modifications – Efficient Tools for Natural Product and Drug Synthesis

10:25 – 10:50 | **Coffee break** partially sponsored by Springer Nature

10:50 – 12:55 | **Session 2** Chair: **Albrecht Berkessel**

10:50 – 11:25 | **Invited Lecture – Jan Deska**, Aalto U, FI
Reverse Biomimetics: Teaching Enzymes the Art of Modern Organic Synthesis

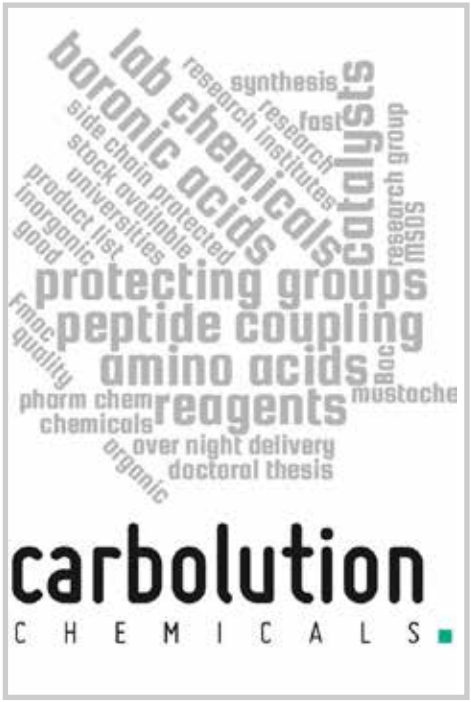
11:25 – 11:45 | **Oral Communication – I.C. (Steven) Wan**, U Groningen, NL
Site-Selective C-C Bond Formation in Unprotected Monosaccharides using Photoredox Catalysis

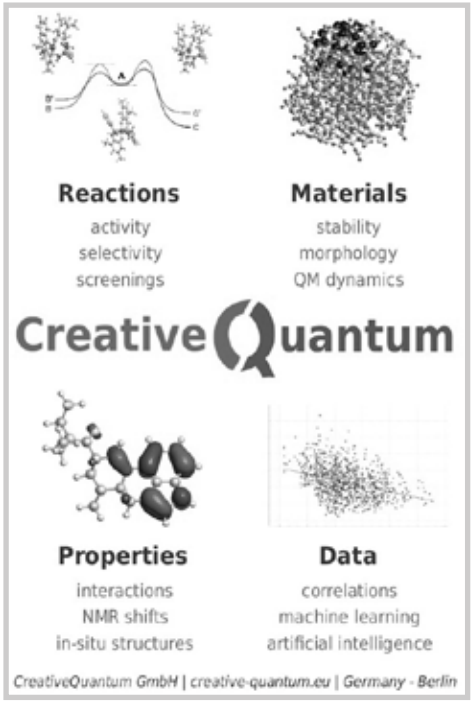
11:45 – 12:05 | **Oral Communication – Wolfgang Kroutil**, U Graz, AT
Biocatalytic C-C Bond Formation and Asymmetric Amination for Organic Synthesis

12:05 – 12:55 | **Plenary Lecture – Ashraf Brik**, Technion, Haifa, IL
Organic Chemistry Applied to Proteins: The Case of Ubiquitination and Deubiquitination

12:55 – 13:05 | **Preview ESOC 2019**

13:05 – 13:20 | **Closing Ceremony**



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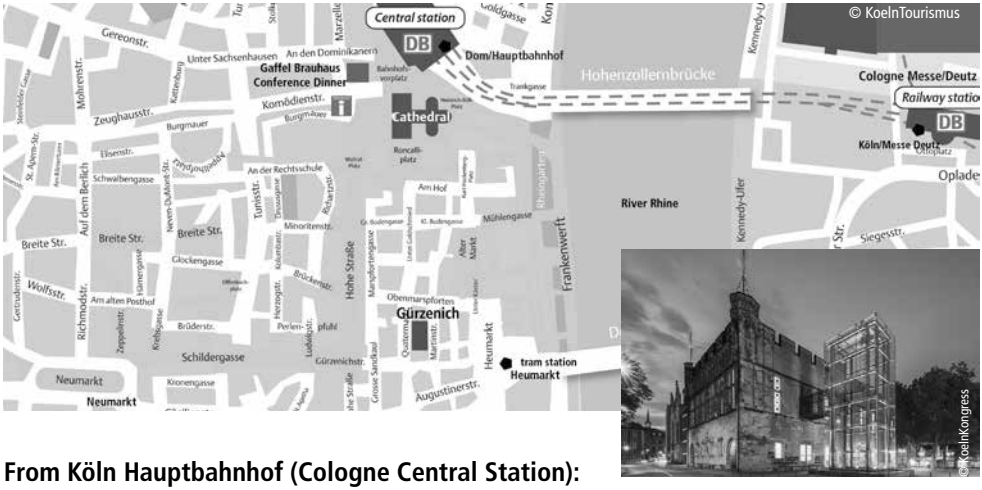
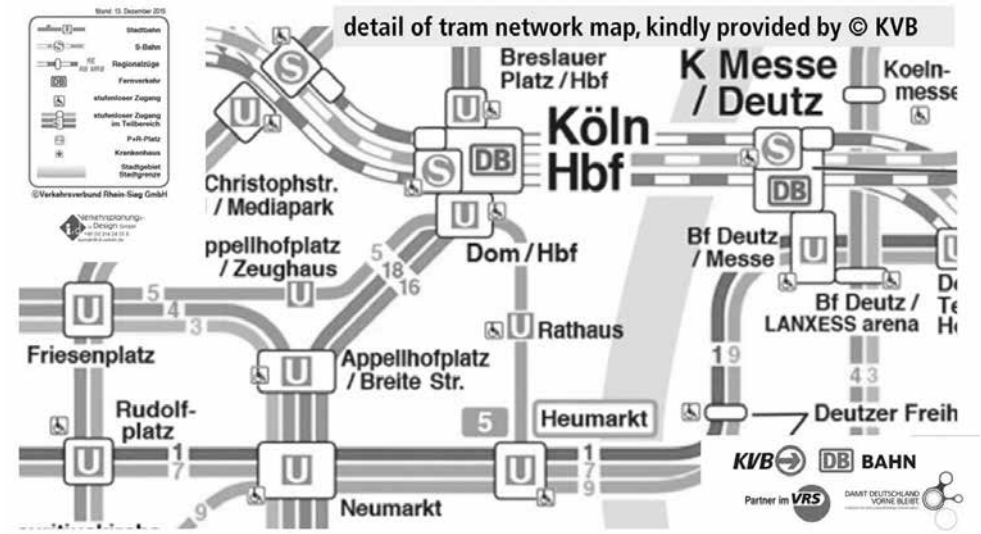
Conference Venue

The conference venue Gürzenich is located in the heart of Cologne.
The Gürzenich is close to the tram station "Heumarkt", which can be easily reached from Cologne Central Station or Cologne/Bonn Airport by public transportation.



From Köln Hauptbahnhof (Cologne Central Station):
Take the subway/tram line 5 with direction Heumarkt to the stop "Heumarkt". You can also reach the Gürzenich Köln on foot from the Central Station in approximately 10 minutes.

From Köln Messe-Deutz:
Take subway/tram no. 1 (direction Weiden West), or tram no. 9 (direction Sülz or Universität).

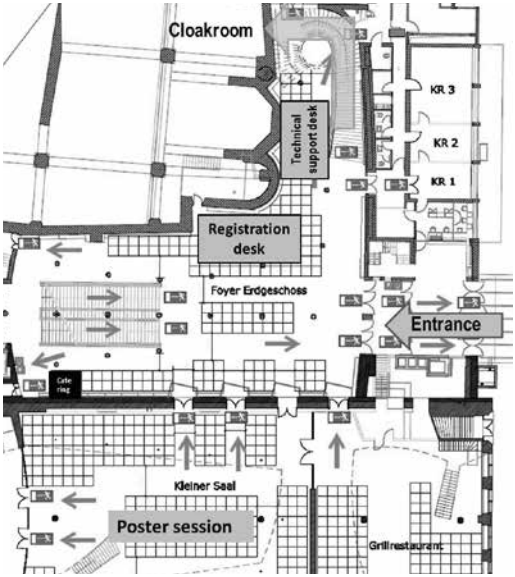


Guide through Conference Venue

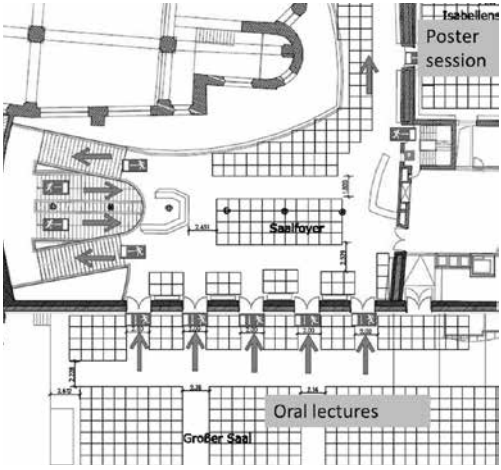
The oral lectures take place in the "Großer Saal" located on the second floor.
The poster sessions take place in the "Kleiner Saal" on the first floor and the "Isabellensaal" on the second floor.

You find the registration and information desk behind the entrance on the right.
The cloakroom is downstairs.
You find working spaces in the foyer and in the bar on the left behind the entrance.

During the conference, the Gürzenich will open at 13:00 on Sunday and at 08:45 from Monday to Thursday and close soon after the end of the sessions.



First Floor



Second Floor

Catering

Coffee breaks: Coffee, drinks and snacks will be served during coffee breaks in the foyers of the first and second floor. You can also get coffee (at your own expense) outside of the Gürzenich in various coffee shops.

Lunch will not be served. There is a large variety of cafes and restaurants with national and international food within walking distance to the Gürzenich.

Beer and pretzels will be served during the poster sessions in the foyers of the first and second floor.

We kindly ask you to refrain from taking food and drinks into the lecture and meeting rooms.

Welcome Reception

The welcome reception takes place Sunday evening from 20:00 onwards at the Gürzenich in the foyers of the first and second floor

Conference Dinner

The conference dinner takes place Tuesday evening in the Brauhaus Gaffel am Dom (see map page 13). The Gaffel Brauhaus will open at 18:00 and close at 24:00.
Please note that it was mandatory to register for the conference dinner. Please bring your conference voucher for identification.

Social Events

We offer three different guided tours:
- City walking tour in the old town and visit of the Cathedral (A)
- City walking tour with preliminary panorama cruise on the River Rhine (B)
- Guided bus tour and walk through the old town (C)

If you have signed up for a tour, please read up on your meeting place.
The meeting place for Tour A is the Gürzenich lobby at 14:00, the meeting place for Tour B is the KD Rhine pier 2 at 14:45, the meeting place for the Bus tour C is the office of KölnTourismus agency at 14:00.

In case you are interested in joining one of the tours, please ask the conference staff at the registration desk. We have a few spaces left and tickets will be sold on a first-come, first-serve basis.

Technical Guidelines and Information

Oral Presentations

Lecturers are asked to hand the electronic file(s) of their presentation to the technicians at the Presenter's Desk (near the Registration Desk) preferably one day in advance, but at least two hours prior to the beginning of their respective session. Please use a USB memory stick and name the file with your name, presentation day and session number (e.g. "John_Doe_Tue_Sess1.pptx").

The use of the provided computers is mandatory. Use of speakers' own computers is allowed only in very rare exceptions and after prior agreement with the organizers as it may cause delays. VGA is not supported.

The lecture hall is equipped with laptops (Windows 10, MS-Office 2016, LibreOffice 5.3.3, Adobe Reader DC and Apple MacBook with MacOS Sierra 10.12, MS-Office 2016, Keynote), LCD projector, presenter and laser pointer. The LCD projector resolution is 1920 x 1200 pixel.

Posters

Posters can be mounted as soon as the registration desk has opened. Posters should be mounted at the latest by Monday, 17:00. All posters are on display throughout the whole time of the conference. Please remember to remove your poster by the end of the conference! Posters which are not removed cannot be stored or returned and will be disposed of.

Adhesive tape for sticking the poster to the board will be provided at the conference desk. Please do not use your own material! Do not write onto the boards.

Poster sessions are on Monday (18:05 – 20:00) and Wednesday (18:05 – 19:40). Attendance of the presenters at the posters is organized in two sessions:

- Presenters of posters with odd numbers are asked to be present at the first poster session on Monday
- Presenters of posters with even numbers are asked to be present at the second poster session on Wednesday

Internet

There is free internet access available via "hotspot.koeln" without a password. For faster WIFI connections, "NetCologne-WiFi-cards (25 € / 24 h) can be purchased at the Gürzenich receptionist.

Twitter

Please follow us on Twitter (@ESOC20) and mention us or #ESOC20 in your posts.

Photography and Filming

Please note that authorized photographers will be taking pictures during the conference. These will be made available to conference participants only. Participants, except the authorized photographers, are seriously advised not to take videos or photos during the scientific sessions unless the lecturer has explicitly given his/her permission. If you see unauthorized persons using cameras during the sessions or in the exhibition areas or if you have any concerns please do not hesitate to contact the conference staff at the registration desk.

General Information

Cloakroom

We offer a free coat check and luggage storage in the basement floor (go to the right at the registration desk), however we cannot take any liability.

Public transportation

If you ordered a public transportation ticket for the Cologne local train and bus system (KVB), you will find it in your name tag bag. It is valid in the inner-city area (which includes the Cologne/Bonn Airport) during the conference period (July 2 to 6). Please sign your ticket for validation.
KVB tickets can also be bought at tram stations at the ticket machine.

If you need a taxi, please call 0049 221 2882 or ask the registration desk for assistance.

Questions and Assistance

In case you need any help, please see the conference staff at the registration desk or in the other conference rooms.

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Exhibitors

Booth number - Company

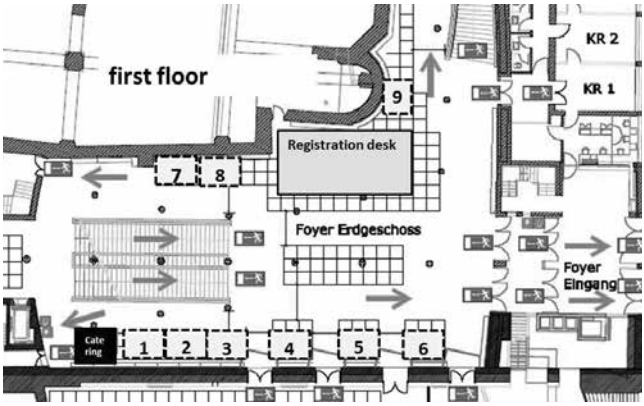
13 – abcr GmbH

5 – Advion Ltd.

11 – Albemarle (Rockwood Lithium GmbH)

2 – Asynt Ltd.

14 – Axel Semrau GmbH & Co. KG



1 – ChemPUR Feinchemikalien und Forschungsbedarf GmbH

18 – COSMOlogic GmbH & Co. KG

9 – Elsevier BV

16 – Fluorochem

15 – Georg Thieme Verlag KG/Thieme Chemistry

4 – J&K Scientific

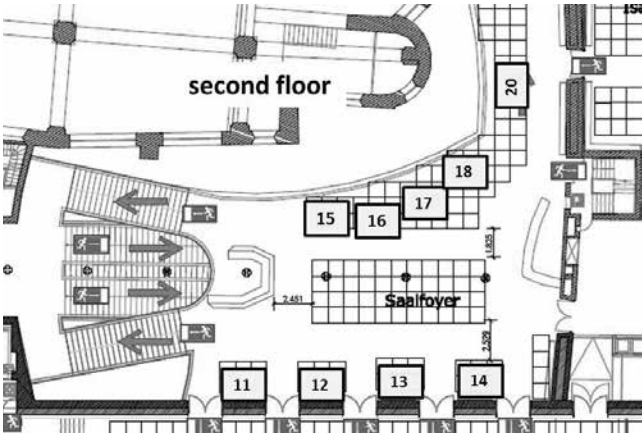
12 – Magritek GmbH

8 – Nanalysis Corp.

3 – Research in Germany

7 – Springer-Verlag GmbH

6 – STREM Chemicals Inc.



20 – TCI Europe NV / SA - TOKYO CHEMICAL INDUSTRY

17 – Wiley-VCH Verlag GmbH & Co. KGaA

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WILEY-VCH

Abstracts of Oral Presentations

The abstracts are listed in the order of the program.

The original pdfs of the submitted abstracts were editorially slightly revised in order to get a uniform layout. Furthermore, all graphics were converted into black and white. No changes were made to the contents.

Molecules in Motion, from Switches to Motors

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Summary. Among the major challenges ahead in the design of complex artificial molecular systems is the control over dynamic functions and responsive far-from-equilibrium behaviour. Chemical systems ultimately require control over structure, organization and function of multi-component dynamic molecular assemblies at different hierarchical levels. A major goal is the control over translational and rotary motion.

In this presentation focus is on the dynamics of functional molecular systems as well as triggering and assembly processes. We design switches and motors in which molecular motion is coupled to specific functions. Responsive behaviour will be illustrated in self-assembly and photopharmacology. The design, synthesis and functioning of rotary molecular motors will be presented with a prospect toward future dynamic molecular systems. In particular the use of rotary motors as multistage switches, acceleration of rotary motors, transmission and control of catalytic function is described. Finally, assembly of motors on surfaces and autonomous motion is illustrated.

Information on http://www.benferinga.com

Molecular Machines: Nature, September 2015
Molecular Switches: Chemistry World, June 2016

London Dispersion Effects in Molecular Chemistry – Reconsidering Steric Effects [1]

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The *Gecko* can walk up a glass window because of the adhesion in hydrophobic setae on its toes that convey van der Waals (vdW) interactions with the surface.[2] The attractive part of such vdW-interactions is an electron correlation effect referred to as *London dispersion*. Its role in the formation of condensed matter has been known since the work of van der Waals[3] and London[4] who related dispersion to polarizability. London dispersion has been underappreciated in molecular chemistry as a key element of structural stability, chemical reactivity, and catalysis. This negligence is due to the notion that dispersion is weak, which is only true for *one* pair of interacting atoms. For increasingly larger structures, the overall dispersion contribution grows rapidly and can amount to tens of kcal mol^{-1}. This presentation shows selected examples that emphasize the importance of inter- and intramolecular dispersion for molecules consisting mostly of first row atoms.[5] We note the synergy of experiment and theory that now has reached a stage where dispersion effects can be examined in fine detail. This forces us to re-consider our perception of steric hindrance and stereoelectronic effects, and even the transferability of chemical bond parameters from one molecule to another.

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Total Syntheses with a Golden Touch

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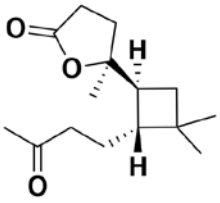
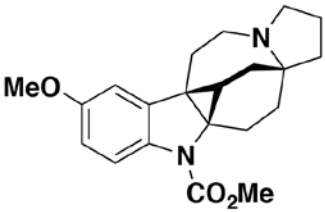
Our group has developed new cyclizations and cascade reactions based on the selective activation of alkynes with cationic gold(I) complexes[1] for the construction of complex polycyclic molecules such as englerin A,[2] schisanwilsonene,[3] and other sesquiterpenoids.[4]

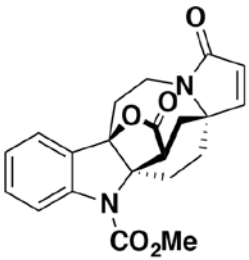
In this lecture, our efforts towards the development of stereoselective cyclizations and cycloadditions for the synthesis of sesquiterpenes such as rumphellaone A[5] and other natural products will be presented.



Rumphellaone A



(–)-Lundurine C



(+)-Grandilodine C

Recent work on the development of broad scope cylopropanations of alkenes via gold-catalyzed retro-Buchner reaction as well as on the total synthesis of cyclopropane- containing products of the lundurine family [6] and other related alkaloids such as the grandolodines will also be presented.

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Strategies and Methods for Chemical Synthesis Inspired by Natural Products

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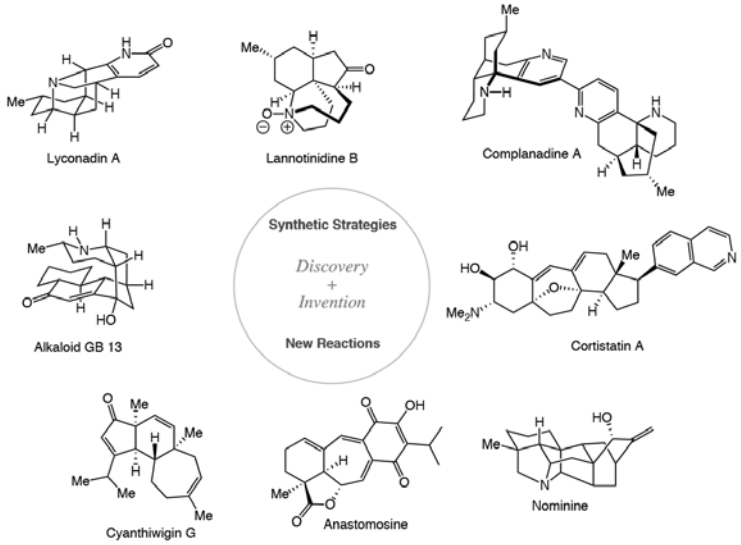
Natural products continue to provide intricate problems that expose limitations in the strategies and methods employed in the synthesis of complex molecules. Several strategies and methods that have been developed in our laboratory and applied to the syntheses of architecturally complex diterpenoid alkaloids, indole alkaloids, and several Lycopodium alkaloids, will be presented and discussed.



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Stereoselective Arene-Forming Aldol Condensation

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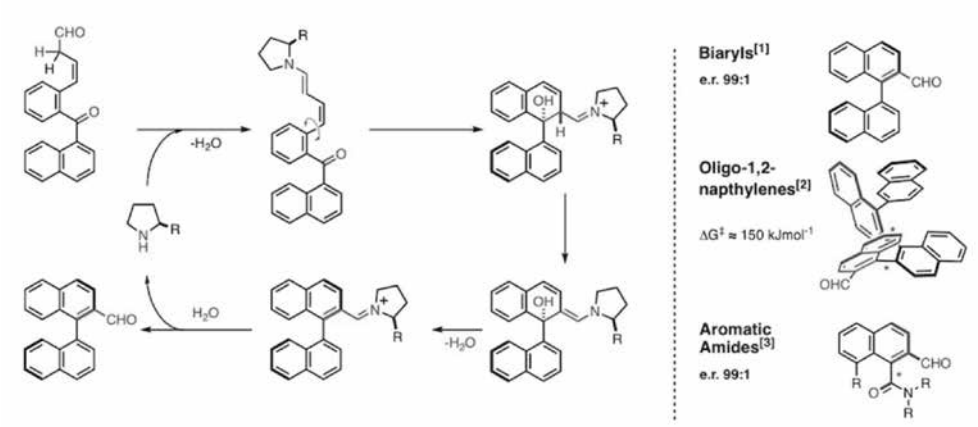
Configurationally stable axially chiral compounds are structurally highly defined building blocks that serve for various applications, such as ligand design, natural product research or materials science. Despite the importance of such atropisomers, only few stereoselective methods are available for their synthesis.

The presentation will outline our efforts to develop a catalytic aldol condensation reaction to convert different ketoaldehyde precursors into axially chiral arenes upon treatment with an amine catalyst. The stereochemical information is thereby transferred from the catalyst into the axially chiral products to provide various atropisomeric scaffolds with excellent stereocontrol.

The stereoselective arene-forming aldol condensation reaction was found to be broadly applicable, as exemplified by the synthesis of biaryls, oligo-1,2- napthylenes and aromatic amides. Insights into the mechanism and models to describe the stereoinduction will be discussed to conclude the talk.



