

10th Workshop on Fats and Oils as Renewable Feedstock for the Chemical Industry

Karlsruhe, Germany, March 17 – 19, 2019

Sunday, March 17, 2019

Registration

Registration will be open from 15:00 - 19:00

- 15.45 **Welcome and Opening**
- Jürgen O. Metzger, *abiosus* e.V.
- Michael A. R. Meier, KIT
- 16.00 – 17.30 *First Session*
- Chair: Michael A. R. Meier*
- 16.00 – 16.30 **At Long Last: Olefin Metathesis Production of Macrocyclic Musk from a Biomass at High Concentration (M)**
- L1 Karol Grela, Biological and Chemical Research Centre, Faculty of Chemistry University of Warsaw and Institute of Organic Chemistry, Polish Academy of Sciences, Warsaw, Poland
- 16.30 – 17.00 **Future of Surfactants: Sustainability fuels Innovation (M)**
- L2 Dirk Kuppert, Clariant, Frankfurt, Germany
- 17.00 – 17.30 **Bio-Derived Molecular Materials: Ability to Adapt, Clean and for Energy Storage (M)**
- L3 George John, The City College of New York, Center for Discovery and Innovation, New York, USA
- 17.30 – 20.30 **Poster Session and Opening Mixer**
- Posters will be displayed until the end of the workshop

(M) Main Lecture 30 min. including discussion

(D) Discussion Lecture 20 min. including discussion

Monday, March 18, 2019

- 9.00 – 10.30 *First morning session*
- Chair: Johannes Kabisch*
- 9.00 – 9.30 **Alteration of Lipase Selectivity for Fatty Acid Enrichment by Protein Engineering (M)**
- L4 Katja Zorn¹, Isabel-Oroz-Guinea¹, Henrike Brundiek², Uwe T. Bornscheuer¹, ¹ Institute of Biochemistry, Greifswald University, Greifswald, Germany, ² Enzymicals AG, Greifswald, Germany
- 9.30 – 9.50 **Synthesis of 100% renewable glycolipids from lignocellulose (D)**
- L5 Katrin Ochsenreither, S. Siebenhaller, C. Syldatk, Karlsruhe Institute of Technology (KIT), Institute of Process Engineering in Life Sciences, Section II: Technical Biology, Karlsruhe, Germany
- 9.50 – 10.10 **Cyanide-free Chemoenzymatic Approach towards Fatty Nitriles and Aliphatic Dinitriles Based on Renewable Feedstocks (D)**
- L6 Harald Gröger, Chair of Organic Chemistry I, Faculty of Chemistry, Bielefeld University
- 10.10 – 10.30 **Enzymatic synthesis of peracids with lipase/acyltransferase for tailored *in situ* epoxidation in mild conditions (D)**
- L7 Rebecca Re,¹ Johanna Proessdorf,¹ James J. La Clair¹, Michael D. Burkart¹, Maeva Subileau,^{1,2} ¹ Department of Chemistry and Biochemistry, UC San Diego, La Jolla, United States, ² Montpellier SupAgro, UMR 1208 IATE, 2 Place Viala, 34060 Montpellier Cedex 2, France
- 10.30 – 11.00 **Coffee break**
- 11.00 – 12.30 *Second morning session*
- Chair: Uwe Bornscheuer*
- 11.00 – 11.30 **Oleaginous Yeasts as Microbial Cell Factories for the Renewable Production of Lipids and Lipid Derived Products (M)**
- L8 Stefan Bruder, Silke Hackenschmidt, Eva Moldenhauer, Felix Bracharz, Johannes Kabisch, Computer-aided Synthetic Biology, TU Darmstadt, Darmstadt, Germany
- 11.30 – 11.50 **Biobased materials and foams from algae or jojoba oils (D)**
- L9 Claire Negrell^a, Adrien Cornille^a, Sylvain Caillol^a, Chakib Mokhtari^b, Fouad Malek^b, ^aInstitut Charles Gerhardt UMR 5253 – CNRS, UM, ENSCM, Montpellier, France. ^bLaboratoire de Chimie Organique, Macromoléculaire et Produits Naturels – Université Mohamed 1^{er} – Faculté des Sciences, Oujda, Maroc