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Activation and Conversion of CO_2 and SO_2 under Metal-free Conditions

Thibault Cantat

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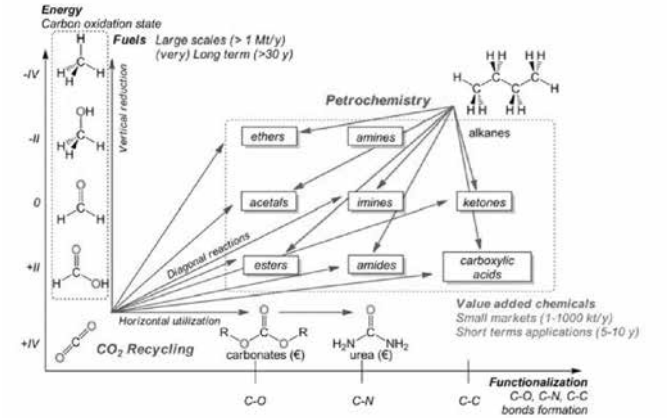
With 95 % of organic chemical commodities deriving from fossil resources, the chemical industry is currently exploring novel and renewable carbon feedstocks for the production of both bulk and fine chemicals.[1] In this context, the utilization of CO_2 or products derived from biomass wastes is an attractive strategy to access value-added products. Because these carbon sources feature carbon atoms in an oxidized state, the development of reduction methods is needed and they call for the design of efficient catalysts able to break strong C–O and C=O bonds.

Over the last years, our group has developed novel catalytic reactions for the conversion of CO_2 to formamides, N-heterocycles, methylamines and methanol, using hydroboranes, hydrosilanes or formic acid as reductants.[2-16] Extension of this methodology to SO_2 enabled the facile conversion of this gaz to sulfones, under metal-free conditions.[17] These new catalytic transformations rely on the use of simple organocatalysts, including nitrogen and phosphorus bases as well as Frustrated Lewis Pairs. The mechanisms at play in these transformations will be presented, based on DFT calculations and isolation of reactive catalytic intermediates.



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Iridium-Catalyzed Hydrogen Isotope Exchange (HIE) and Applications of Isotopically Labelled Compounds for Drug Discovery

***Volker Derdau*[a], *Kristof Jess*[b], *Annina Burhop*[a], *Remo Weck*[a], *Jens Atzrodt*[a], *Matthias Freytag*[b], *Peter G. Jones*[b], *Matthias Tamm*[b]**

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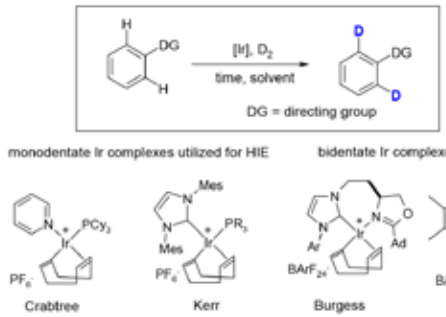
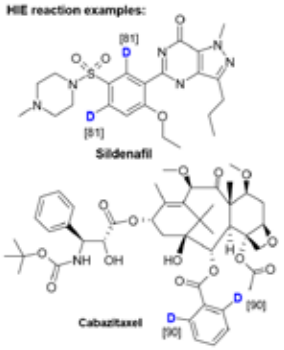
Hydrogen isotope exchange (HIE) allows the direct substitution of hydrogen by its isotopes (deuterium and tritium) at the target molecule itself and thus circumvents the need for additional chemical synthesis steps (e.g. precursor synthesis or a stepwise preparation from isotopically enriched starting materials).[1] Thus, HIE is commonly employed to insert deuterium (D) atoms into pharmaceutical drug candidates for use as internal standards for mass spectrometry, for metabolic pathway elucidation and to alter ADME properties ("heavy drugs"). Additionally, tritium (T) atoms can be incorporated by HIE labelling to provide radioactive tritium tracers, which are important drug discovery tools for e.g. radioligand, protein- and covalent binding assays, for photoaffinity labeling and for ADME profiling of new drug candidates.





Nowadays, the most efficient methods for selective ortho-directed HIE reactions (selective hydrogen isotope introduction at the ortho-position next to a directing group) are based on homogeneous iridium(I) complexes. Recently we have identified a new generation of Ir-catalysts with bidentate P,N or NHC,N ligand structure which allow to overcome some of the limitations associated with commonly utilized monodentate Crabtree's[2] and Kerr's catalysts[3]. The talk will discuss HIE reactions with Burgess[4] and Tamm catalysts[5] and related applications of resulting labelled compounds in drug discovery.

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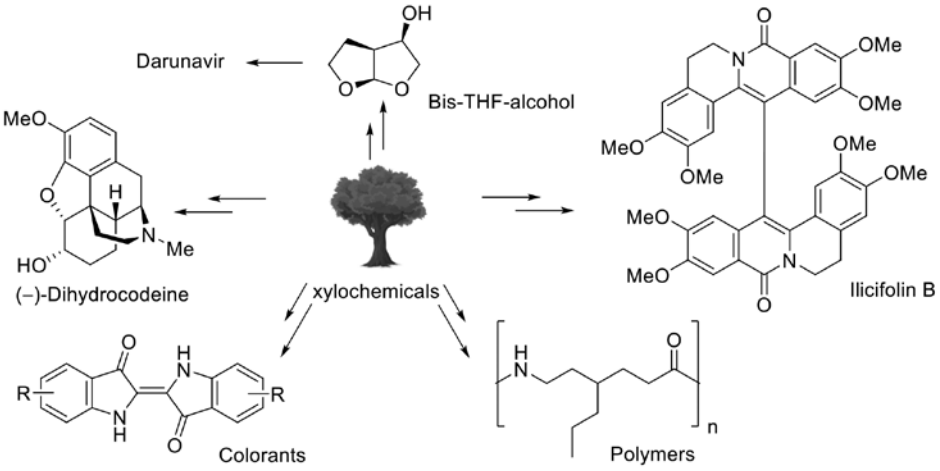
Xylochemistry – using Wood-Based Starting Materials for Chemical Synthesis

***Till Opatz*, Mainz/D, A. J. Arduengo III, Tuscaloosa/USA**

Prof. Dr. Till Opatz, Johannes Gutenberg University, Duesbergweg 10-14, 55128 Mainz

Xylochemistry – the use of wood-based starting materials for synthetic organic chemistry – is an attractive alternative to the use of fossil carbon sources such as natural gas, coal or petroleum. The major wood component lignin consists of oxygenated phenylpropanoid units and is a very useful raw material for the preparation of oxygenated and oxygen-free aromatic compounds which represent ideal starting points for the synthesis of a wide variety of chemical products.[1] In exemplary syntheses, we have employed known constituents of hard- and softwood as the sole carbon sources for the synthesis of complex natural products such as the dimeric berberine alkaloid ilicifoline B or pharmaceuticals like the analgetic (–)-dihydrocodeine. In the latter case, the overall chemical yield surpassed the best known petrochemical synthesis by more than two-fold, showing that the avoidance of fossil carbon source is not necessarily associated with a reduced efficiency.[2] Using xylochemical principles, a key component of the clinically important HIV-protease inhibitor darunavir as well as colorants and polymers have also been prepared.[3]



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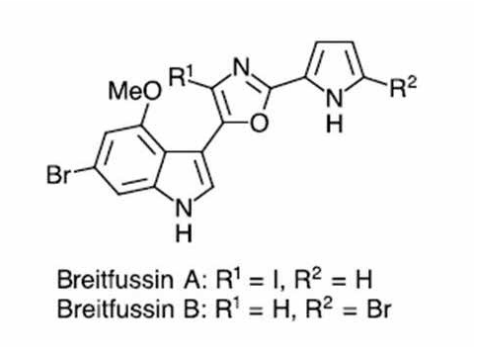
Total Synthesis of Breitfussin A and B

***Annette Bayer*, Tromsø/NO, S. Pandey, Bergen/NO, Y. Guttormsen, Tromsø/NO, B. E. Haug, Bergen/NO, C. Hedberg, Umeå/SE**

Assoc. Prof. Annette Bayer, UiT – The Artic University of Norway, 9037 Tromsø

The discovery of novel marine natural products from Norwegian arctic waters has been a strategically important area of research for some time. Recently, this has resulted in synthesis efforts, where structural confirmation and securing material for biological evaluation have been key goals. One of the natural product classes we have worked on are the breifussins.



Breitfussin A: R^1 = I, R^2 = H
Breitfussin B: R^1 = H, R^2 = Br

The main focus of the presentation will be on the synthesis of breitfussin A and B.[1] Key steps for our approach include a Leimgruber-Bacho indole synthesis, two palladium-catalyzed cross-couplings installing the indole and pyrrole onto the oxazole core and selective lithiation/iodination of a common indole-oxazole fragment providing 2,4-diiodinated or 2-iodinated oxazoles as potential precursors for breitfussin A and B, respectively. An unexpected, acid promoted deiodination was utilized in the synthesis of breitfussin B.

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Nucleophilic Boron for the Synthesis of Versatile Synthetic Intermediates

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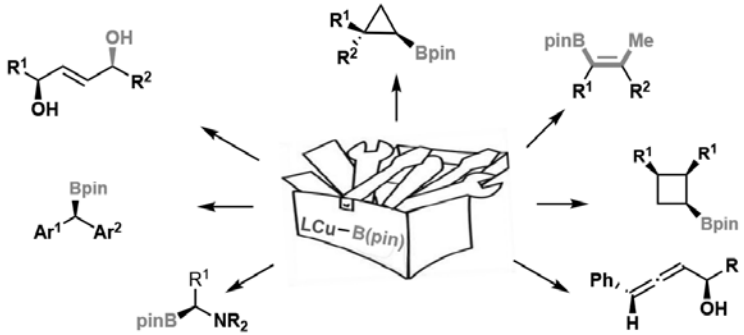
Boronic esters are versatile synthetic intermediates for the preparation of a wide range of organic molecules. The development of new methods to create C-B bonds in an efficient, inexpensive, and environmentally friendly way is therefore an important challenge in organic chemistry. Traditionally, the methods to form C-B bonds have mostly been based on the electrophilic nature of boron. Recently, copper-catalyzed borylations have emerged as a new source of nucleophilic boron. The lower price and toxicity of copper versus other transition metals and the unique reactivity of the boryl- copper intermediates make these processes particularly attractive. We have used boryl-copper species to synthesize a broad variety of useful synthetic intermediates such as 1,4-diols, trisubstituted alkenes, dibenzylic derivatives, aminoboronates, allenes and functionalized small rings.[2] Some of these results will be presented in this talk.



Acknowledgments: We thank the European Research Council (ERC-337776) and MINECO (CTQ2012-35957 and CTQ2016-78779-R) for financial support.

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Frustrated Lewis Pairs: Chemistry beyond Hydrogen Activation

Jan Paradies, Paderborn/D

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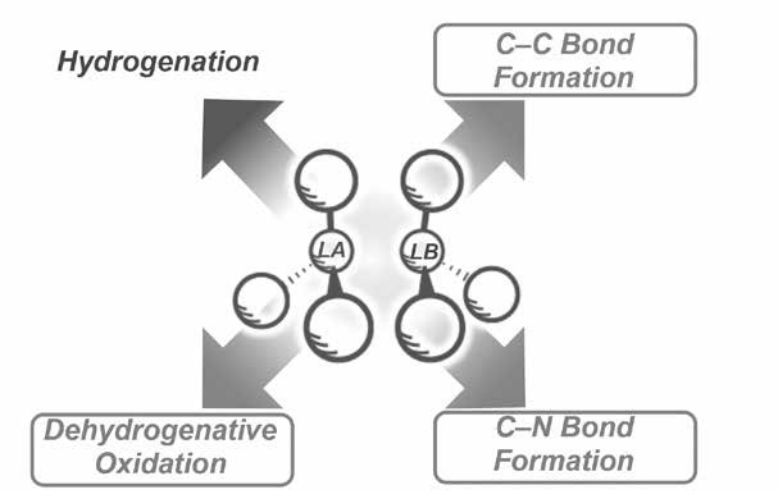
The activation of molecular hydrogen (H2) by frustrated Lewis pairs (FLPs)[1] has emerged to a powerful tool in hydrogenation chemistry.[2] Furthermore, FLPs interact with other small molecules e.g. oxides of nitrogen, sulfur and carbon[3] or alkynes but catalytic reactions are highly challenging due to Lewis acid inhibition.

Here, novel catalytic reactions of FLPs will be presented such as dehydrogenative oxidations[4] and carbon–nitrogen[5] and carbon–carbon bond formations.[6] The role of the corresponding Lewis acid (LA) and of the Lewis base (LB) will be discussed in context with the reactions mechanism.



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Metal-free C-H borylation with Frustrated Lewis Pairs

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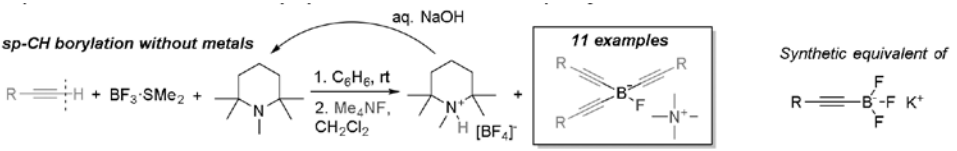
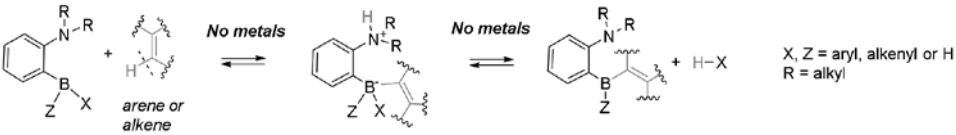
C–H borylation reactions provide powerful and atom-efficient access for converting affordable and abundant chemicals into versatile organic reagents for fine chemicals and functional materials production. The catalysis of these reactions is dominated by the complexes of Ir and other noble metals. For economic and toxicity reasons, there is a significant interest in the development of C–H borylations catalysed by abundant transition metals or metal-free methods.

A novel approach for metal-free activation of various bonds has recently been proposed. The pairs of Lewis acids and Lewis bases, so called "frustrated Lewis pairs" (FLPs), activate σ- and π-bonds of various molecules by their cooperative heterolytic splitting. Utilizing principles of FLP reactivity, we are developing methods for activation of C-H bonds. Terminal acetylenes undergo facile borylation on treatment with a combination of a sterically demanding amine and BF_3.[1] The produced previously unknown tri- and tetraalkynylboron compounds are suitable synthetic equivalents of trifluoroalkynylborates for C-C coupling reactions.



Ansa-aminoboranes readily insert into sp^2-C–H bonds of simple olefins and arenes under mild conditions.[2] In this case heterolytic splitting of much more challenging for FLP chemistry sp^2-C-H bonds is achieved due to extreme cooperativity between Lewis acidic and Lewis basic centres of the pair. This reactivity is of major importance for metal-free catalysis since these elementary C–H insertion and protonation steps can be incorporated into various catalytic cycles.[3] Catalytic borylation of hetarenes has recently been reported with the aid of the previously discovered aminoborane.[4,5].



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A Total Synthesis of (±)-3-O-Demethylmacronine Through Rearrangement of a Precursor Embodying the Haemanthidine Alkaloid Framework

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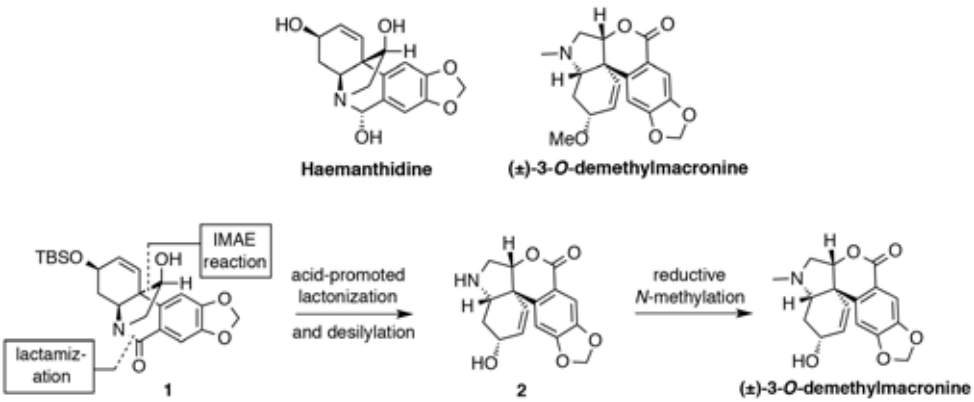
The Australian National University, Canberra, ACT 2601, Australia



A total synthesis of the racemic modification of the tazettine-type alkaloid 3-O-demethylmacronine is described. The key steps are an intramolecular Alder-ene (IMAE) reaction and a lactam-to-lactone rearrangement of tetracycle **1**, a compound that embodies the haemanthidine alkaloid framework.

Transformative Catalysis: Rational Design and Unexpected Surprises

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Intermolecular processes involving formation of new C-C bonds across multiple bonds are in high demand as they provide a fast access to complex molecules from readily available substrates.[1] Our efforts towards the development of metal catalyzed multicomponent dicarbofunctionalizations of alkynes and alkenes[2] as well as on the utilization of 1,n-H migration processes[3] to build up molecular complexity will be presented with particular emphasis on the mechanistic lessons underpinning these transformations.

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Transition Metal Catalysis under Ligand Control

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Our group is interested in developing new polyfunctional ligands giving rise to unusual bonding situations and emulating new reaction pathways. Typically, phosphine-boranes and related ambiphilic ligands are studied for their propensity to form transition metal → Lewis acid interactions, and this opens new possibilities in terms of metal / ligand cooperativity.[1] Bidentate ligands with small bite angles are also used to promote oxidative addition reactions to gold, opening the way to Au(I)/Au(III) redox cycles.[2]

In addition, aiming at developing new pincer structures featuring original bonding situation and peculiar behavior, we have been studying over the last few years tridentate ligands based on the 2-indenediide motif.[3] This presentation will summarize our recent results in this area. The structure and catalytic properties of pincer complexes of type **A** will be discussed (Chart 1).

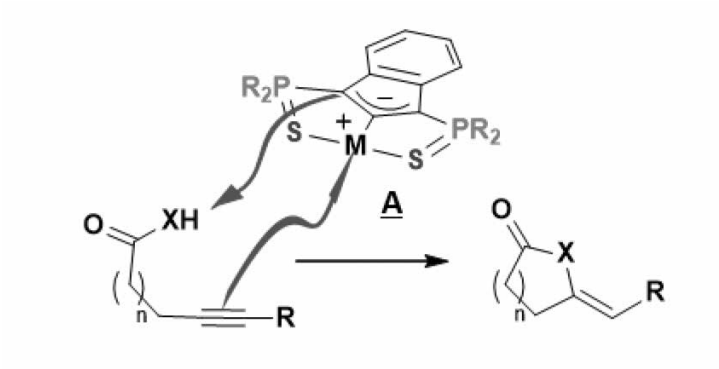

Chart 1: General structure of indenediide-based pincer complexes **A** and their application in cooperative catalysis.

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Catalysis with and without Metals towards the Total Synthesis of Tocopherols

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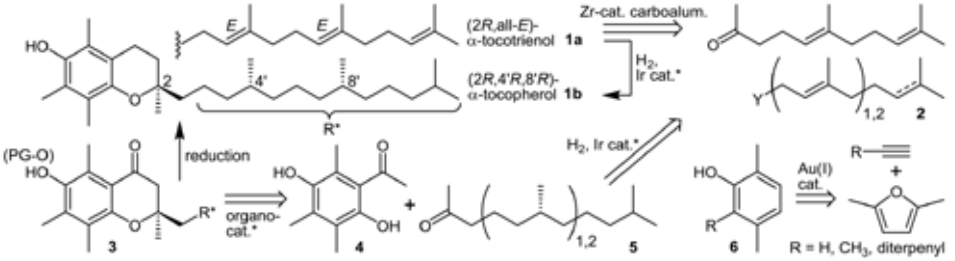
(2R,4'R,8'R)-α-Tocopherol (**1b**) is an industrially important target due to its highest biological potency of all vitamin E compounds.[1] Novel routes by total synthesis including the creation of the quarternary chroman stereocenter [2] will be presented. In continuation of our efforts together with academic partners [3-9] we discovered an enamine-based organocatalytic condensation to chromanone **3** [10] from hydroxyaceto- phenone **4** with chiral isoprenyl ketones of type **5** accessible from olefins **2** via asymmetric hydrogenation with highly selective and active iridium complexes.[11].



Alternative strategies will also be discussed.[12-14] An additional topic deals with the synthesis of aryl key building blocks **6** by Hashmi's gold-catalyzed furan-yne-cyclo- isomerization addressing the replacement of fossil resources by bio-renewables.[15]

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Type II Intramolecular [5+2] Cycloaddition

Prof. Dr. Chuang-Chuang Li

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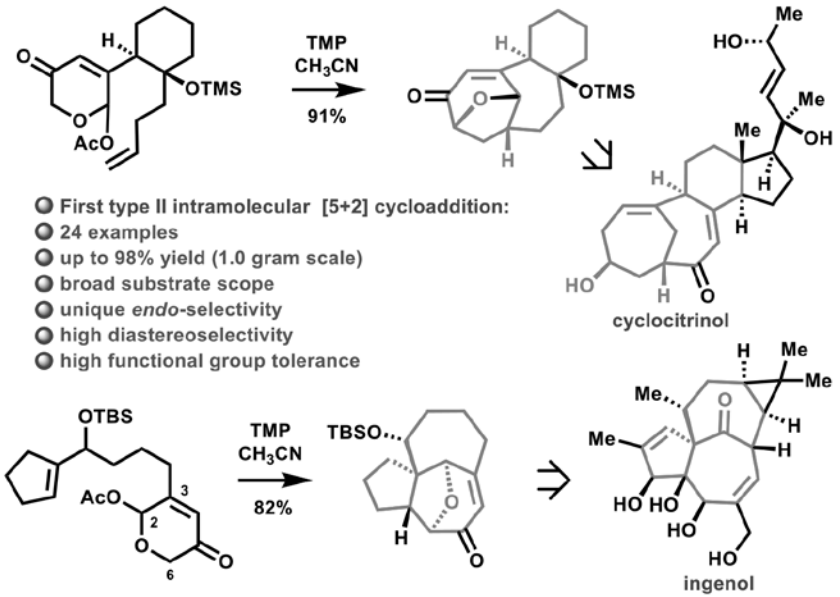
Shenzhen 518055, China, E-mail: ccli@sustc.edu.cn

Developing efficient reactions for achieving bridged ring systems is a long-standing challenge but very significant in organic chemistry, considering that such motif is widely found in natural products (such as Taxol®) with significant biological activities. So far there are no general reactions available for the single-step synthesis of bridged seven-membered-ring systems efficiently. Here, we describe the first type II intramolecular [5+2] cycloaddition reaction, which allows the efficient and diastereoselective construction of various highly functionalized and synthetically challenging bridged seven-membered ring systems. This simple, thermal transformation has shown a broad substrate scope and is high yielding, with high functional group tolerance and unique endo selectivity. The highly strained tricyclic cores of ingenol mebutate (Picato®) and cyclocitrinol are synthesized efficiently and diastereoselectively using this methodology.



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Functional Supramolecular Chemistry

Prof. Stefan Matile

University of Geneva, Geneva, Switzerland

This lecture will focus on functional systems that emphasize conceptual innovation, integrate unorthodox interactions [1], and address lessons from or challenges in nature.

Catalysis with anion-π interactions [2] and chalcogen bonds [3] will presumably be covered first as recent examples for "exotic" interactions at work. Anion-π catalysis of asymmetric enolate, enamine, iminium and transamination chemistry, the first anion-π enzyme [4], and remote control by electric fields will be presented. The more delocalized nature of anion-π interactions suggests that the stabilization of long- distance charge displacements in domino reactions on π-acidic aromatic surfaces deserves particular attention [5]. This is almost complementary to the highly localized substrate activation in the focal point of two or more chalcogen bonds. To realize such noncovalent catalysis with chalcogen bonds, dithienothiophenes will be introduced as a privileged motif reminicent of classics such as bipyridines or bipyrroles [2].

A twisted dimer of same dithienothiophenes will be presented as the first fluorescent probes that can image membrane tension in cells (unpublished). The fluorescent imaging of forces in biological systems in general is one of those central current challenges that are waiting for solutions from organic chemistry. Our contribution to tackle this problem focuses on mechanosensitive "flipper" probes that change color like lobsters during cooking, that is by a combination of polarization and planarization of the mechanophore in the ground state [6].

Another central, most persistent challenge in biology concerns the question how to move across lipid bilayer membranes. To find new ways to enter cells, we have focused on dynamic covalent disulfide exchange chemistry on their surface. Coming from counterion-mediated uptake with cell-penetrating peptides, attention is graduallly shifting from hybrid mechanisms with cell-penetrating poly(disulfide)s toward strain- promoted thiol-mediated uptake with asparagusic acid [7] and, most recently, epidithiodiketopiperazines (ETPs). With a CSSC dihedral angle near zero, ring tension with ETPs is at the maximum: The currently emerging ETP-mediated uptake is correspondingly powerful (unpublished).

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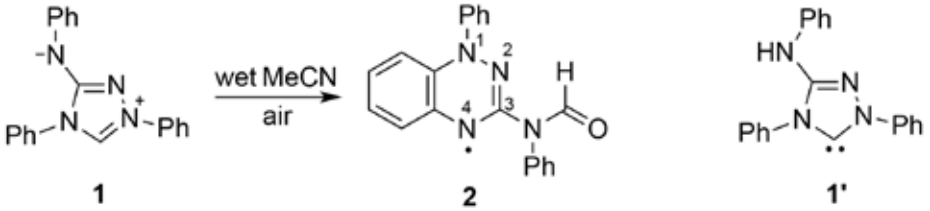
From Bench-Stable Carbenes to Blatter-type Radicals

A. C. O'Donoghue, Durham/UK; V. Chechik, York/UK; J. A. Grant, Durham/UK; Z. Lu, York/UK; D. E. Tucker, Durham/UK; B. M. Hockin, Durham/UK; D. S. Yufit, Durham/UK; M. A. Fox, Durham/UK; R. Kataky, Durham/UK)

Prof. A. C. O'Donoghue, Durham University, South Road, Durham DH1 3LE

There has been considerably increased recent interest in stable benzotriazinyl (Blatters') radicals owing to their potential applications as building blocks for functional materials. Existing synthetic routes to Blatters' radicals are problematic, however, and derivitisation is challenging. We have recently reported that an inexpensive, commercially available, analytical reagent Nitron **1** undergoes a previously unrecognized transformation in wet acetonitrile in the presence of air to yield a new Blatter-type radical **2** with an amide group replacing a phenyl at the C(3)-position. [1]



1 **2** **1'**

Our original interest in the chemistry of **1** was sparked by a recent report of the significance of the N-heterocyclic carbene (NHC) tautomer **1'** of this bench-stable analytical reagent. [2] To further probe the tautomeric distribution, we analysed the proton transfer properties in comparison with other NHCs, which revealed the unexpected transformation of 1 to **2**. [3]

This one-pot reaction of **1** provides access to a range of previously inaccessible benzotriazinyl radicals with excellent stabilities. The scope of the new reaction was confirmed by the successful synthesis of several substituted derivatives. Our mechanistic studies demonstrate that the reaction starts with a hydrolytic cleavage of the triazole ring of **1** followed by oxidative cyclization. Our results provide access to novel C(3)-amido and amino functional handles, thus significantly expanding the scope of benzotriazinyls as radical building blocks.

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Enantioselective Syntheses of Furan Atropisomers by an Oxidative Central-to- Axial Chirality Conversion Strategy

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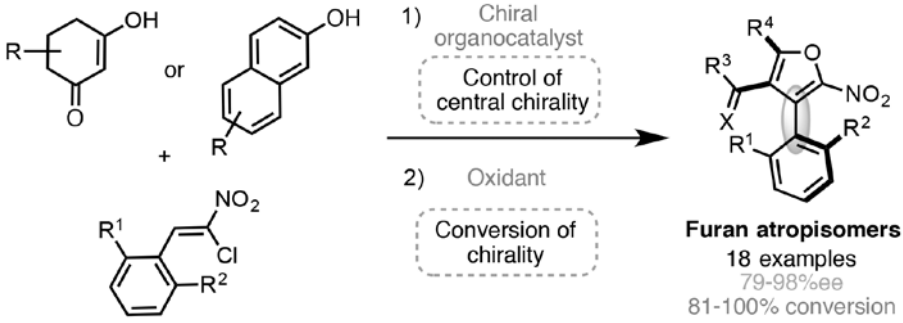
Non-racemic axially chiral molecules are of utmost interest for a wide cross-section of chemists due to their numerous applications as chiral ligands, organocatalysts, and materials but also for their biological relevance. Among them, biaryl atropisomers are the most common ones and many synthetic approaches are available.[1] In sharp contrast, the much more challenging enantioselective construction of atropisomeric heteroaryl structures still constitutes an important challenge of modern organic synthesis. Therefore, the design of new enantioselective synthetic strategies to access new families of atropisomeric heteroaryls is highly desirable. However the situation becomes drastically more difficult when the targeted heteroatropisomeric species display a five-membered heterocycle because of generally much lower barriers to rotation hampering the conformational stability.

To this end, we report the first enantioselective synthesis of hitherto unknown furan atropisomers using a central-to-axial chirality conversion strategy[2] based on the formation of the furan heterocycle, from acyclic precursors, and with the concomitant creation of the chiral axis.[3] Two structurally different optically active heteroatropisomeric families displaying a five-membered heterocycle have been obtained with great efficiency from readily available substrates. The crucial central chirality in the dihydrofuran precursor is mastered by an enantioselective organocatalyzed C–O-heterocyclization sequence and the chiral axis is revealed with good to excellent conversions by an oxidative dehydrogenation



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Advancing the Sustainable Chemistry of Singlet Oxygen and Applying it to Synthetic Challenges

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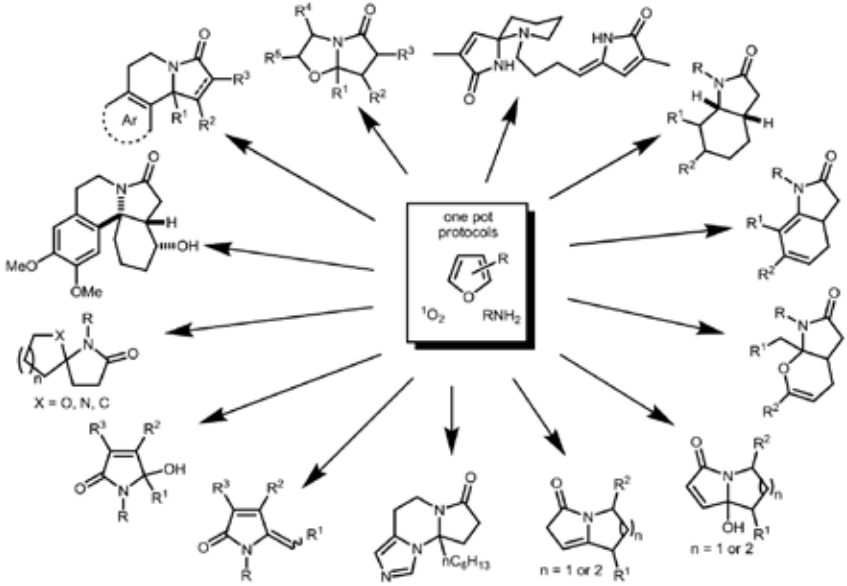
The purpose of this presentation is to give a taste of just how powerful the union of furans and photochemically-generated singlet oxygen ($^1O_2$) is proving to be as a synthetic tool. [1] It will be shown how the field has reached a point where the diversity of product structures attainable is rapidly expanding and how this expansion has facilitated the delineation of more sustainable synthetic technologies.



$^1O_2$-mediated cascade reaction sequences are extremely versatile and flexible and can be used to attain rapid increases in three dimensional molecular complexity. Basic nitrogen can also be introduced into sequences that initially harness the reaction of $^1O_2$ and furan thus furnishing a diverse range of complex polycycles. [2] $^1O_2$ is a green and highly efficient reagent that can be readily used in procedures that conform to many of the stringent criteria relating to the ideal of achieving sustainable chemistry.

The research leading to these results has received funding from the European Research Council under the European Union's Seventh Framework Programme (FP7/2007-2013)/ERC grant agreement no. 277588 as well as from the European Union's Seventh Framework Programme (FP7/2007-2013)/Marie Curie ITN grant agreement no. 316975.

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Why is Molecular Iodine an Outstanding Catalyst?

Martin Breugst

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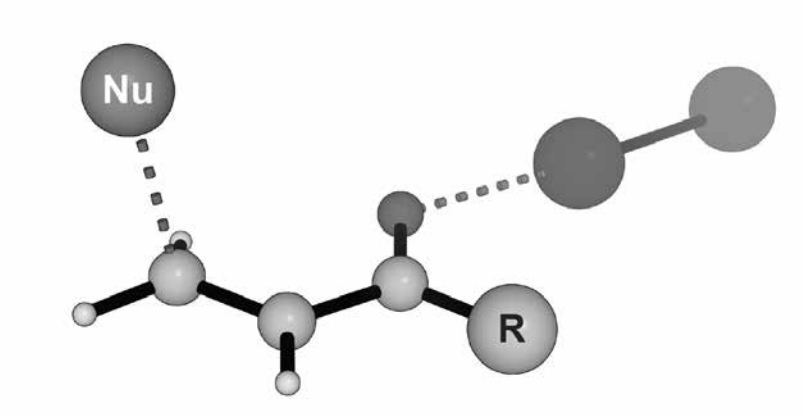
Molecular iodine – an easy to handle solid – is successfully employed as a catalyst in different organic transformations for more than 100 years.[1] Despite being highly active even in very small amounts, the origin of this remarkable catalytic effect is still unknown. The analysis of these reactions is further complicated by a variety of potential side reactions of iodine and, as a consequence, mechanistic investigations are scarce.[2]

We have now analyzed the influence of small amounts of iodine on various organic transformations relying on different experimental, kinetic, and computational approaches.[3] Based on these investigations, we can rule out effects like hidden Brønsted-acid catalysis or the involvement of higher iodine species in the rate-limiting step and are able to propose a plausible origin of the catalytic activity of molecular iodine.



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Multidentate Halogen Bonding Organocatalysts in Molecular Recognition Studies

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The main goal of our research activities is to develop applications of halogen bonding in organocatalysis. To this end, we prepared neutral polyfluorinated and iodinated multidentate halogen bond donors which are based on terphenyl and quaterphenyl backbones and used them as catalysts in a benchmark reaction.[1] Since this reaction is based on halide abstraction, we investigated in more detail the binding of the halogen bond donors to halides and compared the adduct formation in all three phases: gas-phase, solution, and solid state.[2]

The highly symmetric Lewis acidic axis of these organocatalysts also make them ideally suited for molecular recognition processes. In a first proof-of-principle case, molecular recognition between the quaterphenyl-based polyfluorinated halogen bond donor and an orthoamide was realized. The latter featured Lewis basic binding sites which are perfectly positioned to form three virtually identical halogen bonds with the Lewis acid. This complex thus represents the first case of well-defined three-point halogen bonding. The binding to this ideal counterpart is orders of magnitude stronger than the unselective binding to other amine reference compounds.[3]

In an extension of this work, the same halogen bond donor was also used in microquartz balance studies in the gas phase. Acetone was selectively detected, even in the presence of water.[4]

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Design, Synthesis and Applications of Bifunctional Chiral Urea-Quaternary Ammonium Salt Catalysts

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Chiral quaternary ammonium salt catalysts have emerged as one of the outstanding catalytic principles over the last decades. Their versatility to activate nucleophiles in a non-covalent fashion makes them unique compared to other methods.[1] However, over the last years it became obvious that activation and control of nucleophiles alone does not result in sufficient selectivities in a variety of difficult transformations and the same comes true for the sole control of electrophiles by other catalytic motives. Thus the use of bifunctional ammonium salt catalysts has become a promising strategy to carry out demanding reactions that are not possible using other methods in a highly stereoselective fashion.[2] Surprisingly, whereas the use of free OH-containing chiral ammonium salt catalysts has a rich history, the design and application of ammonium salt catalysts containing urea or thiourea H-bonding motives is still in its infancy.[2] Our group has now introduced a new class of systematically modified bifunctional (thio)- urea containing quaternary ammonium salts based on easily obtainable chiral backbones like tartaric acid or trans-1,2-cyclohexane diamine.[3] A detailed overview of the design and syntheses of these catalysts and their catalytic potential for different asymmetric transformations as well as studies concerning the activation mechanisms will be presented in the course of this symposium.

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Dynamic Bioactive Macromolecules by Reversible Chemistry

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The evolution of chemistry – from static to dynamic, where molecular bonds or supramolecular interactions are able to reorganize and exchange in a programmable fashion, has been realized as a fundamental feature in creating intelligent materials on multiple length-scales. In cells, both dynamic covalent chemistry and supramolecular chemistry play a central role in all networks and processes from the transport of small molecules to hierarchical superstructures of macromolecular assemblies.

We present the synthesis of dynamic bioactive architectures based on e.g. boronic acids that allow controlling cellular function. Boronic acids form stable and reversible complexes with salicyl hydroxamates in a pH-dependent manner under aqueous conditions with highest binding affinity. We have demonstrated the integration of boronic acid and protein chemistry for achieving click-like ligation of peptides to the construction of pH-responsive macromolecular systems. Extending the application repertoire of the reaction, we investigate the use of this dynamic complexation in building hybrid macromolecules such as dendritic proteins or native protein hydrogel systems.

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Transition Metal-Catalyzed [2+2+2] Cycloadditions and Cycloisomerizations: An Overview

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For several years, we have been interested in new developments of transition metal-catalyzed [2+2+2] cycloadditions. Our efforts have been concentrated mainly on the search of new efficient catalytic systems, [1] new unsaturated partners and the finding of conditions for enantioselective cycloadditions.

We discovered that the family of tetrakistrimethylphosphinecobalt complexes displayed a very efficient catalytic activity in such a process as they could catalyze this reaction at room temperature with low catalyst loadings and with no need of external activation. [2] We demonstrated that these well-defined electron-rich cobalt catalysts are able to achieve C—H activation / functionalization without additional reducing agents or additives. [3] By using such a kind of catalysts, we also synthesized 1,2- dihydropyridines through C—H activation / 6π-electrocyclization process. [4]

Turning our attention to other transition metals, we reported unprecedented niobium-mediated cycloaddition of silatriynes and intramolecular hydrofunctionalization of alkenes. [5] We also disclosed the first and efficient asymmetric route to 1,2- dihydropyridines by a rhodium-catalyzed [2+2+2] cycloaddition of diynes and sulfonimines. [6] Finally, we have proposed an asymmetric approach relying on the chiral anion strategy.

An overview of these results will be presented and discussed.

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Enabling technologies-assisted stereoselective organic synthesis: (organo)catalysis, catalytic and 3D-printed reactors

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Continuous-flow systems have emerged as a powerful technology for performing chemical transformations and have recently attracted attention also for the preparation of chiral APIs (active pharmaceutical ingredients).[1]

On the other hand, 3D-printing technology allows chemists to build devices with high precision and well-defined architecture. [2]

The combination of these two only partially explored technologies in stereoselective organic synthesis opens new and intriguing possibilities; the fabrication of ad hoc designed reactors and other devices, to perform at best different reactions becomes now feasible and gives new impulse to the use of enabling technologies in the synthesis of complex molecules.[3]

Recently developed technology-assisted stereoselective reactions will be discussed, including reactions of nitroacrylates under MW irradiation and organocatalyzed reactions in alternative reaction media (Deep Eutectic Solvents).[4] Some stereoselective transformations have been performed in chiral organocatalytic reactors (packed-bed and monolithic) under continuous flow conditions. Recent developments will be presented, highlighting also the possibility to perform organocatalytic reactions in (micro)-mesoreactors and to synthesize in flow-mode chiral intermediates of pharmaceutical interest. Preliminary results of stereoselective catalytic reactions in 3D-printed reactors will be also briefly highlighted.[5]

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Ligand-Accelerated C-H Functionalization Reactions

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Metal-catalyzed C-H functionalization is a highly attractive strategy to introduce complexity in organic molecules and has the potential to revolutionize the way we synthesize molecules. However, the low reactivity and selectivity observed in many of these processes impede the actual implementation of this strategy as a general synthetic tool in organic laboratories. To unlock the full potential of metal-catalyzed C-H functionalization, the discovery of new ligands capable of increasing the reactivity and selectivity of these processes is of central importance. To date, only few ligands are able to promote the direct functionalization of C-H bonds [1]. In our laboratories we are interested in design new ligands for promoting high reactivity and selectivity in palladium-catalyzed C-H functionalization processes [2].

In this communication I present the discovery and development of new type of ligands capable of promoting a variety of C-H functionalization reactions of simple arenes. The new catalytic system can be applied in late-stage functionalization of complex molecules.

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Chiral Triazole H-Donors in Anion-Binding Catalysis: Novel Catalysts for the Enantioselective Dearomatization of N-Heteroarenes

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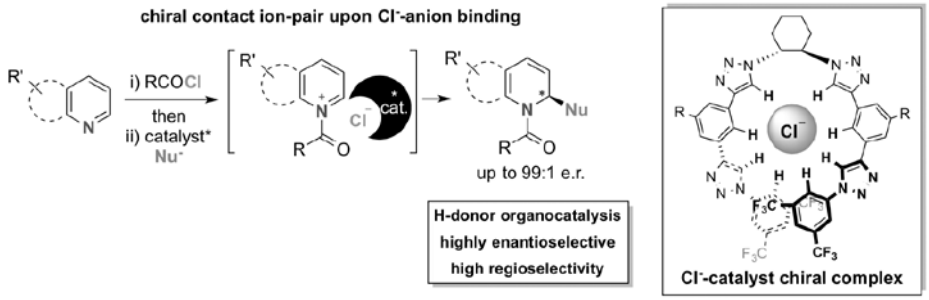
In the past few years, selective anion-binding organocatalysis[1] have become a promising new catalytic strategy to promote highly enantioselective chemical reactions. However, till date essentially only chiral (thio)ureas have been efficiently employed as catalysts. With the aim of providing alternative structures for anion acceptor catalysis, our group has recently developed a novel family of chiral triazoles as C-H bond-based hydrogen donor catalysts.[2-3] The cooperative binding to anions of the catalyst's triazole and aromatic C-H bonds in its cavity has been studied by NMR and CD-titration experiments. Moreover, these rotational flexible structures adopt a reinforced chiral helical conformation upon binding to the chloride anion. All these features have been exploited for the asymmetric catalysis. Herein, their outstanding performance for the asymmetric dearomatization of (iso)quinolines and the more demanding simple pyridines or the challenging diazarenes will be presented.[3]

The developed triazole-catalysts allow high levels of chirality transfer to the products via a close chiral anion-pair complex with in situ pre-formed N-acyl iminium substrates. This methodology offers a straightforward and potent entry to the synthesis of chiral heterocycles with bioactive and added synthetic value from simple and abundant heteroarenes.



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Green Organocatalytic Oxidations Mediated by Hydrogen Peroxide: New Catalysts, One-pot Transformations and Mechanistic Insights

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Modern Organic Synthesis is in a continuous quest for new activation modes of molecules and the discovery of novel transformations that fulfil the criteria of Green Chemistry. In the last few years, we are actively involved in the field of Organocatalysis. Although various elegant contributions exist in this field, organocatalytic oxidations have been left out. In a journey for identification of green reagents, we have introduced a novel oxidation protocol, where 2,2,2- trifluoroacetophenone is employed as the catalyst. A combination of acetonitrile and H_2O_2, known for its green character, since its only byproduct is water, constitutes the oxidation partners of the protocol. We have successfully applied this oxidative protocol for the oxidation of silanes,[1] the chemoselective oxidation of tertiary amines and azines,[2] and the oxidation of olefins to epoxides.[3]

Recently, we have taken a step forward in employing this oxidative protocol in one-pot transformations.[4-7] Finally, in an attempt to clarify the reaction mechanism, HRMS experiments provide clear evidence that exclude the involvement of a dioxirane intermediate.[8]

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Gold Nanoparticles Catalyzing Spirocyclizations under Microflow Conditions

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Gold catalysis utilizing supported gold nanoparticles is an emerging topic in the intensively studied domain of gold-catalyzed reactions. Supported gold nanoparticles combine the advantageous features of homo- and heterogeneous catalysis by merging the selective activation of π-systems with an uncomplicated recycling of the catalyst. Therefore, they provide opportunities to facilitate the application of gold catalysis on a larger scale. Nonetheless, in order to allow an application on an industrial scale, gold-catalyzed processes must be improved with regard to cost, productivity, robustness and environmental sustainability. A logical solution to overcome such issues is the use of a continuous-flow process utilizing highly active supported gold nanoparticles in a packed-bed reactor. The combination of heterogeneous gold catalysis with microreactor technology offers various advantages compared to batch processes. Besides apparent benefits such as enhanced mixing, improved heat transfer, and safer reaction conditions, the use of a packed-bed reactor can increase selectivity and facilitate challenging transformations. Under continuous-flow conditions, usually short residence times are observed due to the increased amount of catalyst/reactant in the packed bed, resulting in less degradation of sensitive substrates. Moreover, the use of a catalyst bed facilitates catalyst recycling and reuse, thereby reducing the amount of metal impurities in the final product. Recently, our international group developed a novel heterogeneous gold catalyst, consisting of gold nanoparticles on an Al-SBA15 support, for post-Ugi cycloisomerizations. The reaction enabled rapid and efficient access to various spiroindolines. In terms of reactivity, selectivity and productivity, the reported protocol proves to be superior to previous reports. The main reason for the superiority is the very high catalyst to substrate ratio in the packed-bed reactor. Moreover no detectable leaching of the Au@Al-SBA15 catalytic bed was noted.

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Adventures in Catalysis: From Mechanisms to Applications

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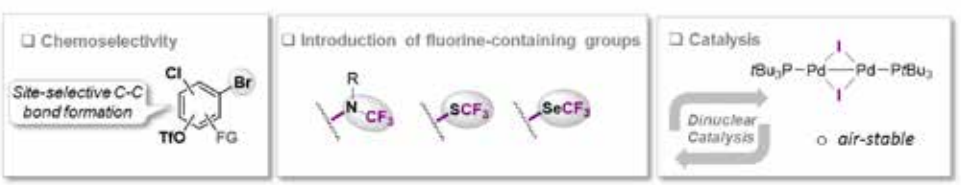
Detailed understanding of catalytic transformations is key to designing better catalysts. This talk will give insights on case studies and reactivity designs recently undertaken in our laboratory. The focus will be on our recent activities in exploring catalysis at dinuclear Pd(I) sites. Parallels to Ni-catalysis will be drawn also, and direct applications of these concepts to the late-stage introduction of fluorine-containing groups and chemoselective C-C bond formations for the creation of richly functionalized (hetero)aryl motifs will be presented.[1] Experimental and computational tools were applied in these studies.[2]



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Diastereofacial π-stacking as an Approach to Access an Axially Chiral P,N-ligand for Asymmetric Catalysis

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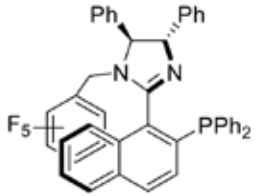
Axially chiral biaryl compounds are highly important in asymmetric catalysis. There have been many ligands based on such a biaryl core and P,N ligands comprise a small, yet important subset of such ligands. Brown synthesised the first atropisomeric P,N-ligand Quinap,[1] which is a P,N analogue of Binap. Since then, only a few atropisomeric P,N-ligands such as Quinazolinap,[2a] PyPhos,[3] Pinap,[4] Quinazox,[2b] and recently StackPhos,[5] are reported in the literature. These ligands were successfully applied in a wide variety of catalytic enantioselective transformations such as Rh-catalysed diboration and hydroboration, Pd-catalysed allylic alkylation, Cu-catalysed conjugate boration and alkynylation, alkyne addition to imine and enamine and Ag- catalysed azomethine cycloaddition etc.[6]

This presentation focuses on the design and successful synthesis of a new member of the axially chiral P,N-ligand family, i.e. (S,S,Ra)-UCD-PHIM. We have first time introduced axial chirality in to PHIM (Phosphino-imidazoline) type ligands. This novel ligand was successfully applied in the enantioselective copper-catalysed A3 coupling reaction (ee's up to 98.1%).[7]



***(S,S,Ra)*-UCD-PHIM**

New P,N-ligand features

- Central chirality
- Axial chirality
- Configurational stability enabled by π–stacking
- Modular and tunable
- Resolved by fractional crystallisation
- Easily scalable
- Excellent *ee*'s and enhanced reaction rate in A3 coupling

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Branched-selective and enantioselective hydroformylation of alkyl-alkenes: From fragrances and commodities to pharmaceutical intermediates and chiral heterocycles.