- 11.50 – 12.10 **Sustainable synthesis of bio-based surfactants from cashew nutshell liquid (CNSL) (D)**
L10 Valentina Bragoni, J. Pollini, R. K. Rit, R. Kirchmann, A. S. Trita, Lukas J. Gooßen, Ruhr Universität Bochum, Bochum, Germany
- 12.10 – 12.30 **Innovative Concepts for Homogeneous Catalyst Recycling: Novel Solutions in the Functionalization of Unsaturated Oleo Chemicals (D)**
L11 T. Seidensticker, J. Vondran, N. Herrmann, D. Vogt, TU Dortmund University, Laboratory of Industrial Chemistry, Dortmund/Germany
- 12.30 – 14.00 **Lunch break**
- 14.00 – 15.30 *First afternoon session*

Chair: Karol Grela
- 14.00 – 14.30 **From Pheromones to Functional Polymers: Ring-Opening Polymerization of Macrolactones from Long-Chain Hydroxyacids (M)**
L12 Andreas Heise, Department of Chemistry, Royal College of Surgeons in Ireland (RCSI), Dublin, Ireland
- 14.30 – 14.50 **Sustainable epoxidation of Cynara cardunculus seed oil with hydrogen peroxide (D)**
L13 Rosa Turco, Riccardo Tesser, Rosa Vitiello, Vincenzo Russo, Martino Di Serio, Università di Naples Federico II, Department of Chemical Sciences, Napoli, Italy
- 14.50 – 15.10 **Organocatalytic cleavage of fatty acid derivatives to aldehydes and esters (D)**
L14 Nam Duc Vu, Souleymane Bah, Elsa Deruer, Boris Guichet, Estelle Métay, Nicolas Duguët, Marc Lemaire, University Lyon 1, Villeurbanne, France
- 15.10 – 15.30 **Selective Oxidations of Unsaturated Fatty Acids and Bio-sourced Feedstocks (D)**
L15 Mukund P. Sibi, Department of Chemistry and Biochemistry, North Dakota State University, Fargo, ND, USA
- 15.30 – 16.00 **Coffee break**

- 16.00 – 17.30 *Second afternoon session*
- Chair: Eric Monflier*
- 16.00 – 16.30 **Bioeconomy in figures - with a focus on the use of oils and fats in
the chemical industry (M)**
L16 Michael Carus, Nova-Institut, Germany
- 16.30 – 17.00 **Enhancing the physical-mechanical properties of vegetable oil-
based waxes using simple, safe and sustainable chemical
modifications (M)**
L17 Eliane Goossens¹, Peter Tollington², ¹ Cargill R&D Centre Europe,
Vilvoorde, Belgium, ² Cargill Bio-Industrials Europe, Schiphol, The
Netherlands
- 17.00 – 17.20 **Current Development in biobased polyester : PRIC range (D)**
L18 Marie Reulier, ITERG, Canejan, France
- 17.20 – 17.40 ***N,N*-Dimethylglucamine – A Sustainable Solution for Paints &
Coatings (D)**
L19 Adriana Grossmann, Clariant Produkte (Deutschland) GmbH,
Burgkirchen, Germany
- 19.30 *Conference Dinner*
- Achat Plaza Karlsruhe**

Tuesday, March 19, 2019

9.00 – 10.30 *First morning session*

Chair: Dean Webster

9.00 – 9.30 **Chemical Synthesis of High-Melting Bacterial Polyesters and Chemically Recyclable Polymers (M)**

L20 Eugene Y.-X. Chen, Department of Chemistry, Colorado State University, Fort Collins, United States

9.30 – 9.50 **Plant oil-based Poly(Alkyl Methacrylate) as Viscosity Control Additive for Mineral and Vegetable Oils (D)**

L21 Juliette Lomege, Vincent Lapinte, Claire Negrell, Jean-Jacques Robin, Sylvain Caillol, Institut Charles Gerhardt, CNRS UMR-5253, Ingénierie et Architectures Macromoléculaires, Montpellier, France

9.50 – 10.10 **Development of New Bio-based Innovative and Responsive Materials Based on Fatty Acid Derivatives (D)**

L22 Khantutta-Kim Tremblay-Parrado, Luc Avérous, BioTeam/ICPEES-ECPM, Université de Strasbourg, Strasbourg, France

10.10 – 10.30 **Roots towards innovation in sustainable poly(2,5-furandicarboxylate)s polymeric materials (M)**

L23 Andreia F. Sousa, CICECO - Aveiro Institute of Materials, Departamento de Química, Universidade de Aveiro, Aveiro, Portugal

10.30 – 11.00 **Coffee Break**

11.00 – 12.30 *Second morning session*

Chair: Eva E. Malmström

11.00 – 11.30 **Sustainable Terpene-Based Biopolymers and Novel Functional Biomaterials (M)**