Matt L. Clarke

Matt Clarke, School of Chemistry, University of St Andrews, EaStCHEM, St Andrews, Fife, Scotland.

Linear selective hydroformylation is well-known as a core reaction in industrial chemistry, and also increasing used in the synthesis of more complex molecules: most terminal alkenes will undergo hydroformylation with good to excellent linear selectivity. Some time ago, we set ourselves the challenge of increasing the utility of hydroformylation in greener organic synthesis by developing new approaches that enable branched chiral aldehydes to be produced. A particularly intractable challenge over the last 40 years has been to form branched aldehydes from alkenes that are not in any way biased towards forming this isomer. A breakthrough in this arena came in our discovery that Rh catalysts derived from a phospholane-phosphite ligand named BOBPHOS (Strem 150557) are unique in giving access to enantiomerically enriched branched aldehydes from unbiased alkenes of type (alkyl)-CH=CH2. [1, 2]. We now have a good understanding of the mechanism of this catalyst system.[4]

The programme that arose out of this discovery has explored the synthesis of various industrial fine chemicals that might be desirably accessed using the Rh / BOBPHOS system, along with optimisation of ligand synthesis and the catalysis process. However, more recently we have also investigated utilising this as an efficient methodology in organic synthesis. This contribution will focus on new results that show how Rh / BOBPHOS catalysts can be used to access not only simple pharmaceuticals and fragrances, but heterocycles that are useful building blocks for the synthesis of drugs and natural products. For example chiral piperidines containing two stereo centres can be made in a very short sequence as single diastereoisomers in enantiomerically pure form, including a precursor to a launched drug.[4] In order to increase the viability of the reaction for laboratories that are not equipped with pressure vessels, we have also developed protocols for highly enantioselective hydroformylation of alkenes using formaldehyde as a syngas surrogate. [3] Recent selected results will be presented.

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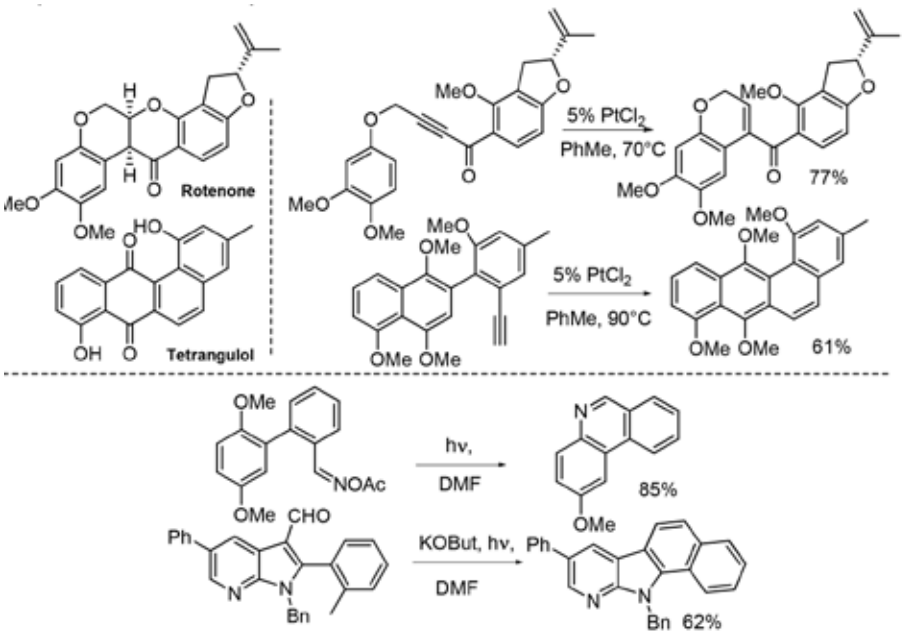
Light and Metal-Mediated Syntheses of Oxygen and Nitrogen Heterocycles

Prof. Charles de Koning

School of Chemistry, University of the Witwatersrand, PO Wits 2050, Johannesburg, South Africa

Nature has provided us with many biologically active natural products, including nitrogen and oxygen heterocycles. In our laboratories, we have discovered a number of interesting, if not unexpected, reactions leading to heterocycles.

In the first part of this presentation the total synthesis of the oxygen-containing natural products rotenone and tetrangulol will be discussed. [1,2] A key step in both syntheses is a platinum-mediated cycloisomerization reaction.



In the second part of the presentation the use of novel light-assisted methodology for the synthesis of benzo-fused quinolines and related compounds, as well as azacarbazoles, will be outlined. [3]

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Catalytic asymmetric dearomatization (CADA) reactions

Prof. Dr. Shu-Li You

State Key Laboratory of Organometallic Chemistry, Shanghai Institute of Organic Chemistry, Chinese Academy of Sciences, 345 Lingling Lu, Shanghai 200032, China;
Email: slyou@sioc.ac.cn

Asymmetric dearomatization reactions are particularly attractive methods in organic synthesis given the facts that the starting materials arenes are highly abundant and readily available, and the dearomatization reaction would provide direct access to polycylces and spirocycles bearing quaternary stereogenic center. However, due to the extra stability of "aromaticity" of the arenes, their dearomatization reaction with good enantioselective control has been a challenge.

In this talk, the progress from the You laboratory on the development of catalytic asymmetric dearomatization processes will be introduced. Direct asymmetric dearomatization reactions of various aromatic compounds were realized with a proper choice of catalysts.

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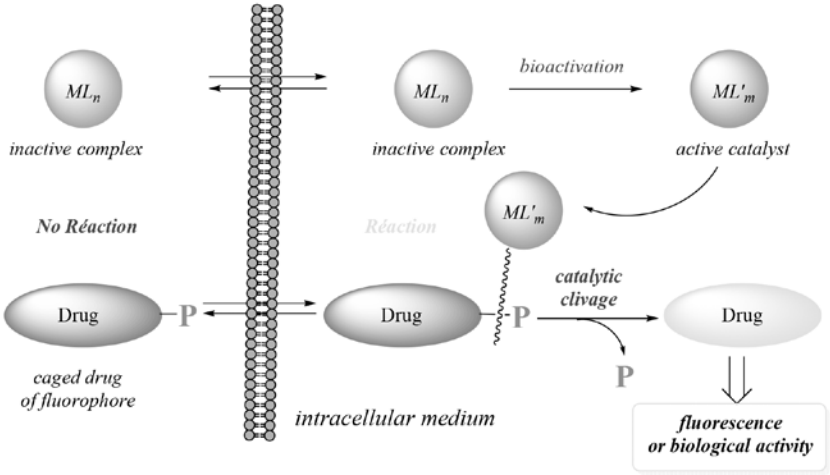
A Quest for Bio-Orthogonal Transition Metal Catalysis in Living Cells

Prof. Dr. Olivier Riant

Institute of Condensed Matter and Nanosciences (IMCN), Université catholique de Louvain, Louvain la Neuve, Belgium
E-Mail :olivier.riantclouvain.be

The development of transition metal catalysed reaction in biological systems is an emerging and fascinating area of research at the interface of homogenous catalysis and chemical biology. As it is still virtually unexplored but already holds out wide prospects of applications in molecular biology and medicine, it represents a fantastic playground for molecular organometallic chemists.



Our group started recently to be involved in this new field of research and this talk will present our progress in two related projects in the field of in cellulo prodrug activation. Our approach is focused on finding transition metal pre-catalysts for which activation will occur after internationalization in the cell through bioactivation. The active complex will then be able to catalyze the uncaging on either a fluorophore or an active drug. We have found two families of complexes based on iridium and palladium which can be activated by biological co-factors and catalyze simple reactions such as double bond reduction and allylic substitution. In the case of the palladium pre-catalysts, the activation proved to be oxygen-dependent and the first example of a selectivity toward hypoxic cells for the corresponding catalysts was found. Here, we will report the methodology for catalysts optimization and the mechanism of the bioactivation, which finally led to the activation of a cytotoxic prodrug in cancer cells.

Thiourea-Catalyzed Cross-Dehydrogenative Coupling of sp^3 C-H with Nucleophiles: Mechanism and Scope

Zhiguo Zhang, Hangzhou/+86, Kai Gu, Hangzhou/+86, Zongbi Bao, Hangzhou/+86, Huabin Xing, Hangzhou/+86, Qiwei Yang, Hangzhou/+86, Qilong Ren, Hangzhou/+86

Prof. Dr. Zhiguo Zhang, Zhejiang University, Zheda Road 38, Hangzhou 310027, China.

The selective transformation of C(sp^3)-H bonds to other functional groups represents an active and vibrant research area over the past decades, as C(sp^3)-H bonds are ubiquitous in organic molecules.[1] Among those reactions reported, the cross-dehydrogenative-coupling (CDC) reaction of two C(sp^3)-H or heteroatom-bonds has been arguably recognized as one of the most elegant and promising strategies in modern synthetic chemistry, mainly because it can directly form a new bond without prior functionalization of substrates [2] While the use of tBuOOH together with a redox-active catalyst (transition metals or iodide) is well documented for these reactions, the use of a non-redox-active organic catalyst has been much less explored. In continuation of our interest in noncovalent organocatalysis, here, we present for the first time an efficient thiourea-catalzyed cross-dehydrogenative coupling of sp^3 C-H of N-aryl tetrahydroisoquinolines (NArTHIQ) with P- and C-nucleophiles without the involvement of metals.[3]

Mechanistic investigations using a combination of NMR, KIE, as well as other experimental techniques reveal for the first time the apparent similarities of thiourea/TBHP and CuBr/TBHP systems for catalytic CDC reactions.[4] Furthermore, we were also able to extend this valuable methodology to C–C and C-P bond formations. N-aryltetrahydroisoquinolines bearing either electron-withdrawing or - donating groups were well tolerated with this method, and the corresponding α-functionalized amines were delivered in good yields. The present method not only expands the application of thiourea further but also paves a new avenue for thiourea- based organocatalysts.

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ERC Individual Grants and Funding Scheme

Christine Courillon, Brussels / Belgium

ERC Executive Agency
Place Rogier, 16 B-1049 Brussels, Belgium

The European Research Council (ERC) is a leading European funding body supporting excellent investigator-driven frontier research across all fields of science. ERC calls are open to researchers around the world.

The ERC offers various different outstanding funding opportunities with grants budgets of €1.5 to €3.5 million for individual scientists. All nationalities of applicants are welcome for projects carried out at a host institution in Europe (European Union member states and associated countries).

At this session, the main features of ERC funding individual grants will be briefly presented, as well as testimonial from ERC panel members and/or ERC grantees in the field of Organic Chemistry.

New Catalytic Strategies for Chemical Synthesis

Matthew Gaunt, Cambridge/UK

University of Cambridge, Lensfield Road, Cambridge, United Kingdom

My group is focused on the development of new catalyst-controlled reactivity concepts that enable novel transformations in chemical synthesis. This lecture will focus on a number of different aspects of our current research programs. Firstly, the lecture will detail our work towards the discovery and development of general platform for palladium-catalysed C–H bond activation on aliphatic amines. The chemistry described here leads to the selective transformation of a range of C–H bonds adjacent to an unprotected secondary amine into synthetically versatile nitrogen containing molecules and leads to a number of applications of relevance to practitioners of synthetic and medicinal chemistry. The second part of the lecture will focus on the development of a strategy for the selective functionalization of certain amino acid residues in proteins, and detail how this bioconjugation process can be used to generated complex, information rich protein scaffolds.

Complex Glycans in Health and Disease

Geert-Jan Boons

Chemical Biology and Drug Discovery, Utrecht University
Universiteitsweg 99, 3584 CG Utrecht, The Netherlands

Most cell surface and secreted proteins are modified by covalently-linked glycans which are essential mediators of biological processes such as protein folding, cell signaling, fertilization, embryogenesis, and the proliferation of cells and their organization into specific tissues. Overwhelming data support the relevance of glycosylation in pathogen recognition, inflammation, innate immune responses, and the development of autoimmune diseases and cancer, Although the functional importance of glycoconjugates are well-established, molecular mechanisms by which these compounds exert their functions have been difficult to define. We have addressed these difficulties by the development of methods for complex oligosaccharide and glycoconjugate synthesis, application of the new methods for the preparation of biologically important targets such as tumor-associated antigens, capsular polysaccharides, lipopolysaccharides, and heparan sulfates, and use of the resulting compounds in biological and biomedical studies. These studies have provided insight in how viruses employ host glycans for infection and in which way alteration of glycan expression by cancer results in metastasis and immune evasion.

Stereoselective Peptide Modifications – Efficient Tools for Natural Product and Drug Synthesis

U. Kazmaier, Saarbrücken, Germany,

Prof. Dr. Uli Kazmaier, Saarland University, Campus C4.2, 66123 Saarbrücken

Microorganisms are highly productive producers of natural products, and a wide range of their secondary metabolites became lead structures for the development of drugs. Peptides and cyclo(depsi)peptides formed by nonribosomal peptide synthetases (NRPS) are especially interesting from a pharmaceutical point of view. Many of these peptides contain not only (S)- and (R)-configured or N-methylated amino acids, but also rather unusual side chains. While classical peptide synthesis is suitable for the synthesis of single target molecule, it is by far less suited for the synthesis of libraries of related peptidic structures, as required for SAR studies. In these cases, a concept allowing modifications in a very late stage of the synthesis would be much more attractive. Since a couple of years our group is also involved in stereoselective peptide modifications.[1] For example, peptide allylesters can be subjected to a stereoselective chelate enolate Claisen rearrangement,[2] where the stereochemical outcome is controlled by the stereogenic centres in the peptide chain. An (S)-amino acid generates an adjacent new (R)-amino acid and vice versa. Alternatively, similar unsaturated side chains can also be introduced via transition metal-catalyzed allylic alkylation,[3] generating also (S)/(R)-peptides. Excellent diastereoselectivities are obtained with sterically demanding allylic substrates (> 95% ds), such as stannylated allyl carbonates.[4] The metallated peptides obtained are excellent substrates for further side chain modifications, giving straightforward access to small peptide libraries. This approach is also suitable for the synthesis and modification of natural products, such as the miuraenamides.[5] Latest results will be presented on the conference.

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Reverse Biomimetics: Teaching Enzymes the Art of Modern Organic Synthesis

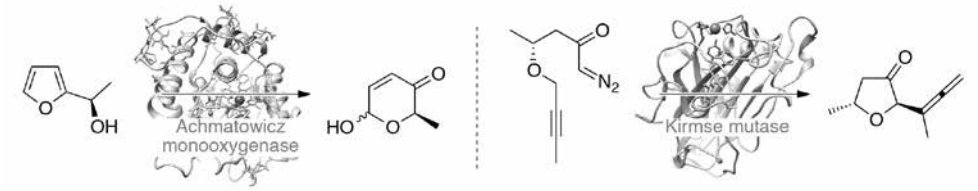
J. Deska, Espoo/FIN

Prof. Dr. Jan Deska, Aalto University, Kemistintie 1, 02150 Espoo/Fin

Thanks to unrivalled selectivities and good availability of stable and optimized enzyme preparations, biocatalysis is increasingly gaining ground as module in the organic chemist's toolbox for the synthesis of well-defined building blocks. Moreover, the biological activation modes have served as great inspiration for the design of new and effective, biomimetic catalysts allowing for small molecule entities to promote reactions typically associated with biosynthetic transformations, and beyond.[1] However, with regard to an even broader application of enzymatic catalysts in classical synthetic chemistry, the lack of biosynthetic precedence for numerous synthetically relevant reactions and the consequent lack of biocatalysts to promote those reactions needs to be considered a major drawback.

Since many years, catalytic promiscuity, the enzymes' capability to catalyze fundamentally different chemical interconversions, has been in the scientific focus,[2] however, just recently entirely abiotic transformations came within reach by means of specialized evolved proteins.[3-5] With the chemo-inspired design of novel biocatalytic transformations, reverting the concept of biomimetics, new opportunities arise that can provide the necessary tools to apply synthetic strategies in biological systems en route to streamlined fermentative production scenarios of valuable organic building blocks.

In our search of biological catalysts with abilities to address synthetically important reactions beyond the biosynthetic repertoire, a set of wild-type metallo-enzymes was identified to be effective promoters in a range of transformations for the preparation of O-heterocyclic compounds.[6,7] This talk will present the development of biocatalytic versions of the Achmatowicz-type ring expansion of furfuryl alcohols and the Kirmse-Doyle-type rearrangements of oxonium ylides, as well as their implementation in the construction of short ex vivo metabolisms.



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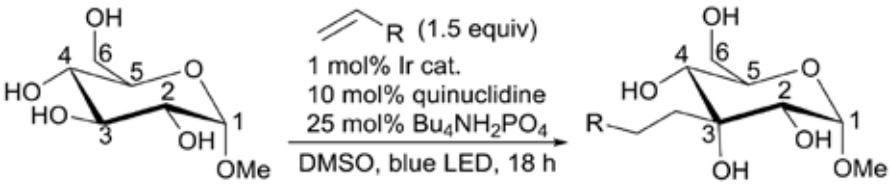
Site-selective C-C bond formation in unprotected monosaccharides using photoredox catalysis

I. C. (Steven) Wan, Groningen NL

Prof. Dr. Adriaan J. Minnaard, University of Groningen, Nijenborgh 7, 9747AG Groningen

Site-selective photoredox reactions with somophiles readily enable branching of the carbon skeleton of unprotected glucosides, allosides and xylosides regioselectively at C3. These reactions open the possibility of selective C-C bond formation in monosaccharides without multi-step protection-deprotection strategies.

A photoredox reaction developed by MacMillan and coworkers allows the activation of alcohol C-H bonds. [1] With this information in hand, in addition to the previous efforts of regioselective oxidation of carbohydrates in our group, we recognized the intrinsic reactivity of carbohydrates and the possibility of regioselective C-H activation. [2] The activated C-H bond turned out to be C3. The regioselectivity is currently under investigation.



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Biocatalytic C-C bond formation and asymmetric amination for organic synthesis

W. Kroutil, Graz/A, N. G. Schmidt, Graz/A, S. E. Payer, Graz/A, L. Hammerer, Graz/A, E. Eger, Graz/A, J. E. Farnberger, Graz/A, S. Velikogne, Graz/A, J. Popłoński, Graz/A, M. Fuchs, Graz/A, J. Pletz, Graz/A, J. H. Schrittwieser, Graz/A,

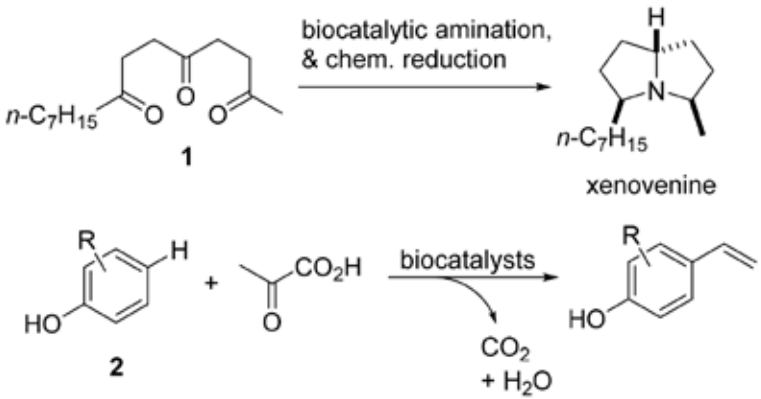
Prof. Dr. Wolfgang Kroutil, University of Graz, Heinrichstrasse 28, 8010 Graz

Atom efficient and mild transformations are highly desired reactions for C-C bond formation as well as for the asymmetric amination of ketones.

Especially transaminases (TAs) have attracted increasing attention for the preparation of α-chiral, optically pure amines from prochiral ketones via an asymmetric reductive amination, often representing a key step in the synthesis of active pharmaceutical ingredients (API) [1-2]. Additionally, biocatalytic C-C bond formation gained higher interest.

As an example for a synthetic application we report the regio- and stereoselective asymmetric mono-amination of a single ketone moiety out of three (see compound **1**) which allowed performing the shortest and highest yielding total synthesis of the bicyclic showcase pyrrolizidine alkaloid xenovenine without the need for protecting strategies [3].

By choosing appropriate enzymes for C-C bond formation ortho- and meta-substituted phenols **2** were selectively vinylated in para position [4]. For this method no chemical equivalent was available before. The same is true for the para-coupling of phenols to pyruvate yielding after an enzyme cascade 3-(p-hydroxy-phenyl) lactic acid derivatives [5].



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Organic chemistry applied to proteins: The case of ubiquitination and deubiquitination

Ashraf Brik, Haifa/ IL

Prof. Dr. Ashraf Brik, Technion-Israel Institute of Technology, 3200008, Haifa, Israel

In this talk, I will present our synthetic approaches for protein ubiquitination to shed light on the various unknown aspects of the ubiquitin signal in cellular pathways. The enzymatic attachment of ubiquitin to a specific protein target is a widely utilized post-translational modification in cellular functions and has been implicated in several diseases. The majority of biochemical, biophysical and structural studies in the field rely on the in vitro enzymatic reconstitution of this complex modification for the protein of interest. However, these approaches are often challenged by difficulties in obtaining the ubiquitinated conjugates in acceptable homogeneity and workable quantities. Our group has been developing novel chemical approaches for the efficient and site-specific protein ubiquitination to overcome the enzymatic limitations. Our methods combine state of the art ligation approaches of unprotected peptides and more recently the use of Pd(II) complexes for the assembly of these challenging proteins starting from commercially available protected amino acids. These approaches enabled the preparation of ubiquitinated proteins and novel probes such as tetra-ubiquitinated alpha-synuclein and mono-ubiquitinated histone H2B to support the ongoing efforts aiming at studying the role of ubiquitination in these systems. We are also expanding our synthetic approaches to study and target important deubiquitinases, which reverse the ubiquitination step, to shed light on their role in health and disease and ultimately for drug development.

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Poster

Synthesis

SY001 **Stereoselective Arene-Forming Aldol Condensation: Synthesis of Configurationally Stable Oligo-1,2-naphthylenes**

D. Lotter, Basel/CH , C. Sparr, Basel/CH

SY003 **Application of semi-synthetic approach for synthesis of heterocyclic analogues of colchicine exhibiting antitumor activity**

E. Shchegravina, Nizhny Novgorod/RU , Y. Voitovich, Nizhny Novgorod/RU, E. Svirshchevskaya, Moscow/RU, H.-G. Schmalz, Cologne/DE, A. Fedorov, Nizhny Novgorod/RU

SY004 **Singlet Oxygen Initiated One-pot Transformation of Simple Furans into Octahydroindole Scaffolds**

M. Triantafyllakis, Iraklion Crete/GR , D. Kalaitzakis, Iraklion Crete/GR, G. I. Ioannou, Iraklion Crete/GR, G. Vassilikogiannakis, Iraklion Crete/GR

SY005 **Synthesis of Pyrrolizidine and Indolizidine Alkaloids Initiated by Photooxidation of Furylalkylamines.**

M. Sofiadis, Iraklion,Crete/GR , D. Kalaitzakis, Iraklion, Crete/GR, M. Triantafyllakis, Iraklion, Crete/GR, D. Noutsias, Iraklion, Crete/GR, G. Vassilikogiannakis, Iraklion, Crete/GR

SY006 **Investigations of truncated borrelidin analogues**

F. Schmid, Stuttgart/DE , T. Gündemir-Durmaz, Stuttgart/DE, S. Laschat, Stuttgart/DE

SY007 **Studies toward the Total Syntheses of Lycorine Type Alkaloids**

M. H. Wahl, Garching/DE

SY008 **Access to functionalyzed 4-thiazolidinones from alpha tetralone. Evaluation of biological activity**

S. Bouzroura - Aichouche, Algiers/DZ , L. Sahli, Algiers/DZ, B. Kolli-Nedjar, Algiers/DZ, S. Martini-Poulin, France/FR, E. Dunach, France/FR

SY009 **A Novel Nebulizer-Based Continuous Flow Reactor: Introducing the Use of Pneumatically Generated Aerosols for Highly Productive Photooxidations**

G. I. Ioannou, Iraklion, Crete/GR , T. Montagnon, Iraklion, Crete/GR, D. Kalaitzakis, Iraklion, Crete/GR, S. A. Pergantis, Iraklion, Crete/GR, G. Vassilikogiannakis, Iraklion, Crete/GR

SY010 **Synthesis of Axially Chiral Macrocycles Derived from Perrottetin E via Atroposelective Iodination Followed by Heck Cyclization**

L. Biondo, Saarbrücken/DE , A. Speicher, Saarbrücken/DE

SY011 **Sulfoxide Auxiliary Controlled Suzuki Type Macrocyclization for the Synthesis of Axially Chiral Biaryl Natural Products**

S. Bauspieß, Saarbrücken/DE , A. Speicher, Saarbrücken/DE

SY012 **4-Prenylated Quinolines via Suzuki-Coupling for the Synthesis of Aurachins**

L. Stief, Saarbrücken/DE , A. Speicher, Saarbrücken/DE

SY013 **Synthesis of Di- and Triquinanes via Metal-catalysed Rearrangments**

A. Zens, Stuttgart/DE

SY014 **Synthesis of pyridine acrylate and acrylamide crosslinkers**

E. Oruc, Stuttgart/DE

SY015 **Identification and synthesis of gular gland compounds from the African reed frog Hyperolius cinnamomeoventris**

M. Menke, Braunschweig/DE , S. Schulz, Braunschweig/DE

SY016 **Total syntheses of the leupyrrins A_1 and B_1**

S. Thiede, Bonn/DE , P. R. Wosniok, Bonn/DE, D. Herkommer, Stevenage/GB, D. Menche, Bonn/DE

SY017 **Synthesis of substituted pentacene derivatives and functionalized cyclooctynes for the study of organic/semiconductor interfaces**

P. Nikodemiak, Marburg/DE , P. Hofmann, Marburg/DE

SY018 **Synthesis of a bicyclic oxo-γ-lactam from a simple caprolactam derivative**

C. Weck, Lincoln/GB , F. Obst, Freiberg/DE, E. Nauha, Lincoln/GB, C. J. Schofield, Oxford/GB, T. Gruber, Lincoln/GB

SY019 **Towards the Total Synthesis of Cyanogramide**

M. Monecke, Braunschweig/DE , T. Lindel, Braunschweig/DE

SY021 **Studies towards the Total Synthesis of Dankastatin C**

S. Mende, Braunschweig/DE , T. Lindel, Braunschweig/DE

SY022 **Synthesis and Photoreactivity of Fluorinated 2-Azidobenzimidazoles towards Carboxylic Acids**

N. E. Kanitz, Braunschweig/DE , T. Lindel, Braunschweig/DE

SY023 **Total Synthesis of Alternaria Toxins**

D. Kohler, Karlsruhe/DE , J. Podlech, Karlsruhe/DE

SY024 **In vitro studies of the post-PKS pathway in jerangolid biosynthesis Totalsynthesis of the precursor projerangolid**

F. Lindner, Bayreuth/DE , F. Hahn, Bayreuth/DE

SY025 Synthesis of N-Acyl-N,O-acetals from Aldehydes, Amides and Alcohols

K. Hofman, Frankfurt/Main/DE , J. Halli, Frankfurt/Main/DE, T. Beisel, Frankfurt/Main/DE

SY026 O,S- and S,S-Acetals in Synthesis of (Hetero)acenes via the New Modification of the Friedel-Crafts/Bradsher Cyclization

K. Owsianik, Łódź/PL , A. Bodzioch, Łódź/PL, E. Kowalska, Łódź/PL, J. Skalik, Łódź/PL, A. Stasiak, Łódź/PL, P. Bałczewski, Łódź, Częstochowa/PL

SY027 Modular Two-Step Approach for the Stereodivergent Synthesis of 1,3-Diamines with Three Continuous Stereocenters

J. Halli, Frankfurt am Main/DE

SY028 Enabling organic synthesis with uncommon diazo compounds

K. Hock, Aachen/DE , L. Mertens, Aachen/DE, R. Spitzner, Aachen/DE, R. Hommelsheim, Aachen/DE, F. K. Metze, Aachen/DE, C. Schmittmann, Aachen/DE, R. M. Koenigs, Aachen/DE

SY029 Towards the total synthesis of raputindole A

M. Kock, Braunschweig/DE

SY030 A Triple Functionalized Metal Centre Catalyzed Enantioselective Three-component Reaction

S. Liu, Shanghai/CN , Q. Wei, Shanghai/CN, X. Ma, Shanghai/CL, W. Hu, Shanghai/CN

SY031 Synthesis of Tetramethyltryptophan via Organocatalytic α-Amination of a Sterically Congested Aldehyde Precursor

J. H. Lang, Braunschweig/DE , T. Lindel, Braunschweig/DE

SY032 Palladium-Catalyzed Cyclization of Free Hydroxyalkenoic Acids: Regio- and Chemoselective Access to Methylene Lactones

Y. Mostinski, Jerusalem/IL , R. Kotikalapudi, Jerusalem/IL, V. Valerio, Jerusalem/IL, R. Nataf, Jerusalem/IL, D. Tsvelikhovsky, Jerusalem/IL

SY033 BODIPY-2,2-Dimethoxy-1,3-indandione as a Key Intermadiate to BODIPY-Ninhydrin Dyad Synthesis, Photophysical and Electrochemical Properties

A. Tutar, Sakarya/TR , R. F. Yılmaz, Sakarya/TR, B. Albayrak, Sakarya/TR, Y. Derin , Sakarya/TR, A. Özdemir, Sakarya/TR, S. Ökten, Sakarya/TR

SY034 Anomeric homo-coupled carbohaydrates as a new class of sugars

M. Bayer, Tübingen/DE , T. Ziegler, Tübingen/DE

SY035 Total Synthesis of (2R)-α-Tocopherol through Ir-catalyzed Desymmetrizing C-C Bond Activation of a Cyclobutanol Intermediate

W. Schlundt, Köln/DE , H.-G. Schmalz, Köln/DE

SY036 Synthesis and Study of Biological Activity of tetrahydro-1H-[3]-benzazepines

A. Lucena-Serrano, Málaga/ES , C. Lucena-Serrano, Málaga/ES, Juan M. López-Romero, Málaga/ES, A. Díaz, Málaga/ES, M. Valpuesta, Málaga/ES

SY037 Synthesis of Bioactive Compounds. Studies of their Attachment to Nanoparticles

C. Lucena-Serrano, Málaga/ES , A. Lucena-Serrano, Málaga/ES, J. M. López-Romero, Málaga/ES, A. Díaz, Málaga/ES, M. Valpuesta, Málaga/ES

SY038 Synthesis of Thioalkyl Pyrazolone Derivatives

L. Hammal, Algiers/DZ , S. Meksem, Algiers/DZ, S. Baaziz, Algiers/DZ, W. Frites, Algiers/DZ

SY039 Carbohydrate-derived 3,2-enolones in the rearrangement to highly functionalized C4-quaternary 4-hydroxy-2-cyclopentenones

D. Borowski, Tübingen/DE , T. Ziegler, Tübingen/DE

SY041 Iodine and $PhI(OAc)_2$ Mediated Multicomponent synthesis of novel (E)-1,3-diphenyl-1-butene derivatives

H. H. Kinfe, Johannesburg/ZA , M. B. Marakalala , Johannesburg/ZA

SY042 Synthesis of Functionalized Cyclooctadienes via Cross-Coupling Reactions

A. E. E. Wandler, Karlsruhe/DE , S. Bräse, Karlsruhe/DE

SY043 Synthesis of Novel Triazole Amino Acids Analogues of Natural Amino Acids

P. Meffre, Nîmes/FR , T. Boibessot, Nîmes/FR, D. Bénimélis, Nîmes/FR, Z. Benfodda, Nîmes/FR

SY044 Palladium-Catalyzed Stereoselective Synthesis of 1,1-Diaryl-2,2,2-Trifluoroethanes

M. Brambilla, Mülheim an der Ruhr/DE , M. Tredwell, Mülheim an der Ruhr/DE

SY045 Mechanochemical Friedel-Crafts acylations

D. Margetic, Zagreb/HR

SY046 Short Asymmetric Route Towards Lignan Natural Products

M. Fuchs, Graz/AT , A. Borg, Graz/AT, W. Kroutil, Graz/AT

SY047 Natural or Unnatural Products? : Discovery of a Novel Enzyme-Free Halogenation Reaction

L. Liao, ACT/AU , R. A. Barrow, ACT/AU

SY048 **Catalysts derived from sustainable natural and value added alkaloids from poppies**

E. Silm, Tallinn/EE , P. Pata, Tallinn/EE, A. Sikerina, Tallinn/EE, I. Pata, Tallinn/EE, T. Kanger, Tallinn/EE, N. Gathergood, Tallinn/EE

SY049 **Synthesis of Novel Bicyclic Derivatives Containing Isoxazoline and Pyrazole Tetrazines**

Y. Adiloglu, Sakarya/TR , M. Ekiz, Düzce/TR, A. Menzek, Erzurum/TR, A. Tutar, Sakarya/TR

SY050 **A synthetic strategy toward the cyclocitrinols: An unusual class of C_{25} steroids with a captivating bridged bicyclic motif**

A. Minakar, Koeln/DE , H.-G. Schmalz, Koeln/DE, S. El Sheikh, Koeln/DE, A. Meier zu Greffen, Koeln/DE

SY051 **Methoxyninhydrin Appended BODIPY Synthesis, Photophysical and Electrochemical Properties**

Y. Derin, Sakarya/TR , R. F. Yılmaz, Sakarya/TR, B. Albayrak, Sakarya/TR, M. Mutlu, Sakarya/TR, A. Özdemir , Sakarya/TR, A. Tutar, Sakarya/TR

SY052 **Phenol oxidation with oxone leading to novel cyclic peroxides**

A. Eske, Cologne/DE , A. G. Griesbeck, Cologne/DE

SY053 **Synthesis of Molecular Tripods functionalized with Thioacetate Groups: Model Molecules for Gold Substrates Nanostructuration**

M. Sánchez Molina, Málaga/ES , A. Diaz, Málaga/ES, M. Valpuesta, Málaga/ES, J. M. López-Romero, Málaga/ES

SY054 **Highly Enantioselective Construction of Sterically Hindered α-Allyl-α-Aryl Lactones via Palladium-Catalysed Decarboxylative Asymmetric Allylic Alkylation**

J. James, Dublin/IE , P. J. Guiry, Dublin/IE

SY055 **Novel cross-coupling reactions for the arylation and heteroarylation of [2.2]paracyclophane**

D. M. Knoll, Karlsruhe/DE , C. Braun, Karlsruhe/DE, E. Spuling, Karlsruhe/DE

SY056 **Development of a Photochemical Strategy for the Aromatic Extension of the Corannulene Scaffold**

D. Halilovic, Singapore/SG , Z. R. Wong, Singapore/SG, M. C. Stuparu, Singapore/SG

SY057 **[2+2] Photocycloaddition Reactions of Nitrostyrenes**

L.-M. Mohr, München/DE , T. Bach, München/DE

SY058 **Construction of the complete Carbon Skeleton of Stemocochinamine**

C. Mayer, München/DE , T. Bach, München/DE

SY059 **Straightforward Syntheses of Alkylidenecyclobutanes**

M. Eisold, München/DE

SY060 **Construction of Functionalized Cyclobutenes and their transformation to Alkylidenecyclobutanes**

A. N. Baumann, München/DE

SY061 **Functionalization of Four-Membered Heterocycles**

D. Didier, Munich/DE , A. Music, Munich/DE, A. Müller-Deku, Munich/DE, F. Reiners, Munich/DE

SY063 **Switchable Cascade Reactions Furnishing α-Pyrones or 1H-Pyridines**

N. Breuer, Düsseldorf/DE

SY064 **Three-Component and Metal Free Route to Substituted Biaryls and Heterobiaryls under High Pressure Conditions**

L. Minuti, Perugia/IT , A. Temperini, Perugia/IT, F. Piazzolla, Perugia/IT

SY065 **Studies towards the total synthesis of Clivonine leading to an unexpected N-O bond cleavage**

R. Campagne, Paris/FR , F. Schäkel, Paris/FR, V. Alezra, Paris/FR, W. Liu, Atlanta/US, H. M. L. Davies, Atlanta/US, C. Kouklovsky, Paris/FR

SY066 **One-pot synthesis of new S-thiocarbamates by benzylic Newman-Kwart rearrangements of O-thiocarbamates**

F. Dumitrascu, Bucharest/RO , D. E. Dumitrescu, Constantza/RO, M. T. Caproiu, Bucharest/RO, C. Draghici, Bucharest/RO, M. R. Caira, Cape Town/ZA, S. Shova, Iasi/RO

SY067 **Mild Synthetic Method for the Preparation of Symmetrical Cinnamic Anhydrides**

M. Kim, Gwangju/KR , G. C. E. Raja, Gwangju/KR, S. Lee, Gwangju/KR

SY068 **Bimetallic Pd-Pt-Fe_3O_4 Catalyzed Silylation of Aryl Halides with Triethylsilane.**

J. Jang, Gwangju/KR , S. Lee, Gwangju/KR

SY069 **Pd-Catalyzed Decarboxylative Coupling of sp Carbon Carboxylic Acids with Aryl Tosylates**

J.-H. Lee, Gwangju/KR , S. Lee, Gwangju/KR

SY070 **Nickel Catalyzed Decarboxylative Coupling of sp Carbon Carboxylic Acids and Aryl Iodides**

Y. Son, Gwangju/KR , S. Lee, Gwangju/KR

SY071 **UV Irradiation Mediated Pd-TiO_2-CNT Catalyst : Heck and Decarboxylative coupling Reactions**

S. Yu, Gwangju/KR , H.-S. Kim, Gwangju/KR, H. Choi, Gwangju/KR, S. Lee, Gwangju/KR

SY072 Decarboxylative Coupling Reactions of alkynyl carboxylic acid with aryl iodides by using zeolite-based copper catalyst.

J. Park, Gwangju/KR , S. Lee, Gwangju/KR

SY073 Nickel-Catalyzed Decarboxylative Coupling Reactions with sp Carbon Carboxylic Acid and Aryl Boronic Acids

E. Cho, Gwangju/KR , J.-H. Lee, Gwangju/KR, S. Lee, Gwangju/KR

SY074 Styrylmalonates as an alternative to donor-acceptor cyclopropanes in reactions with aldehydes in the presence of Lewis acids

D. D. Borisov, Moscow/RU , A. S. Eltysheva, Moscow/RU, R. A. Novikov, Moscow/RU, Y. V. Tomilov, Moscow/RU

SY076 An Unconventional Reaction of 2,2-Diazido Acylacetates with Amines

A. P. Häring, Berkeley/US , P. Biallas, Wuppertal/DE, S. F. Kirsch, Wuppertal/DE

SY077 Synthesis of α-Amido Silyl Enol Ethers through a Photoinduced Multicomponent Reaction and their Application in Organic Synthesis

A. Basso, Genova/IT , P. Capurro, Genova/IT, M. Anselmo, Genova/IT, L. Banfi, Genova/IT, L. Moni, Genova/IT, R. Riva, Genova/IT

SY078 Catalytic Routes to Vitamin A Acetate

J. Schütz, Kaiseraugst/CH , B. Bonrath, Kaiseraugst/CH, C. Eggertswyler, Kaiseraugst/CH, J. Medlock, Kaiseraugst/CH, T. Netscher, Kaiseraugst/CH, B. Wüstenberg, Kaiseraugst/CH

SY079 From Erythritol to druglike, biobased heterocycles: a convenient combination of biocatalysis and multicomponent reactions

L. Moni, Genova/IT , L. Banfi, Genova/IT, A. Basso, Genova/IT, E. Martino, Genova/IT, M. Nola, Genova/IT, R. Riva , Genova/IT

SY080 Controlling Selectivity in Gold(I)-Catalyzed Intermolecular Reactions of Alkynes with Alkenes

M. E. de Orbe, Tarragona/ES , A. M. Echavarren, Tarragona/ES

SY081 Highly Enantioselective Synthesis of Chromano[3,4-b]pyrrolidine Derivatives via Cascade [3+2] Cycloaddition/Esterification Reaction

Y. Jhen Kuei, Taipei/TW , W. Lin, Taipei/TW

SY082 Total Synthesis of Depudecin and Analogues via an Olefin Cross-Metathesis Based Strategy

I. Cheng, Málaga/ES , F. Sarabia, Málaga/ES

SY083 Tandem Anionic Sigmatropic Rearrangements/Radical Reactions

M. Simek, Prague/CZ

SY084 **One-Pot Synthesis of Dibenzo[b,d]oxepines via Olefinic C-F Bond Functionalization and Intramolecular Pd-Catalyzed C-H Arylation**

E. Ausekle, Rostock/DE , P. Ehlers, Rostock/DE, A. Villinger, Rostock/DE, P. Langer, Rostock/DE

SY085 **Facile Three-Component Synthesis of New Pyrano[3,4-c]pyrrole Derivatives**

N. Bennamane, Algiers/DZ , B. Cherfaoui, Algiers/DZ, M. Khalfaoui, Algiers/DZ, H. Lakhdari, Algiers/DZ, B. Nedjar-Kolli, Algiers/DZ

SY086 **Efficient Phosphine-Mediated Formal $C(sp^3)$-$C(sp^3)$ Coupling Reactions of Alkyl Halides in Batch and Flow**

U. Tran, Sydney/AU , V. Nguyen, Sydney/AU, C. Gordon, Cambelltown/AU, R. Koenigs, Aachen/DE, K. Hock, Aachen/DE

SY087 **Synthesis of aromatic sulfonamides as inhibitors of carbonic anhydrases**

J. Ivanova, Riga/LV , R. Zalubovskis, Riga/LV

SY088 **Total Synthesis of Biselyngbyaside**

E. Sato, Yokohama/JP , M. Sato, Yokohama/JP, Y. Tanabe, Yokohama/JP, N. Nakajima, Yokohama/JP, A. Ohkubo, Yokohama/JP, K. Suenaga, Yokohama/JP

SY089 **Sulfur dioxide: useful reagent and solvent in organic chemistry**

M. Turks, Riga/LV , J. Luginina, Riga/LV, K. Suta, Riga/LV, D. Posevins, Riga/LV, A. Stikute, Riga/LV, I. Novosjolova, Riga/LV, D. Cirule, Riga/LV, M. Purins, Riga/LV

SY090 **Synthesis of C-linked Carbohydrates bearing Phthalocyanines and the Investigation of their Aggregation Behaviour in Solution**

F. Bächle, Tübingen/DE , T. Ziegler, Tübingen/DE

SY091 **One pot process for the production of diformylfuran and its transformation into gemini surfactants with particularly low critical micelle concentration**

N. Hoffmann, Reims/FR , Q. Girka, Reims/FR, S. Marinkovic, Pomacle/FR, B. Estrine, Pomacle/FR, J. Le Bras, Reims/FR, J. Muzart, Reims/FR

SY092 **Synthesis of pretubulysin-derivatives via the TubUgi-approach**

J. N. Gorges, Saarbrücken/DE , J. Hoffmann, Saarbrücken/DE, L. Junk, Saarbrücken/DE, U. Kazmaier, Saarbrücken/DE

SY093 **Domino Catalytic and Enantioselective [2,3]-Rearrangement of Allylic Ammonium Ylides**

S. Spoehrle, St Andrews/GB

SY094 **Synthesis of tryptophan containing cyclopeptides by late stage functionalization**

L. Junk, Saarbrücken/DE , U. Kazmaier, Saarbrücken/DE

SY095 **Application of liquid sulfur dioxide as a solvent for organic transformations**

J. Lugiņina, Riga/LV , K. Suta, Riga/LV, M. Turks, Riga/LV

SY096 **Selective aromatic halogenation in superacid HF/SbF_5**

A. Mamontov, Poitiers/FR , F. Bouazza, Poitiers/FR, O. Karam, Poitiers/FR, F. Zunino, Poitiers/FR, A. Martin - Mingot, Poitiers/FR, S. Thibaudeau, Poitiers/FR

SY097 **A novel and efficient method to the synthesis of 1Azabicyclo[3.1.0] hexane-3-enes**

B. Mohammadi, Tehran/IR , V. Azizkhani, Tehran/IR

SY098 **Synthesis Of 5-Substituted 1h-Tetrazoles Via Domino Knoevenagel Condensation And [3+2]Cycloaddition Reactions Under Microwave Radiation**

D. E Quintero Jimenez, São Carlos-SP/BR , L. L. Zanin, São Carlos-SP/BR, J. C. Barreiro, São Carlos-SP/BR, L. P. Fonseca, Lisboa/PT, A .L. M. Porto, São Carlos-SP/BR

SY099 **Catalyzed Substitution of Functionalized Allylic Fluorides:Toward to Synthesis of Potent inhibitor of the humain calpain protease and Natural Products**

S. Bouzbouz, Mont Saint Aignan/FR , M. Bédier, Mont Saint Aignan/FR

SY100 **Towards the enantioselective C(sp3) difluoromethylation**

G. Hanquet, Strasbourg/FR , C. Batisse, Strasbourg/FR, F. Leroux , Strasbourg/FR, A. Panossian, Strasbourg/FR

SY101 **Synthesis and Characterization of Bromine Trifluoride Compexes with Aromatic N-Heterocycles**

S. I. Ivlev, Marburg/DE , M. R. Buchner, Marburg/DE, F. Kraus, Marburg/DE

SY102 **Towards the Synthesis of Pyrronazol A**

R. S. McLennan, St Andrews/GB , N. Jimenez, St Andrews/GB, M. D. Stell, St Andrews/GB, G. J. Florence, St Andrews/GB

SY103 **Total synthesis of gracilamine based on 1,2-type aza-Friedel–Crafts reaction using guanidine-bisthiourea bifunctional organocatalyst**

M. Odagi, Tokyo/JP , Y. Yamamoto, Tokyo/JP, K. Nagasawa, Tokyo/JP

SY104 **Synthesis of Silyl Dienes from Propargyl Silanes**

M. Purins, Riga/LV , M. Turks, Riga/LV

SY105 **Alkenyl peroxides – Investigation into their formation, reactivity and use as low temperature radical initiators**

M. S. Perryman, Mülheim an der Ruhr/DE , B. Schweitzer-Chaput, Mülheim an der Ruhr/DE, R. Verschueren, Mülheim an der Ruhr/DE, H.-L. Yue, Mülheim an der Ruhr/DE, M. Klussmann, Mülheim an der Ruhr/DE

SY106 Leaving-Group Directed SNAr Reactions of 2,6-Disubstituted Purines

K. Ozols, Riga/LV , I. Novosjolova, Riga/LV, K. H. Hopmann, Tromsø/NO, D. Cīrule, Riga/LV, Ē. Bizdēna, Riga/LV, M. Turks, Riga/LV

SY107 A Pictet–Spengler Reaction Catalyzed by the Bisthiourea/Acid Complex

S. Handa, Tokyo/JP , Y. Mori, Tokyo/JP, K. Yamashita, Tokyo/JP, H. Sugimoto, Tokyo/JP

SY109 C-C Bond Formation between an sp2 Carbanion of Selenonium Ylide and α,β-Unsaturated Ketone

M. Hirokawa, Nagoya/JP , A. Yoshimoto, Nagoya/JP, M. Kadono, Nagoya/JP, S.-i. Watanabe, Nagoya/JP

SY110 Iron-Catalysis-Based Total Synthesis of Pateamine A and its Analogue with In Vivo Anticancer Activity

C.-X. Zhuo, Mülheim an der Ruhr/DE , A. Fürstner, Mülheim an der Ruhr/DE

SY111 A New Synthesis of Indene Derivatives Using 2-Methyleneaziridines as Key Intermediates

M. Adachi, Nagoya/JP , S.-i. Watanabe, Nagoya/JP

SY112 Non-natural polycyclic polyprenylated acylphloroglucinols (PPAPs) are promising antimicrobials for the treatment of methicillin-resistant Staphylococcus aureus and vancomycin-resistant enterococci

A. Baykal, Stuttgart/DE , C. Guttroff, Stuttgart/DE, N. Biber, Stuttgart/DE, F. Kraus, Stuttgart/DE, P. Popella, Tübingen/DE, S. Krauss, Tübingen/DE, H. Wang, Tübingen/DE, F. Götz, Tübingen/DE, B. Plietker, Stuttgart/DE

SY113 Three-component Reactions of Alkynylselenonium Salt, Heteronucleophiles, and Carbonyl Compounds

A. Sakai, Nagoya/JP , R. Fuwa, Nagoya/JP, S.-i. Watanabe, Nagoya/JP

SY114 Lewis-Acid Catalyzed Ring-Opening of Donor-Acceptor Cyclobutanes with Electron-Rich Arenes

A. Kreft, Braunschweig/DE , S. Ehlers, Braunschweig/DE, D. B. Werz, Braunschweig/DE

SY116 Sonochemical oxidation of alcohols into carbonyl compounds catalyzed by magnetic CoFe2O4 nanoparticles in the presence of Oxone as an oxidant in water

V. Azizkhani, Abhar/IR , B. Mohammadi, Abhar/IR

SY117 One-Pot Synthesis of Amides Involving an Alkynylselenonium Salt, Sodium Trifluoromethanesulfinate, Carboxylic Acids, and Amines: New Amido Formation through a β-Acyloxyvinyl Triflone Intermediate

R. Seki, Nagoya/JP , M. Akiyoshi, Nagoya/JP, S. Kawamura, Nagoya/JP, S.-i. Watanabe, Nagoya/JP

SY118 Reactions of Donor-Acceptor Cyclopropanes with Naphthoquinones by an in-situ Umpolung

A. Lücht, Braunschweig/DE , L. J. Patalag, Braunschweig/DE, P. G. Jones, Braunschweig/DE, D. B. Werz, Braunschweig/DE

SY119 Towards the Diversification of Embelin Through Quinone Methide Intermediate Reactivity

P. Martín-Acosta, La Laguna/ES , A. Estévez-Braun, La Laguna/ES

SY120 Chemoselective Synthesis of Carbamates using CO2 as Carbon Source

D. Riemer, Göttingen/DE , P. Hirapara, Göttingen/DE, S. Das, Göttingen/DE

SY121 Quaternary N-Aryl-DABCO Salts: The First Synthesis and Reactions with Nucleophiles

D. Bugaenko, Moscow/RU , M. Yurovskaya, Moscow/RU, A. Karchava, Moscow/RU

SY122 Synthesis of New Analogues of the Bengamides: Peptidyl Bengamides and Molecular Probes

A. M. Agüera-Suárez, Málaga/ES , C. Porras -Alcalá, Málaga/ES, G.A. Guerrero-Vásquez, Málaga/ES, I. Cheng-Sánchez, Málaga/ES, F. Sarabia, Málaga/ES

SY123 Synthesis of β-Acyloxyvinyl Triflones Using Alkynykselenonium Salt and Their Application to Esterification Reactions

K. Toda, Nagoya/JP , M. Akiyoshi, Nagoya/JP, S. Kawamura, Nagoya/JP, S.-i. Watanabe, Nagoya/JP

SY124 Cyclic diaryliodoniums as versatile synthons to construct diversified molecular scaffoldings

S. Wen, Guangzhou/CN

SY125 Tandem Reactions of Alkynylselenonium Salt, Aldehyde, and Sodium Sulfinate: A New Synthetic Strategy for 4-Methylene-1,3-dioxolane Derivatives

S.-i. Watanabe, Nagoya/JP , M. Ohishi, Nagoya/JP, N. Miyata, Nagoya/JP, M. Kobayashi, Nagoya/JP, M. Tatsuta, Nagoya/JP, G. Tanabe, Higashiosaka/JP, O. Muraoka, Higashiosaka/JP

SY126 Mechanistic investigation of the mechanochemical oxidative amidation of aldehydes

V. Štrukil, Zagreb/HR , D. Gracin, Zagreb/HR, D. Margetić, Zagreb/HR, G.-W. Wang, Hefei/CN

SY127 Dicationic Ionic Liquids (DILs): structure dependence on the cyclic carbonate synthesis

A. Mezzetta, Pisa/IT , L. Guazzelli, Pisa/IT, L. Guglielmero, Pisa/IT, C. S. Pomelli, Pisa/IT, C. Chiappe, Pisa/IT

SY128 Enantioselective Vinylogous Mannich Reaction of N-tert-Butanesulfinyl Ketimines

V. U. B. Rao, New Delhi/IN , A. P. Jadhav, New Delhi/IN, D. Garad, New Delhi/IN

SY129 Palladium Mediated Functionalization Of Benzofuran And Benzothiophene Cores

M. Pérez Gómez, Murcia/ES , S. Hernandez-Ponte, Murcia/ES, J.-A. Garcia-Lopez, Murcia/ES, R. Frutos-Pedreño, Murcia/ES, D. Bautista, Murcia/ES, I. Saura-Llamas, Murcia/ES, J. Vicente, Murcia/ES

SY131 Iminosugars de novo synthesis via diastereoselective aldol reaction of isoserinal

S. Bas, Krakow/PL , C. Nicolas, Orleans/FR, M. Pasternak-Suder, Krakow/PL, O. R. Martin, Orleans/FR, J. Mlynarski, Krakow/PL

SY132 Tetriary amines as efficient catalysts for the synthesis of isotetronic acid

M. Pasternak-Suder, Krakow/PL , J. Mlynarski, Krakow/PL

SY133 Enantioselective Total Synthesis of the Mycenarubins A and C

J. Backenköhler, Bremen/DE , B. Reck, Bremen/DE, P. Spiteller, Bremen/DE

SY135 α-Regioselective Aqueous Mukaiyama aldol reaction of conjugated systems

A. Adamkiewicz, Krakow/PL , M. Woyciechowska, Krakow/PL, J. Mlynarski, Krakow/PL

SY136 Rational design, synthesis and biological evaluation of 1,3-dihydroxyxanthones derivatives: New agents against acetylcholinesterase

D. C. Gerbino, Bahía Blanca/AR

SY137 Late-stage Formation of Carbonyls from Alkenylstannanes – Application to the Total Synthesis of Paecilonic Acid A

H. Sommer, Haifa/IL , J. Y. Hamilton, Mülheim/DE, A. Fürstner, Mülheim/DE

SY138 Chiral version of evans-aldol prins metodology. Synthetic strategies to obtain natural products

M. Fariña-Ramos, La Laguna/ES , S. J. Álvarez-Méndez, La Laguna/ES, C. García, La Laguna/ES, V. S. Martín, La Laguna/ES

SY139 Microwave Assisted Synthesis of Dioxaphospholane Based Phosphites

J.-M. Pohl, Giessen/DE , R. Göttlich, Giessen/DE

SY140 Synthesis of a Simplified Pradimicin Derivative as New Anti-Viral Drug Leads

R. Weber, Hannover/DE , M. Omelan, Hannover/DE, M. Boysen, Hannover/DE, H. Butenschön, Hannover/DE

SY141 A Simple, Practical Decarboxylative Borylation

A. Fawcett, Bristol/GB , J. A. Pradeilles, Bristol/GB, Y. Wang, Bristol/GB, T. Mutsuga, Bristol/GB, E. L. Myers, Bristol/GB, V. K. Aggarwal, Bristol/GB

SY142 Amphoteric Boron Reagents Facilitate the Synthesis of Challenging Borylated Molecules

S. J. Kaldas, Toronto/CA , W. Shao, Toronto/CA, K .T. V. O, Toronto/CA, R. Mendoza-Sanchez, Toronto/CA, A. K. Yudin, Toronto/CA

SY143 Regioselective Photocycloaddition of Saccharin. Continuous Flow Synthesis of Benzosultams and Theoretical Study.

G. Oksdath-Mansilla, Córdoba/AR , F. N. Figueroa, Córdoba/AR, J. E. Argüello, Córdoba/AR, D. Sampedro, Logroño/ES

SY144 A Route Towards Nitrones: Experimental and Theoretical Findings

D. A. Safin, Tomsk/RU , M. P. Mitoraj, Cracow/PL, P. Kubisiak, Cracow/PL, M. G. Babashkina, Louvain-la-Neuve/BE, K. Robeyns, Louvain-la-Neuve/BE, Y. Filinchuk, Louvain-la-Neuve/BE

SY145 "Mountains to climb" in total synthesis: Biomimetic Assembly of Voacalgine A and Bipleiophylline

L. Evanno, Châtenay-Malabry/FR , V. Turpin, Châtenay-Malabry/FR, C. Kouklovsky, Orsay/FR, E. Poupon, Châtenay-Malabry/FR, G. Vincent, Orsay/FR, D. Lachkar, Châtenay-Malabry/FR, N. Denizot, Orsay/FR, G. Bernadat, Châtenay-Malabry/FR, K. Ahamada, Châtenay-Malabry/FR, M. A. Beniddir, Châtenay-Malabry/FR, V. Dumontet, Gif-Sur-Yvette/FR, J. F. Gallard, Gif-Sur-Yvette/FR, R. Guillot, Orsay/FR, K. Leblanc, Châtenay-Malabry/FR, E. Otogo N, Châtenay-Malabry/FR

SY146 Bi(III) Triflate-Catalyzed Tandem Cyclisations: Polycyclic Ethers from Unsaturated Alcohols. Evaluation of their Olfactory Properties

E. Dunach, Nice/FR , P. Ondet, Nice/FR, L. Lempenauer, Nice/FR, G. Lemière, Nice/FR

SY147 Stereoselective Homologation of Boronic Esters Using α-Sulfinyl Benzoates

M. Kucukdisli, Bristol/GB , G. Casoni, Bristol/GB, J. Fordham, Bristol/GB, M. Burns, Bristol/GB, E. L. Myers, Bristol/GB, V. K. Aggarwal, Bristol/GB

SY148 Access to Wieland-Miescher derivated synthons by stereoselective construction of quaternary center using Mukaiyama aldolization

S. Choppin, Strasbourg/FR , L. Schiavo, Strasbourg/FR, L. Lebedel, Strasbourg/FR, G. Hanquet, Strasbourg/FR

SY149 **On-Demand Stereocontrolled Synthesis of Contiguous Stereocenters by the Heck Reaction**

D. Pierrot, Haifa/IL , J. Bruffaerts, Haifa/IL, I. Marek, Haifa/IL

SY150 **Novel Gold (I)-Catalyzed Cyclization Cascade Towards The Synthesis Of Repraesentin F**

S. Ferrer, Tarragona/ES , A. M. Echavarren, Tarragona/ES

SY151 **Total Synthesis of Polyhydroazocine-Indole-Type Kopsia Alkaloids**

M. S. Kirillova, Tarragona/ES , F. M. Miloserdov, Tarragona/ES, M. E. Muratore, Tarragona/ES, A. M. Echavarren, Tarragona/ES

SY152 **Rational Design of Ready-to-Shape New Classes of Organo-Photocatalysts**

A. Gini, Straubing/DE , M. Uygur, Regensburg/DE, O. Garcìa Mancheño, Regensburg/DE

SY153 **Total synthesis and biological evaluation of Pelofen, a simplified analogue of Peloruside A with microtubule-stabilizing activity.**

J. Van der Eycken, Ghent/BE , N. Jacobs, Ghent/BE, D. Van den Bossche, Ghent/BE, J. Cornelus, Ghent/BE, M. Bracke, Ghent/BE

SY154 **Flow chemistry: safe, scalable access to 1,2-azidochlorides and conversion to 1,4-disubstituted 1,2,3-triazoles**

M. Vögtle, Basel/CH , B. Leforestier, Toulouse/FR

SY155 Macrocyclic polyethers as effective fluorescence, ECD and CPL switches
E. Brun, Geneva/CH , A. Homberg, Geneva/CH, F. Zinna, Geneva/CH, S. Pascal, Geneva/CH, M. Gorecki, Pisa/IT, G. Pescitelli, Pisa/IT, L. Di Bari, Pisa/IT, J. Lacour, Geneva/CH

SY156 **Novel Stereoselective Strategies for Targeting Aminosugars: with and without Metal Catalysis**

A. Goti, Florence/IT , S. Mirabella, Florence/IT, G. Petrucci, Florence/IT, C. Matassini, Florence/IT, F. Cardona, Florence/IT

SY157 **Photocatalyzed Synthesis Of Isochromanones And Isobenzofuranones Under Batch And Flow Conditions**

M. Anselmo, Genova/IT , L. Moni, Genova/IT, Y. Hosry, Alexandria/EG, D. Comoretto, Genova/IT, L. Banfi, Genova/IT, R. Riva, Genova/IT, A. Basso, Genova/IT

SY158 **Synthesis, Properties, and Applications of Corannulene Derivatives**

M. Stuparu, Singapore/SG

SY159 **New Perspectives in Lithium Halocarbenoids Mediated Homologations**

V. Pace, Vienna/AT , L. Castoldi, Vienna/AT, S. Monticelli, Vienna/AT, R. Senatore, Vienna/AT

SY160 **Total Synthesis of Laurallene**

T. Okada, Sapporo/JP , F. Yoshimura, Sapporo/JP, K. Tanino, Sapporo/JP

SY161 **Total Synthesis of the anti-viral natural product Houttuynoid B**

T. Kerl, Köln/DE , H.-G. Schmalz, Köln/DE

SY162 **Synthesis and Cycloisomerization of Cryptochiral Allenes**

M. Körner, Dortmund/DE , N. Krause, Dortmund/DE

SY163 **Extremely Long Enatio- and Diastereomerically Pure [19]Helicene**

J. Nejedlý, Prague/CZ , J. Rybáček, Prague/CZ, I. G. Stará, Prague/CZ, I. Starý, Prague/CZ

SY164 **Synthesis of Optically Pure Helically Chiral Amino Heterohelicenes as Precursors for NHC Ligands**

I. Gay Sánchez, Prague/CZ , M. Šámal, Prague/CZ, I. G. Stará, Prague/CZ, I. Starý, Prague/CZ

Catalysis

CA001 **Synthesis of spiro-fused carbohydrate-PHOX-ligands**

M. R. Imrich, Tübingen/DE , J. Kraft, Tübingen/DE, T. Ziegler, Tübingen/DE

CA002 **Stereoselective Arene-Forming Aldol Condensation: Synthesis of Axially Chiral Aromatic Amides**

V. C. Fäseke, Basel/CH , C. Sparr, Basel/CH

CA003 **The Development of Chiral Diene Ligands for Asymmetric Rhodium Catalysis**

T. Mühlhäuser, Stuttgart/DE , S. Helbig, Stuttgart/DE, S. Laschat, Stuttgart/DE

CA004 **A single catalyst mediates two mechanistically completely distinct reaction types in a sequential fashion**

X. Zhang, Marburg/DE , M. Eric, Marburg/DE

CA005 **Asymmetric Three-Component Fluoroalkylations Catalyzed by Chiral-at-Metal Rh(III) Complex under Photoredox Conditions**

J. Ma, Marburg/DE

CA006 **Chiral-at-metal octahedral Ruthenium(II) complex as efficient catalyst for the asymmetric alkynylation of ketones**

Y. Zheng, Marburg/DE , Y. Q. Tan, Marburg/DE

CA007 **Asymmetric Cascades on π-Acidic Surfaces: Diastereospecific Michael/Henry Reactions for Bicyclic Prodcuts with Quarternary Chiral Centers**

L. Liu, Geneva/CH , Y. Cotelle, Geneva/CH, N. Cotelle, Geneva/CH, S. Matile, Geneva/CH

CA008 **Mass Spectrometric Challenges: Investigations of a $HAuCl_4$ catalysed reaction**

M. T. S. Krause, Bonn/DE , M. Engeser, Bonn/DE

CA009 **Tyrosinases as versatile catalysts in organic synthesis**

P. Marx, Jülich/DE , R. Krug, Jülich/DE, J. Pietruszka, Jülich/DE

CA010 **Ruthenium catalysed air mediated C-H activation reaction of 2-phenylpyridine in an ionic liquid**

M. Muntzeck, Paderborn/DE , R. Wilhelm, Paderborn/DE

CA011 **Photoredox-catalyzed reaction, with different TiO_2-modified graphene hybrides**

M. Rosenthal, Paderborn/DE

CA012 C-SeCF$_3$ Bond Formation via Dinuclear Pd(I) Catalysis

T. Sperger, Aachen/DE , M. Aufiero, Aachen/DE, A. S.-K. Tsang, Aachen/DE, F. Schoenebeck, Aachen/DE

CA013 Predictable Chemoselective Arylation of Poly(pseudo)halogenated Arenes

G. Magnin, Aachen/DE , I. Kalvet, Aachen/DE, F. Schoenebeck, Aachen/DE

CA014 Experimental Investigations of Iodine-Catalyzed Michael Additions

D. von der Heiden, Köln/DE , S. Bozkus, Köln/DE, M. Klussmann, Mülheim a. d. Ruhr/DE, M. Breugst, Köln/DE

CA015 Pyrene and Perylenebisimid-Peptide Conjugates for the Application as Photoredox Catalyst for Anti- and Markovnikov Additions

S. Hermann, Karlsruhe/DE

CA016 Organocatalytic Stereoselective One-pot Direct Mannich Reaction: Access to New 4-Amino-Isochromanone Derivatives

F. Vetica, Aachen/DE , D. Enders, Aachen/DE

CA017 Visible-light photoredox-catalyzed aminosulfonylation of diaryliodonium salts with sulfur dioxide and hydrazines

N.-W. Liu, Frankfurt am Main/DE , S. Liang, Frankfurt am Main/DE, G. Manolikakes, Frankfurt am Main/DE

CA018 Synthesis of Nitrogen- and Sulfur-Containing Heterocycles by Palladium-Catalyzed C–S and Oxidative Dehydro C–H Couplings

J. Paradies, Paderborn/DE

CA019 Imidazolium based ionic liquids as selectivity controller for various hydrogenation reactions using Ni- and Ru- nanocatalysts

H. Konnerth, Cologne/DE , M. H. G. Prechtl, Cologne/DE

CA020 Towards a solution for the reversible C$_1$-reforming puzzle at near ambient conditions with a bio-inspired organometallic approach

L. E. Heim, Cologne/DE , D. Thiel, Cologne/DE, C. Gedig , Cologne/DE, D. van der Waals, Bath/GB, S. Vallazza, Cologne/DE, N. E. Schloerer, Cologne/DE, J.-H. Choi, Cologne/DE, J. Deska, Aalto/FI, M. H. G. Prechtl, Cologne/DE

CA021 Ammonium ylide mediated synthesis of enantioenriched 2,3-dihydrofuranes

L. Öhler, Jülich/DE , D. Worgull, Jülich/DE

CA022 Characterizing intermediates of a proline-catalyzed aldol reaction with a charge-tagged catalyst and IRMPD mass spectrometry

J. A. Willms, Bonn/DE

CA023 **Pd(II)-Catalyzed, Enantioselective 3-Component-Synthesis of α-Substituted Amino Acid Derivatives from Sulfonamides, Glyoxalates and Boronic Acids**

A. M. Diehl, Frankfurt (Main)/DE , T. Beisel, Frankfurt (Main)/DE, G. Manolikakes, Frankfurt (Main)/DE

CA024 **Regioselective Silaboration and Diboration of Allenes Catalyzed by Gold Nanoparticles**

M. Kidonakis, Heraklion/GR , M. Stratakis, Heraklion/GR

CA025 **Keto-Enol Thermodynamics of Breslow Intermediates**

M. Paul, Cologne/DE , M. Breugst, Cologne/DE, J.-M. Neudörfl, Cologne/DE, R. B. Sunoj, Mumbai/IN, A. Berkessel, Cologne/DE

CA026 **Facile oxidation of substituted cyclopentane-1,2-diones using metalloporphyrin catalysts**

K. Maljutenko, Tallinn/EE , V. Borovkov, Tallinn/EE, D. Kananovich, Tallinn/EE, M. Lopp, Tallinn/EE

CA027 **Enantioselective Functionalization of Carbon Radicals Catalyzed by Chiral-at-Metal Rh(III) Complex under Photoredox Conditions**

X. Huang, Marburg/DE , S. Luo, Marburg/DE

CA028 **Development of new Biocatalytic Tools for Heterocycle Synthesis**
T. Hollmann, Bayreuth/DE , G. Berkhan, Hannover/DE

CA029 **Peptide-catalyzed Baeyer-Villiger Oxidations**

D. Niedek, Giessen/DE , P. R. Schreiner, Giessen/DE

CA030 **Rationalization of Enantioselectivity Change in Rhodium-catalyzed Hydrogenation Reaction Assessed by DFT Calculations**

Z. Glasovac, Zagreb/HR , Z. Kokan, Zagreb/HR, S. I. Kirin, Zagreb/HR

CA031 **Organocatalytic asymmetric transformations of 3–substituted 3–hydroxyisoindolinones**

M. Gredicak, Zagreb/HR , D. Glavač, Zagreb/HR

CA032 **Highly Efficient Substitutions Enabled by a Simple Formamide Catalyst**

P. H. Huy, Saarbrücken/DE , S. Motsch, Stuttgart/DE, T. Hauch, Saarbrücken/DE, I. Filbrich, Saarbrücken/DE

CA033 **Supramolecular Photocatalyst for the Reduction of Au(III) to Au(I)**

B. Bibal, Bordeaux/FR , C. Mongin, Bordeaux/FR, D. M. Bassani, Bordeaux/FR

CA034 **Asymmetric Organocatalytic Wittig [2,3]-Rearrangement**

M. Ošeka, Tallinn/EE , M. Kimm, Tallinn/EE, T. Kanger, Tallinn/EE

CA035 Hydrogen-Bonding catalysts in enantioselectve catalysis and anion recognition

F. Wolf, Köln/DE , B. G. Goldfuss, Köln/DE

CA036 Mild Benzylic C–H Bond Iodination using 1,3-Diiodo-5,5-dimethylhydantoin and 3-Iodo-1,5,5-trimethylhydantoin

S. H. Combe, Giessen/DE , A. Hosseini, Giessen/DE, H. Quanz, Giessen/DE, H. Hausmann, Giessen/DE, P. R. Schreiner, Giessen/DE

CA037 Photoswitchable Peptide-based Catalysts

F. R. Erb, Giessen/DE , D. Niedek, Giessen/DE, P. R. Schreiner, Giessen/DE

CA038 Accelerating Effects of Brønsted Acids and Bases on the Ti-Salalen-Catalyzed Asymmetric Epoxidation of Terminal Non-Functionalized Olefins

T. M. Leuther, Cologne/DE , H. Engler, Cologne/DE, M. Lansing, Cologne/DE, A. Berkessel, Cologne/DE

CA039 Cis-Diaminocyclohexane (DACH)-Derived Titanium Salalen Catalysts: A Powerful Tool for the Enantioselective Epoxidation of Terminal Olefins

H. Engler, Cologne/DE , T. M. Leuther, Cologne/DE, M. Lansing, Cologne/DE, J.-M. Neudörfl, Cologne/DE, A. Berkessel, Cologne/DE

CA040 Highly stereoselective Pd-catalyzed N-allylation of amino acid esters and application in the synthesis of bicyclic dipeptide analogs

S. Dohmen, Cologne/DE , S. Akyol Dinçer, Cologne/DE, M. Reiher, Cologne/DE

CA041 Enantioselective Cu- and Fe-Catalyzed Conjugate Additions Starring an Exceptional Hydrido-Phosphite Ligand P-BIFOP-H

E. Brüllingen, Cologne/DE

CA042 Access to Chiral Amines and Heterocycles by Decarboxylation of Adamantane-oxazolidine-2-one

R. Hrdina, Giessen/DE

CA043 Enantioselective phase-transfer catalytic functionalization of isoxazolidin-5-ones: an approach to $\beta^{2,2}$-amino acids

J.-F. Brière, Rouen/FR , T. Cadart, Rouen/FR, C. Berthonneau, Rouen/FR, S. Perrio, Caen/FR, V. Levacher, Rouen/FR

CA044 Enantioselective Lewis Acid Catalyzed Photocyclization of Aryloxyhexenones

V. Edtmüller, Garching/DE , T. Bach, Garching/DE, A. Pöthig, Garching/DE

CA045 ChenPhos: A modular, readily accessible, scalable, P-stereogenic diphosphine ligand

J. Rotzler, Basel/CH , W. Chen, Basel/CH, F. Spindler, Basel/CH, B. Pugin, Basel/CH

CA046 **The Development of Chiral Phosphine Hydrogen-bonding Multifunctional Catalysts in Enantioselective Organocatalysis**

L. Liu, Shanghai/CN , J. Zhang, Shanghai/CN

CA047 **Design, Synthesis and Application of Chiral Sulfinamide Phosphines in Asymmetric Metal Catalysis**

J. Zhang, Shanghai/CN

CA048 **Prins Reaction Catalyzed by Molecular Iodine and the Effect of Bis(trifluoromethanesulfonyl)imide Salts**

W. Harnying, Cologne/DE , J.-M. Neudörfl, Cologne/DE, A. Berkessel, Cologne/DE

CA049 **Cobalt-catalyzed asymmetric Hydrovinylation of Vinylarenes**

J. Westphal, Köln/DE , S. Movahhed, Köln/DE, H.-G. Schmalz, Köln/DE

CA050 **3-Homoacyl Coumarins as a Class of All-Carbon 1,3-Dipole Precursors: An Enantioselective Concerted (3+2) Cycloaddition towards Coumarin/Spiro-Indandione Fused Cyclopentanes**

Y.-R. Chen, Taipei/TW , K.-H. Hsieh, Taipei/TW, K.-H. Chen, Taipei/TW, W. Lin, Taipei/TW

CA051 **Pictet-Spengler Cyclization and other Dehydrogenative Transformations of Imines using a Heterogeneous Photoredox Catalyst**

C. Adolph, West Lafayette/US , J. Werth, West Lafayette/US, C. Uyeda, West Lafayette/US

CA052 **Pd-Catalyzed Synthesis of Fluoranthenes via Sequential Suzuki-Miyaura and Intramolecular C-H Arylation Reactions**

Y. E. Turkmen, Ankara/TR , S. Pal, Ankara/TR

CA053 **Decarbonylative Silylation and Borylation of Esters by Nickel Catalysis**

L. Guo, Aachen/DE , A. Chatupheeraphat, Aachen/DE, M. Rueping, Aachen/DE

CA054 **Synthesis of Flavanoid Derivatives Employing Decarboxylative Asymmetric Catalysis**

B. C. Fitzpatrick, Dublin/IE

CA055 **Brønsted Acid-Catalyzed, Conjugate Addition of β-Dicarbonyls to in situ Generated ortho-Quinone Methides - Enantioselective Synthesis of 4-Aryl-4H-Chromenes**

F. Göricke, Leipzig/DE , C. Schneider, Leipzig/DE, S. Haseloff, Leipzig/DE

CA056 **Stability and Catalytic Activity of Triazolinylidenes: The Remarkable Effect of Dispersion Energy Donor Substituents**

D. Kootz, Cologne/DE , V. R. Yatham, Tarragona/ES, W. Harnying, Cologne/DE, J.-M. Neudörfl, Cologne/DE, N. E. Schlörer, Cologne/DE, A. Berkessel , Cologne/DE

CA057 Organocatalytic Atroposelective Hantzsch Pyridine Synthesis

X. Bugaut, Marseille/FR , O. Quinonero, Marseille/FR, M. Jean, Marseille/FR, N. Vanthuyne, Marseille/FR, C. Roussel, Marseille/FR, D. Bonne, Marseille/FR, T. Constantieux, Marseille/FR, C. Bressy, Marseille/FR, J. Rodriguez, Marseille/FR

CA058 NHC-Catalyzed H/D Exchange Reactions

F. Perez, Marseille/FR , Y. Ren, Marseille/FR, T. Boddaert, Paris/FR, J. Rodriguez, Marseille/FR, Y. Coquerel, Marseille/FR

CA059 Chiral Brønsted acid–catalyzed aza-Friedel–Crafts reaction of indoles with 3-aryl 3–hydroxyisoindolinoes

D. Glavac, Zagreb/HR , C. Zheng, Shanghai/CN, I. Dokli, Zagreb/HR, S.-L. You, Shanghai/CN, M. Gredicak, Zagreb/HR

CA060 Practical Cyclopropenone catalyzed Nucleophilic Substitutions

T. Hauch, Saarbrücken/DE , J. Dräger, Saarbrücken/DE, P. H. Huy, Saarbrücken/DE

CA061 Brønsted Acid Catalysis in Visible-Light-Induced [2+2] Photocycloaddition Reactions of Enone Dithianes

C. Brenninger, Garching/DE , A. Pöthig, Garching/DE, T. Bach, Garching/DE

CA062 Copper(I)-Catalyzed Selective Defluorination: Selective Synthesis of Stereodefined β-Monofluoroalkenes

R. Kojima, Sapporo/JP , K. Kubota, Sapporo/JP, H. Ito, Sapporo/JP

CA063 Enantioselective Formal α-Methylation and α-Benzylation of Aldehydes by Means of Photo-Organocatalysis

G. Filippini, Tarragona/ES , M. Silvi, Tarragona/ES, P. Melchiorre, Tarragona/ES

CA064 Synthesis of 3-Substituted 2-Arylpyridines via Cu/Pd-Catalyzed Decarboxylative Cross-Coupling of Picolinic Acids with (Hetero)Aryl Halides

P. Weber, Bochum/DE , D. Hackenberger, Bochum/DE, D. Blakemore, Groton/US, L. J. Gooßen, Bochum/DE

CA065 New beta-amino alcohol catalyst for enantioselective nucleophilic additions to aldehydes

C. Sappino, Rome/IT

CA066 Heterogeneous acid catalysts for benzylic methylene oxidation and aniline dimerization

E. Paris, Parma/IT , G. Mestri, Parma/IT, R. Maggi, Parma/IT

CA067 Z-selective semi-reduction of alkynes with all-metal aromatic tripalladium complexes

V. Santacroce, Parma/IT , G. Maestri, Parma/IT

CA068 **Nickel mediated aminocarbonylation with preformed Nickel(II)-alkyl complex for 11C- and 13C-isotop labelling of pharmaceuticals and peptides**

A. S. Donslund, Aarhus /DK , K. T. Neumann, Aarhus/DK, T. L. Andersen, Aarhus/DK, D. U. Nielsen, Aarhus/DK, T. Skrydstrup , Aarhus/DK

CA069 **Scalable CO2 electroreduction coupled to carbonylation chemistry**

A. K. Ravn, Aarhus/DK , M. H. Rønne, Aarhus /DK, M. T. Jensen, Aarhus/DK, R. W. Juhl, Aarhus/DK, D. U. Nielsen, Aarhus/DK, X.-M. Hu, Aarhus/DK, S. U. Pedersen , Aarhus/DK, K. Daasbjerg, Aarhus/DK, T. Skrydstrup, Aarhus/DK

CA070 **Catalytic enantioselective cyclopropanations of fluoroalkenes using diacceptor and donor-acceptor diazo compounds**

A. Pons, Mont Saint Aignan/FR , T. Poisson, Mont Saint Aignan/FR, A. B. Charette, Montreal/CA, X. Pannecoucke, Mont Saint Aignan/FR, P. Jubault, Mont Saint Aignan/FR

CA071 **Cis-Trans Isomerization of Isolated Trisubstituted Olefins Catalyzed by Oligothiols or Nitrogen Monoxide**

R. T. Stemmler, Kaiseraugst/CH , N. Greiner, Kaiseraugst/CH, A. Wildermann, Sisseln/CH

CA072 **Palladium-Catalyzed Carbonylative Double Trifluoromethylation of Aryl Bromides**

K. Domino, Aarhus/DK , K. T. Neumann, Aarhus/DK, C. Matheis, Kaiserslautern/DE, T. Skrydstrup, Aarhus/DK

CA073 **Chiral Synthesis of C3 and C4-disubstituted tetralone derivatives based on oxidative kinetic resolution using guanidine-bisurea bifunctional organocata**

K. Hosoya, Tokyo/JP , M. Odagi, Tokyo/JP, K. Nagasawa, Tokyo/JP

CA074 **Fe-catalyzed Intramolecular Aminations of C(sp3)-H-bonds of alkylarylazides**

C. Guttroff, Stuttgart/DE , I. T. Alt, Stuttgart/DE, B. Plietker, Stuttgart/DE

CA075 **Hybrid Oxazoline-Imidazoline Ligands for Asymmetric Catalysis**

L. Byrne, Dublin/IE , P. J. Guiry, Dublin/IE

CA076 **Synthesis of highly derivatized allenyl indoles catalysed by TBAF**

A. De Nisi, Bologna/IT , S. Sierra, Madrid/ES, M. Monari, Bologna/IT, M. Bandini, Bologna/IT

CA077 **Enantioselective synthesis of a communesin and hydrocarbazole framework by Brønsted acid catalysis via aza-ortho-quinomethide**

K. Kaut, Aachen/DE , H.-H. Liao, Aachen/DE

CA078 Phase-transfer catalyzed asymmetric decarboxylative protonationreaction involving Meldrum's acid derivatives and phenols

F. Legros, Rouen/FR , T. Martzel, Rouen/FR, S. Oudeyer, Rouen/FR, J.-F. Brière, Rouen/FR, V. Levacher, Rouen/FR

CA079 Synthesis and Application of a Novel Family of Ferrocenyl Catalysts for Asymmetric Catalysis

L. A. Cunningham, Dublin/IE , P. J. Guiry, Dublin/IE

CA080 Preparation of Electrophilic Trifluoromethylthio Reagents from Nucleophilic Tetramethylammonium Trifluoromethylthiolate

S. Kovacs, Kaiserslautern/DE , B. Bayarmagnai, Kaiserslautern/DE, L. J. Gooßen, Bochum/DE

CA081 Conversion of Fatty Acid Methyl Esters to Olefins by Ni- or Pd-Catalyzed Decarbonylative Elimination Reaction

F. Jia, Bochum/DE , L. J. Gooßen, Bochum/DE

CA082 Nickel-Catalyzed Decarbonylation of Amide – An Easy Synthetic Access to Arylsilanes, Arylboronates and Arylamines

S.-C. Lee, Aachen/DE , L. Guo, Aachen/DE, H. Yue, Aachen/DE, H.-H. Liao, Aachen/DE

CA083 Copper-catalyzed allylic substitutions with a hydride nucleophile from dihydrogen

F. Pape, Berlin/DE , J. F. Teichert, Berlin/DE

CA084 Enantioselective Allylic Reduction

T. N. T. Nguyen, Berlin/DE , N. O. Thiel, Berlin/DE, J. F. Teichert, Berlin/DE

CA085 Orthogonal Selectivity in the Semihydrogenation of Alkynes with Copper or Nickel Catalysts

N. O. Thiel, Berlin/DE , J. F. Teichert, Berlin/DE

CA086 Cu catalysed amidation of styrenes and benzyl amines for the synthesis of N-aryl benzamides and benzoyloxyacetanilides using isocyanides as an amide source

P. Sharma, Delhi/IN

CA087 Decarboxylative Perfluoroalkylation of Organothiocyanates

B. Exner, Bochum/DE , B. Bayarmagnai, Kaiserslautern/DE, F. Jia, Bochum/DE, C. Matheis, Kaiserslautern/DE, L.J. Gooßen, Bochum/DE

CA088 Elimination vs. Rearrangement – Selectivity in Lewis Acid Catalyzed Domino IEDDA Reactions

S. Schmalisch, Giessen/DE , H. A. Wegner, Giessen/DE

CA089 Chemoenzymatic Asymmetric Reductive Acylation of Ketones

A. Brzozowska, Aachen/DE , O. El-Sepelgy, Aachen/DE, M. Rueping, Aachen/DE

CA090 Asymmetric Brønsted Acid Catalyzed Substitution Of Diaryl Methanols With Thiols And Alcohols For The Synthesis Of Chiral Thioethers And Ethers

A. Chatupheeraphat, Aachen/DE , H.-H. Liao, Aachen/DE, S. Mader, Aachen/DE, M. Sako, Osaka/JP, H. Sasai, Osaka/JP, I. Atodiresei, Aachen/DE, M. Rueping, Aachen/DE

CA091 Electron rich bis-carbenes

C. Nierhaus, Bochum/DE , S. M. Huber, Bochum/DE

CA092 Quinone mediated oxidative dehydrogenative couplings performed with oxidized carbon supports or DDQ

T. Wirtanen, Helsinki/FI , J. Helaja, Helsinki/FI

CA093 Knoevenagel Condensation Assisted By Microwave Radiation And Biocatalytic Ene-Reduction Of Adducts By Marine Fungus Penicillium citrinum

A. L. M. Meleiro Porto, São Carlos, SP/BR , D. E. Q. JIMENEZ, São Carlos/BR, L. L ZANIN, São Carlos/BR, J. C. BARREIRO, São Carlos/BR, W. G. BIROLLI, São Carlos/BR, L. P. FONSECA, Lisbon/PT

CA094 A simple Iron and lipase catalysed dynamic kinetic resolution of secondary alcohols

J. Sklyaruk, Aachen/DE , J. Borghs, Aachen/DE, O. El-Sepelgy, Aachen/DE, M. Rueping, Aachen/DE

CA095 Biocatalytic halocyclizations of allenic alcohols and carboxylates in micellar medium – An enzymatic path to functionalized O-heterocycles

J. Naapuri, Espoo/FI

CA096 Metal-free asymmetric electrophilic fluorination using a combination of hydrogen fluoride and an oxidant

P. E. Podsiadly, Aachen/DE , R. Pluta, Aachen/DE, M. Rueping, Aachen/DE

CA097 The application of the iron carbonyl complexes in the synthesis of heterocyclic compounds

Y. K. Jang, Aachen/DE , O. El-Sepelgy, Aachen/DE, M. Rueping, Aachen/DE

CA098 Palladium-catalysed Enantioselective Hydroaryloxycarbonylation of Styrenes by 4-Substituted Phenols

L. Kollar, Pecs/HU , P. Pongracz, Pecs/HU, A. Abu Seni, Pecs/HU

CA099 Rhodium-catalyzed Chemoselective Hydrogenation of Arenes

Z. Nairoukh, Münster/DE , M. Wiesenfeldt, Münster/DE, F. Glorius, Münster/DE

CA100 Nickel-Catalyzed Decarbonylative Amination of Aryl and Heteroaryl Esters

H. Yue, Aachen/DE , L. Guo, Aachen/DE, H.-H. Liao, Aachen/DE, Y. Cai, Aachen/DE, C. Zhu, Aachen/DE, M. Rueping, Aachen/DE

CA101 Non-typical leaving groups in visible light photocatalyzed C-H funtionalization reactions

J. Bardagi, Córdoba/AR , S. Caby, Córdoba/AR

CA102 Synthesis and characterization of Ti-MCM-22, Ti-MCM-41 and Ti-SBA-15 and their activity in oxidation of alpha-pinene and ethyl oleate

N. Thi Ha, Hanoi/VN

CA103 Regioselective Hydrothioesterification of Vinyl Arenes

I. Fleischer, Tübingen/DE , V. Hirschbeck, Regensburg/DE, P. H. Gehrtz, Regensburg/DE

CA104 Cobalt-Catalyzed Esterification of Benzamide Derivatives

Y. Bourne-Branchu, Palaiseau/FR , C. Gosmini, Palaiseau/FR, G. Danoun, Palaiseau/FR

CA105 High-Pressure Activation of Organocatalytic Reactions: Application in Asymmetric Synthesis of Trifluoromethylated Molecules

P. Kwiatkowski, Warsaw/PL , A. Szulinska, Warsaw/PL, M. Walewska-Krolikiewicz, Warsaw/PL, M. Biedrzycki, Warsaw/PL, M. Glowacki, Warsaw/PL

CA106 Synthesis of Morita-Baylis-Hillman Adducts via a Copper Catalyzed Domino Reaction

C. Rasson, Louvain-la-Neuve/BE , A. Stouse, Louvain-la-Neuve/BE, V. Cirriez, Louvain-la-Neuve/BE, F. Josse, Louvain-la-Neuve/BE, O. Riant, Louvain-la-Neuve/BE

CA107 Dithiocarbamate Anion Catalysis: Activation of Electrophiles towards Radical Reactions under Blue Light Irradiation

B. Schweitzer-Chaput, Tarragona/ES , M. Ošeka, Tarragona/ES, P. Melchiorre, Tarragona/ES

CA108 Biocatalytic routes to α-hydoxyketones

U. Hanefeld, Delft/NL

CA109 Enzyme-catalysed Ester Synthesis in Water

C. Bisterfeld, Delft/NL , N. de Leeuw, Delft/NL, U. Hanefeld, Delft/NL

CA110 Mechanistic Insight in the Copper Catalyzed Oxidative Derivatization of Tetrahydroisoquinolines

M. Engeser, Bonn/DE , J. A. Willms, Bonn/DE

CA111 Switchable Site-Selective Catalytic Carboxylation of Allylic Alcohols with CO2

M. Börjesson, Tarragona/ES , M. van Gemmeren, Münster/DE, A. Tortajada, Tarragona/ES, S.-Z. Sun, Tarragona/ES, K. Okura, Kyoto/JP, R. Martin, Tarragona/ES

CA112 Nickel Mediated Carbonylations for Applications in Isotope labeling of Pharmaceutically Relevant Compounds

K. T. Neumann, Aarhus/DK , A. S. Donslund, Aarhus/DK, T. L. Andersen, Aarhus/DK, D. U. Nielsen, Aarhus/DK, T. Skrydstrup, Aarhus/DK

CA113 Palladium-Catalyzed Cyanation of Aryl Bromides with Gaseous HCN – Evidence for a Transmetallation Step Involving Two Oxidative Addition Palladium-Complexes

S. K. Kvist Kristensen, Aarhus/DK , E. Z. Eikeland, Aarhus/DK, E. Taarning, Copenhagen/DK, A. T. Lindhardt, Aarhus/DK, T. Skrydstrup, Aarhus/DK

CA114 Experiment and Computation – The Story of Nickel-Catalyzed Trifluoromethylthiolation of Aryl Halides

I. Kalvet, Aachen/DE , F. Schoenebeck, Aachen/DE

CA115 Deoxygenation of benzylic alcohols via transfer hydrogenolysis

B. Ciszek, Regensburg/DE , M. Böldl, Regensburg/DE, I. Fleischer, Regensburg/DE

CA116 Synthesis and Reactivity of Allenes by Copper- and Gold-Mediated Reactions

A. Boreux, Louvain-La-Neuve/BE , G. H. Lonca, Palaiseau/FR, K. Indukuri, Louvain-La-Neuve/BE, F. Gagosz, Palaiseau/FR, O. Riant, Louvain-La-Neuve/BE

CA117 Diversity-Oriented Synthesis of Heterocycles and Macrocycles by Controlled Reactions of Oxetanes with α-Iminocarbenes

A. Guarnieri-Ibáñez, Geneva/CH , F. Medina, Geneva/CH, C. Besnard, Geneva/CH, J. Lacour, Geneva/CH

CA118 CpRu-Catalyzed Decomposition of α-diazo-β-ketoesters for the Synthesis of Dioxenes, Dioxepines and Spiro Ketals

L. Egger, Geneva/CH , C. Tortoreto, Geneva/CH, T. Achard, Geneva/CH, J. Lacour, Geneva/CH

CA119 Straightforward Synthesis of Novel Indoline-Diazepine Fused Tricyclic Scaffold by Electrophilic Addition of α-Imino Carbenes to Tröger Bases

A. Bosmani, Geneva/CH , A. Guarnieri-Ibáñez, Geneva/CH, S. Goudedranche, Geneva/CH, C. Besnard, Geneva/CH, J. Lacour, Geneva/CH

CA121 **$B(C_6F_5)_3$-Catalyzed Transfer Hydro-tert-Butylation of Alkenes**

S. Keess, Berlin/DE , M. Oestreich, Berlin/DE

CA122 **Enantioselective Organocatalytic Multicomponent Synthesis of Six-Membered Nitrogen-Containing Heterocycles**

X. Bugaut, Marseille/FR , H. Du, Marseille/FR, Y. Dudognon, Marseille/FR, M. M. Sanchez Duque, Marseille/FR, O. Baslé, Marseille/FR, J. Rodriguez, Marseille/FR, T. Constantieux, Marseille/FR

CA123 **The chemistry of stable trinuclear all-metal aromatics**

G. Maestri, Parma/IT

CA124 **Replacing Noble Metal Catalysts with Earth-abundant Catalysts: from Concepts to Applications**

O. El-Sepelgy, Aachen/DE , M. Rueping, Aachen/DE

CA125 **Organocatlytic Atroposelective Desymmetrization of N-Arylmaleimides**

G. Bencivenni, Bologna/IT , N. Di Iorio, Bologna/IT, P. Righi, Bologna/IT, E. Marotta, Bologna/IT, S. Crotti, Bologna/IT, L. Soprani, Bologna/IT, A. Mazzanti, Bologna/IT

CA126 **Nanostructured Organic Semiconductors for Metal-free and Visible-light Photocatalysis**

W. Huang, Mainz/DE , K. Zhang, Mainz/DE

CA127 **Cycloisomerization of α- and β-Hydroxyallenes in Deep Eutectic Solvents**

M. Düser, Dortmund/DE , N. Krause, Dortmund/DE

CA128 **Synthesis of Functionalized Pyrazolidines by Gold-catalyzed Three-component Spirocyclization in Micellar Systems**

J. Schieven, Dortmund/DE , N. Krause, Dortmund/DE

CA129 **Pd-catalyzed perfluoroalkylative double functionalization of alkynes with iodoperfluoroalkanes and boronic acids.**

W. Chaładaj, Warsaw/PL , S. Domański, Warsaw/PL

CA130 **The Selective Oxidation of Saccharides Using TEMPO as a Catalyst**

S. Ellis, Lincoln/GB , S. Kyne, Lincoln/GB

C-H Bond Activation

CHB001 **Oxidative Coupling Reactions using Mo^{V} Reagents**

P. Franzmann, Mainz/DE , S. B. Beil, Mainz/DE, S. R. Waldvogel, Mainz/DE

CHB002 **Palladium(0)-Catalyzed Asymmetric C(sp3)–H Arylation: the Chiral Base Approach**

L. Yang, Basel/CH , R. Melot, Basel/CH, O. Baudoin, Basel/CH

CHB003 **Combination of Cp*Rh(III)-catalyzed C–H Activation with a Wagner-Meerwein-Type Rearrangement**

X. Wang, Münster/DE , A. Lerchen, Münster/DE, T. Gensch, Münster/DE, T. Knecht, Münster/DE, C.G. Daniliuc , Münster/DE, F. Glorius, Münster/DE

CHB004 **Ruthenium(II)-Catalyzed C–H Functionalizations of Benzoic Acids**

A. Bechtoldt, Göttingen/DE , N.Y.P. Kumar, Göttingen/DE, S. Warratz, Göttingen/DE, L. Ackermann, Göttingen/DE

CHB005 **Twofold Electrochemical C,H-Amination of Naphthalene and Related Arenes**

S. Möhle, Mainz/DE , S. Herold, Mainz/DE, F. Richter, Leverkusen/DE, H. Nefzger, Leverkusen/DE, S. R. Waldvogel, Mainz/DE

CHB006 **Postfunctionalization of Rhodium(II) Complexes – En Route to Artificial Enzymes**

J.-P. Berndt, Gießen/DE , P. R. Schreiner, Gießen/DE, R. Hrdina, Gießen/DE

CHB007 **Peptide Diversification by Ruthenium(II)-Catalyzed C–H Activation**

A. Schischko, Goettingen/DE , H. Ren, Goettingen/DE, N. Kaplaneris, Goettingen/DE, L. Ackermann, Goettingen/DE

CHB008 **High-Throughput Screening of C-H Borylation by using Paper-Based Colorimetric Sensor System**

H.-S. Kim, Gwangju/KR , S. Lee, Gwangju/KR

CHB009 **An old dog with new tricks: quaternary ammonium salts as operationally simple alkylating agents in C-H activation chemistry**

M. Schnürch, Wien/AT , M. Spettel, Wien/AT

CHB010 **Remote functionalization of donor-substituted cyclopropanes via directed metalation strategy**

Y. Ermolovich, Tallinn/EE , D. Kananovich, Tallinn/EE

CHB011 **Gallic Acid as radical initiator for the direct C-H arylation of (hetero) arenes**

D. M. Monzón, La Laguna/ES , R. Carillo, La Laguna/ES

CHB012 Synthesis of 5,5′-bisfurfural derivatives through a direct coupling approach

T. P. Kainulainen, Oulu/FI , J. P. Heiskanen, Oulu/FI

CHB013 Carbazole synthesis from 2-aminobiphenyl via intramolecularC-H activation and C-N bond formation

V. Elumalai, Bergen/NO , H. R. Bjørsvik, Bergen/NO

CHB014 Functionalization of 4(3H)-pyrimidinones via Pd-Catalysed and Copper-Assisted C-H Arylation

S. Collado Ruiz, Rouen/FR , C. Baudequin, Rouen/FR, L. Bischoff, Rouen/FR, C. Hoarau, Rouen/FR

CHB015 Late-stage C-H Arylation of Thiazolo[5,4-f]quinazolin-9(8H)-one Backbone: Synthesis of an Array of Potential Kinase Inhibitors

F. Couly, Rouen/FR , C. Fruit, Rouen/FR, T. Besson, Rouen/FR

CHB016 Synthesis of N-Mannich Bases of Aromatic Heteroarenes via Copper Catalysed AerobicCross-Dehydrogenative Coupling

N. Chandna, New Delhi/IN

CHB017 Metal-free ortho-functionalization of iodoarene via iodine(III)

S. Bouvet, Tarragona/ES , S. Izquierdo, Tarragona/ES, Y. Wu, Tarragona/ES, A. Shafir, Tarragona/ES

CHB018 Efficient and Regioselective Cp*Co(III)-Catalyzed Synthesis of Isoquinolone and Pyridone Building Blocks

M. Koy, Münster/DE , A. Lerchen, Münster/DE, T. Knecht, Münster/DE, F. Glorius, Münster/DE

CHB019 Reactivity and regioselectivity of C–H bonds of 2-naphthylfuran in palladium- catalysed direct (hetero)arylations

I. Kmentova, Bratislava/SK , M. Putala, Bratislava/SK

CHB020 Construction of Biologically-Relevant Heteroaryl Oligomers via Pd/Cu-Mediated C-H Bond Activation/C-C Cross-Coupling

S. N. Georgiades, Nicosia/CY , N. Rizeq, Nicosia/CY

CHB021 Selective Transition-Metal-Free Vicinal cis-Dihydroxylation of Saturated Hydrocarbons

L. Bering, Dortmund/DE , A. P. Antonchick, Dortmund/DE

CHB022 Remote C-H functionalization via sigma-alkyl-Pd species

J.-A. García-López, Murcia/ES , M. Pérez-Gómez, Murcia/ES, S. Hernández-Ponte, Murcia/ES, D. Bautista, Murcia/ES

Medicinal Chemistry and Chemical Biology

MCB001 Avenues to DNA-Encoded Libraries - of Chemoresistant Sequences and Nanoreactors

A. Brunschweiger, Dortmund/DE , M. Klika Skopic, Dortmund/DE, H. Salamon, Dortmund/DE, K. Jung, Dortmund/DE

MCB002 Enzymatic Synthesis and Copperfree Bioorthogonal Labeling of Cyclopropene-modified Oligonucleotides by the Use of Inverse Electron Demand Diels-Alder Cycloaddition

D. Ploschik, Karlsruhe/DE , H.-A. Wagenknecht, Karlsruhe/DE

MCB003 Synthesis of immobilised galactosyltransferase inhibitors for the discovery of new Trypanosoma brucei drug targets

M. R. Ventura, Oeiras/PT , J. Bevan, Oeiras/PT, M. Rénio, Oeiras/PT, E. C. Lourenço, Oeiras/PT, J. A. Rodrigues, Oeiras/PT

MCB004 Methyl fumarate-derived iron carbonyl complexes (FumETCORMs) as powerful anti-inflammatory agents

A.-L. Göderz, Köln/DE , H.-G. Schmalz, Köln/DE, B. Bauer, Tübingen/DE, T. Wieder, Tübingen/DE

MCB005 Synthesis and Biological Evaluation of New Azoles to Treat Fungal Infection

G. Newman, Dublin/IE , M. Deasy, Dublin/IE, A. Fleming, Dublin/IE, K. Kavanagh, Kildare/IE, V. McKee, Dublin/IE

MCB006 ProMs: A construction kit for potential metastatic inhibitors involving proline-rich segment recognition

S. Chiha, Cologne/DE , S. Dohmen, Cologne/DE, M. Klein, Cologne/DE, R. Kühne, Berlin/DE, H.-G. Schmalz, Cologne/DE

MCB007 Synthesis and biological evaluation of imidazopyridinylbenzochromene-2-carbonitrile and 4-imidazopyridinyloxopyranopyran-2-carbonitrile

B. Nedjar-Kolli, Algiers/DZ , S. Bakhta, Algiers/DZ, L. A. Haouchine, Algiers/DZ

MCB008 Synthesis of Cinchona alkaloid derived autophagy inhibitors

G. Garivet, Dortmund/DE

MCB009 Study Of The Enzyme-Substrate By Molecular Modeling Interaction; Cases Of The Disease Of Cancer

M. M. Benmiloud Kamal, Tlemcen/DZ

MCB010 Preparation of functionalized iron oxide and gold nanoparticles as drugdelivery models

S. Türkkan, Hannover/DE , G. Dräger, Hannover/DE, A. Kirschning, Hannover/DE

MCB011 Combining GC/MS, GC/IR, calculation of IR-spectra and synthesis for the identification of new natural compounds occurring in the ng range

C. Schlawis, Braunschweig/DE , S. Schulz, Braunschweig/DE

MCB012 Study of Oxidative Coupling Reaction of Paracetamol by Peroxidase Enzyme from Broccoli (Brassica oleraceae) and Its Activity as Antioxidants

E. S. Hasan Basri, Depok/ID , A. Maulidya, Depok/ID, A. A. Ibrahim, Depok/ID, N. R. Aisy, Depok/ID, R. D. Brotoningrat, Depok/ID

MCB013 Design of novel GPCR family-targeted scaffolds: synthetic and cheminformatic exploration of novel medicinal chemistry space

R. Megens, Nijmegen/NL , T. Berkenbosch, Nijmegen/NL, J. Benningshof, Nijmegen/NL, G. Mueller, Nijmegen/NL, D. Stumpfe, Bonn/DE, A. De la Vega de Leon, Bonn/DE, D. Dimova, Bonn/DE, J. Bajorath, Bonn/DE

MCB014 Synthesis of novel photoactive hybrid conjugates based on chlorin-e_6 and selective delivery agents for antitumor photodynamic therapy

A. V. Nyuchev, Nizhny Novgorod/RU , V. F. Otvagin, Nizhny Novgorod/RU, N. S. Kuzmina, Nizhny Novgorod/RU, O. I. Koifman, Ivanovo/RU, A. Y. Fedorov, Nizhny Novgorod/RU

MCB015 The First Selective BET-Inhibitor Targeting BRD4(BD1)

I. Voitovich, Nizhny Novgorod/RU , A. Fedorov, Nizhny Novgorod/RU, S. Combes, Marseille/FR, X. Morelli, Marseille/FR

MCB016 Multicomponent synthesis of natural-based polyphenols starting from bio-based phenols and their evaluation as amyloid aggregation inhibitors

C. Lambruschini, Genova/IT , A. Traverso, Genova/IT, L. Banfi, Genova/IT, G. Baruzzo, Genova/IT, C. D'Arrigo, Genova/IT, F. Ferraro, Genova/IT, D. Galante, Genova/IT, G. Gangia, Genova/IT, L. Moni, Genova/IT, K. Pagano, Milano/IT, R. Riva, Genova/IT, S. Tommaselli, Milano/IT

MCB017 Lilly Open Innovation Drug Discovery Program (OIDD)

M. Walter, Windlesham/GB

MCB018 Synthesis of novel organic selenides compounds as potential neuroprotective agents

S. Shaaban, Frankfurt am Main/DE , A. Zarrouk, Dijon/FR, D. Vervandier-Fasseur, Dijon/FR, P. Andreoletti, Dijon/FR, C. Jacob, Saarbruecken/DE, M. Cherkaoui-Malki, Dijon/FR

MCB019 Pigments In Rust Fungi: Biosynthesis, Role And Evolution

E. Wang, Sydney/AU , C. Dong, Sydney/AU, T. H. Roberts, Sydney/AU, R. F. Park, Sydney/AU

MCB020 Asymmetric Synthesis and Biological Evaluation of Heteroaromatic Lipoxin A_4 Analogues

A. Zanetti, Dublin/IE

MCB021 New indole derivatives against C. albicans biofilm

F. Pandolfi, Rome/IT , M. Feroci, Rome/IT, G. Simonetti, Rome/IT, I. Chiarotto, Rome/IT, L. Scipione, Rome/IT

MCB022 Addressing challenging targets with New Modality chemistry

R. Gopalakrishnan, Dortmund/DE , S. M. Guéret, Dortmund/DE, H. Adihou, Dortmund/DE, M. Lemurell, Gothenburg/SE, T. N. Grossmann, Dortmund/DE, A. T. Plowright, Gothenburg/SE, E. Valeur, Gothenburg/SE, H. Waldmann, Dortmund/DE

MCB023 Asymmetric Synthesis of Novel Heteroaromatic Lipoxin A4 Analogues

K. Gahan, Dublin/IE

MCB024 Search for Selective MMP-2 Inhibitors in Series of Novel Triazolylmethyl Aziridines and Azetidines

K. Suta, Riga/LV , D. Stamberga, Riga/LV, A. Solops, Riga/LV, I. Domracheva, Riga/LV, M. Turks, Riga/LV

MCB025 Octa-glycoconjugated aminoporphyrazines as potential photosensitizers in photodynamic therapy

T. Klein, Tübingen/DE , T. Ziegler, Tübingen/DE

MCB026 Total synthesis of sphingolipids and sphingosine-type signaling molecules of microbial origin

D. Leichnitz, Jena/DE , L. Raguž, Jena/DE, A. Cantley, Boston/US, A. Woznica, Berkeley/US, N. King, Berkeley/US, J. Clardy, Boston/US, C. Beemelmanns, Jena/DE

MCB027 Furoquinoline from Vepris lecomteana (Rutaceae Family)

A. D. Kenmogne Kouam, Bielefeld/DE , A. F. Kamdem Waffo, Douala/CM, E. Happi Ngueffa, Douala/CM, J. D. Wansi, Douala/CM, N. Sewald, Bielefeld/DE

MCB028 Aurone Oxime Ethers as Selective Estrogen Receptor Modulators (SERMs): Design, Synthesis and Computacional Prediction of Binding Modes

P. López-Rojas, La Laguna/ES , A. Estévez-Braun, La Laguna/ES, A. Amesty, La Laguna/ES

MCB029 Synthesis and Docking Studies of Potencial Bromodomain Inhibitors (BRDs) based on Pyrimidine Scaffolds

A. Amesty, La Laguna/ES , P. Martín-Acosta, La Laguna/ES, E. Polo, La Laguna/ES, D. Heidenreich, Frankfurt/DE, S. Knapp, Frankfurt/DE, A. Estevez-Braun, La Laguna/ES

MCB030 Synthesis Towards Efficient TCOs for Bioorthogonal Chemistry

M. Haider, Vienna/AT , D. Svatunek, Vienna/AT, H. Mikula, Vienna/AT

MCB031 Novel phthalimides as potent and selective inhibitors of cholesterol esterase

F. M. Dato, Cologne/DE , Z. R. Uhl, Cologne/DE, M. Sheikh, Cologne/DE, A. W. Schüller, Cologne/DE, B. Goldfuß, Cologne/DE, M. Pietsch, Cologne/DE

MCB032 Synthesis of Rigidin Analogues and their Incorporation into Polymeric Delivery Systems

W. A. L. van Otterlo, Stellenbosch/ZA , A. E. van der Westhuyzen, Stellenbosch/ZA, B. Klumperman, Stellenbosch/ZA, A. Kornienko, San Marcos, Texas/US

MCB033 Alcohol-enhanced Cu-mediated radiofluorination

J. Zischler, Jülich/DE , N. Kolks, Cologne/DE, D. Modemann, Jülich/DE, B. D. Zlatopolskiy, Cologne/DE, B. Neumaier, Jülich/DE

MCB034 Efficient preparation of 2-[^{18}F]fluorophenylalanine (2-[^{18}F]FPhe) by Cu-mediated radiofluorination

D. Modemann, Jülich/DE , B. Zlatopolskiy, Köln/DE, J. Ermert, Jülich/DE, B. Neumaier, Jülich/DE

MCB035 Preparation of [^{18}F]fluoroalkenyliodonium salts and their application forradiolabeling by Sonogashira coupling reactions

S. Humpert, Jülich/DE , B. Zlatopolskiy, Köln/DE, M. Holschbach, Jülich/DE, B. Neumaier, Jülich/DE

MCB036 Discovery of Cytochrome bc_1 Complex Inhibitors from Natural Products

G.-F. Yang, Wuhan/CN , C. Chen, Wuhan/CN

MCB037 Multifunctionalised Carbon Nanotubes as Efficient Anticancer Systems

S. Cicchi, Sesto Fiorentino/IT , G. Biagiotti, Sesto Fiorentino/IT, S. Fedeli, Sesto Fiorentino/IT, A. Brandi, Sesto Fiorentino/IT, P. Paoli, Firenze/IT, P. Chiarugi, Firenze/IT

Organic Materials and Supramolecular Chemistry

OMSC001 OLED-Materials based on functionalised polysiloxanes for solution processing

C. Stadtmüller, Darmstadt/DE

OMSC002 From Sequence-Defined Glycooligomers to Multiblock Glycopolymers: Precision Glycopolymers for the Investigation of Multivalent Ligand/Receptor Interactions

C. Gerke, Düsseldorf/DE , M. F. Ebbesen, Düsseldorf/DE, D. Jansen, Düsseldorf/DE, S. Boden, Düsseldorf/DE, T. Freichel, Düsseldorf/DE, L. Hartmann, Düsseldorf/DE

OMSC003 Synthesis of triazole-based cross-linkers for hydrogels

N. Schaedel, Stuttgart/DE , M. Martini, Stuttgart/DE, M. Kirchhof, Stuttgart/DE, S. Laschat, Stuttgart/DE

OMSC004 Poly(phenylisocyanides) as versatile, enantiodiscriminating alignment media for small molecules

S. Wesp, Darmstadt/DE

OMSC005 Photoelimination of nitrogen from polycyclic diazirines in inclusion complexes

T. Šumanovac Ramljak, Zagreb/HR , M. Alešković, Zagreb/HR, M. Matković, Zagreb/HR, N. Basarić, Zagreb/HR, K. Mlinarić-Majerski, Zagreb/HR

OMSC006 Chalcogen Bonding in Catalysis

S. Benz, Geneva/CH , J. López-Andarias, Geneva/CH, N. Sakai, Geneva/CH, S. Matile, Geneva/CH

OMSC007 Synthesis of new heteroleptic mononuclear Ru(II) complexes and dinuclear Ru(II) complexes with bridging ligand for DSSCs

W. Lee, Seoul/KR , J. Lee, Seoul/KR, Y. R. Choi, Seoul/KR, J. Seo, Seoul/KR, J. Tak, Seoul/KR

OMSC008 New approach to fabricate OLED devices by solution processing with organogelators

F.-F. Hartmann, Darmstadt/DE

OMSC009 Synthesis and biodegradation studies of a series of novel L-phenylalanine derived ionic liquids

I. V. Kapitanov, Tallinn/EE , A. Jordan, Dublin/IE, A. Haiß, Lüneburg/DE, M. Špulák, Hradec Kralove/CZ, Ye. Karpichev, Tallinn/EE, G. Raba, Tallinn/EE, V.K. Gupta, Tallinn/EE, R. Vilu, Tallinn/EE, K. Kümmerer, Lüneburg/DE, N. Gathergood, Tallinn/EE

OMSC011 **Supramolecularly regulated phosphite-based ligands applied to gold catalysis**

L. Carreras Vinent, Tarragona/ES , A. Vidal-Ferran, Tarragona/ES

OMSC012 **Synthetic Pathways Towards the Synthesis of Mixed [1:2:3]-Hexakisadducts of C_{60} with an Octahedral Addition Pattern**

K. L. Maxouti, Erlangen/DE , A. Hirsch, Erlangen/DE

OMSC013 **Oligodithienothiazines – Red-shifted Luminescent Electron-rich Donors**

J. Nau, Düsseldorf/DE , T. J. J. Müller, Düsseldorf/DE, C. Dostert, Düsseldorf/DE

OMSC014 **Synthesis and characterization of chiral triazole-based halogen bond donors: halogen bonds in solid state and in solution**

M. Kaasik, Tallinn/EE , S. Kaabel, Tallinn/EE, K. Kriis, Tallinn/EE, I. Järving, Tallinn/EE, R. Aav, Tallinn/EE, K. Rissanen, Jyvaskyla/FI, T. Kanger, Tallinn/EE

OMSC015 **Fluorometric Sensors on amino acid basis for enantiodifferentiation of chiral anions**

M. Vollmer, Cologne/DE , S. Hanft, Cologne/DE, Y. Diaz-Miara, Cologne/DE, A. G. Griesbeck, Cologne/DE

OMSC016 **Interaction Studies between Newly Synthesized Photosensitive Polymer and Ionic Liquids.**

J. Jeong, Seoul/KR , I. T. Kim, Seoul/KR, G. C. Kwon, Seoul/KR, S. H. Lee, Seoul/KR, Y. S. Kim, Seoul/KR, J. H. Kim, Seoul/KR, J. H. Cha, Seoul/KR, S. H. Kim, Seoul/KR, P. K. Attri, NewDelhi/IN

OMSC018 **New fluorescence probes based on phthalimide-methionine dyads for reactive oxygen species (ROS): singlet oxygen, hydrogen peroxide and hypochlorite**

M. Atar, Cologne/DE , B. Ö. Öngel, Cologne/DE

OMSC019 **Intramolecular Anti-Phosphinoauration of Alkynes**

S. Arndt, Heidelberg/DE

OMSC020 **Synthesis of porous organic 3D networks using thiol-yne click chemistry**

M. Lang, Karlsruhe/DE , A. Schade, Karlsruhe/DE, S. Bräse, Karlsruhe/DE

OMSC021 **Synthesis and properties of porphyrin-fullerene dyads as sensitizers for NiO based dye-sensitized solar cells.**

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OMSC022 **Two new bulky substituted Zn porphyrins bearing carboxylate anchoring groups as promising dyes for DSSCs**

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OMSC023 **Functionalized Sulfonatocalix[4]arenes as Scavengers for the Detoxification of V-Type Nerve Agents**

B. Andrae, Kaiserslautern/DE , C. Schneider, Kaiserslautern/DE, S. Kubik, Kaiserslautern/DE

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J. Anhäuser, Bonn/DE , A. Lützen, Bonn/DE

OMSC025 **[2.2]Paracyclophane-based functional surface coatings by CVD Polymerization**

E. Spuling, Karlsruhe/DE , C. Hussal, Karlsruhe/DE, J. Lahann, Karlsruhe/DE, S. Bräse, Karlsruhe/DE

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M. Käseborn, Bonn/DE , A. Lützen, Bonn/DE

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D. Püschner, Bonn/DE , A. Lützen, Bonn/DE, S.-S. Jester, Bonn/DE

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S. Milenin, Moscow/RU , D. Migulin , Moscow/RU, G. Cherkaev , Moscow/RU, A. Muzafarov , Moscow/RU

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B. Nikolova, Sofia/BG , R. Dimitrova, Sofia/BG, K. Ilieva, Sofia/BG, A. Vasilev, Sofia/BG, M. Kandinska, Sofia/BG, S. Baluschev, Sofia/BG, S. Stoyanov, Sofia/BG, S. Stanimirov, Sofia/BG, S. Angelova, Sofia/BG

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R. Dimitrova, Sofia/BG , M. Kandinska, Sofia/BG, A. Vasilev, Sofia/BI, S. Baluschev, Mainz/DE

OMSC031 Polyborosiloxanes: synthesis and physical properties

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OMSC033 Novel Zwitterionic Deep Eutectic Solvents as effective alternatives to organic solvents

M. Tiecco, Perugia/IT , R. Germani, Perugia/IT

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J. P. Heiskanen, Oulu/FI , R. Sippola, Oulu/FI, A. Hadipour, Leuven/BE, T. Kastinen, Tampere/FI, P. Vivo, Tampere/FI, T. I. Hukka, Tampere/FI, T. Aernouts, Leuven/BE

OMSC036 Turning metallosupramolecular chemistry upside down: The effect of supramolecular structures on metal centres

N. Struch, Bonn/DE , A. Lützen, Bonn/DE

OMSC037 Perylene Bisimides: An adaptable building block for the preparation of functional hybrid materials

Z. Syrgiannis, Trieste/IT

OMSC038 Modification of biopolymers by exploiting ionic liquids and CO_2 to access added value materials

L. Guazzelli, Pisa/IT , A. Mezzetta, Pisa/IT, C. Chiappe, Pisa/IT

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S. Förtsch, Ulm/DE , P. Bäuerle, Ulm/DE

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E. Heinrich, Mainz/DE

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W. Kramer, Jackson/US , D. Razinoubakht, Jackson/US, G. Kaur, Jackson/US, S. Molitor, Koeln/DE, A. Zimmer, Koeln/DE, A. Griesbeck, Koeln/DE

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S. Halbert, Paris/FR , M. Morin, Rennes/FR, S. Drissi-Amraoui, Montpellier/FR, J.-M. Campagne, Montpellier/FR, M. Mauduit, Rennes/FR, H. Gérard, Paris/FR

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P. Byrne, Cork/IE , H. Mayr, Munich/DE, E.-U. Würthwein, Münster/DE

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S. Fabig, Essen/DE , G. Haberhauer, Essen/DE, R. Gleiter, Heidelberg/DE

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Christophe Lévêque, Vincent Corcé, Ludwig Chenneberg, Cyril Ollivier, and Louis Fensterbank

LM002 **Synthetic strategies for the synthesis of quinazoline alkaloid derivatives with promising biological activities**

Diana I. S. P. Resende, Solida Long, Papichaya Boonpothong, Artur M. S. Silva, Anake Kijjoa, Emília Sousa,* and Madalena M. M. Pinto

LM003 **Extraction, Characterization and Fatty Acid Profile of African Star Apple Seed (Chrysophyllum albidum) Oil**

Ominyi, C.E.; Ominyi, C.J. and Nwali, U.I.

LM004 **Niobium Catalysis: a New Tool for Hydrofunctionalization**

Laura Ferrand, Yue Tang, Corinne Aubert, Louis Fensterbank, Virginie Mouriès-Mansuy, Marc Petit and Muriel Amatore*

LM005 **Dipolar Cycloadditions: Molecular Glues for Creation of Photoresponsive Biomolecules**

F. Heaney, J. O'Sullivan and J. Hayden

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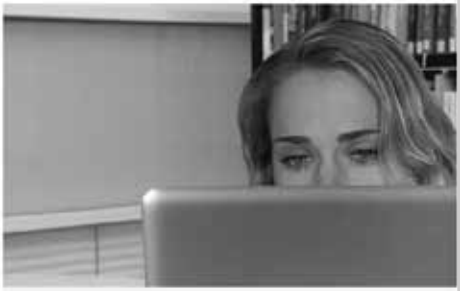

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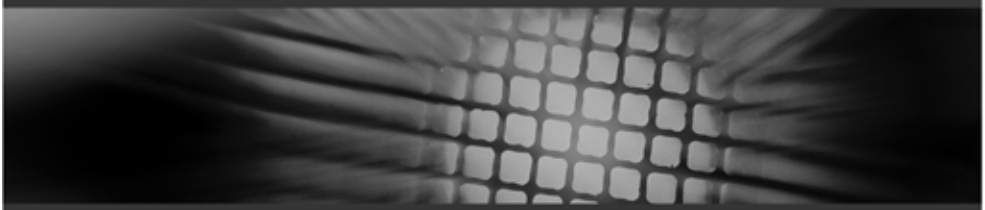

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