L24 Malte Winnacker, Jacob Sag, Andreas Beringer, Bernhard Rieger, WACKER-Lehrstuhl für Makromolekulare Chemie and Catalysis Research Center, TU München, Garching bei München, Germany

11.30 – 11.50 **Renewable polyamides via thiol-ene click' chemistry and long-chain aliphatic segments (D)**

L25 Phan Huy Nguyen, Steven Spoljaric, Jukka Seppälä, Polymer Technology, Department of Chemical and Metallurgical Engineering, Aalto University School of Chemical Engineering, Aalto, Finland

- 11.50 – 12.10 **Sustainable Cellulose modification *via* transesterification using high oleic sunflower in a DBU-CO₂ switchable solvent system (D)**
- L26 Kelechukwu (Kenny) N. Onwukamike,^{1,2} S. Grelier,² E. Grau,² H. Cramail,² M.A.R. Meier¹, ¹ Institute of Organic Chemistry (IOC), Karlsruhe Institute of Technology (KIT), Karlsruhe, Germany. ² Laboratoire de Chimie des Polymères Organiques, Université de Bordeaux, UMR5629, CNRS - Bordeaux INP - ENSCBP, Pessac Cedex France.
- 12.10 – 12.30 **Non-isocyanate bio-based polyurethanes through reactive extrusion (D)**
- L27 Fiona Magliozzi,^{1,2} Etienne Grau^{1,2}, Guillaume Chollet³, Henri Cramail^{1,2}, ¹Univ. Bordeaux, LCPO, UMR 5629, Pessac, France ² Bordeaux INP, LCPO, UMR 5629, Talence, France, ³ITERG, F-Canéjan, France
- 12.30 – 14.00 **Lunch break**
- 14.00 – 15.30 *Afternoon session*
- Chair: Eugene Y.-X. Chen*
- 14.00 – 14.30 **Epoxidized Sucrose Esters as a Platform Technology for High Performance Thermosets (M)**
- L28 Dean C. Webster, North Dakota State University, Fargo, North Dakota, USA
- 14.30 – 15.00 **Recent Advances in Hydroformylation, Hydrohydroxy-methylation and Hydroaminomethylation of Oleochemicals (M)**
- L29 Eric Monflier, University of Artois, Unité de Catalyse et Chimie du Solide, UMR CNRS 8181, Faculté des Sciences Jean Perrin, Lens, France
- 15.00 – 15.30 **Renewable building blocks for potential use in coatings (M)**
- L30 Eva E. Malmström, KTH Royal Institute of Technology, Stockholm, Sweden
- 15.30 **Poster Award and Closing Remarks**
- Best Poster Award**
Award committee: Eliane Goossens, Andreas Heise, George John, Malte Winnacker
- 15.45 **End of Workshop**

Poster

- P1 **Sustainable Preparation of Catalytically Active Ag/AgBr Janus Nanoparticles Under Sun light using Renewable Surface Active Ionic Liquid**
Gurbir Singh, Komal, Tejwant Singh Kang*, Department of Chemistry, UGC Sponsored Centre for Advanced Studies (CAS-II), Guru Nanak Dev University, Amritsar, India
- P2 **Inherently Green and Thermally stable Microemulsions**
Manvir Kaur, Gurbir Singh, Tejwant Singh Kang*, Department of Chemistry, UGC-Centre for Advance Studies – II, Guru Nanak Dev University, Amritsar, India
- P3 **Nicotine-based Renewable Surface Active Ionic Liquids: Self-assembly and Their Application as Greener Oil Herding Agents**
Gurbir Singh,[†] Raman Kamboj, Venus Singh Mithu,[†] Vinay Chauhan, Taranjeet Kaur,[#] Gurcharan Kaur,[#] Sukhprit Singh,^{†,*} Tejwant Singh Kang^{†,*}
[†]Department of Chemistry, UGC-centre for Advance Studies – II, [#]Department of Biotechnology, Guru Nanak Dev University, Amritsar, India.
- P4 **Green Initiative to Prepare Glass Fibre Reinforced Composite based on Vegetable Oil Polyester Thermoset Matrices**
Abhishek Chowdhury, Prashant Anthony, Sam Higginbottom University of Agriculture, Technology and Sciences, Allahabad, Uttar Pradesh, India
- P5 **Oxidative processes towards 12-OPDA as a precursor of jasmonic acid**
Jana Löwe, Karl-Josef Dietz and Harald Gröger, Chair of Organic Chemistry I, Faculty of Chemistry, Bielefeld University, Bielefeld, Germany
- P6 **Ruthenium-catalyzed hydroaminomethylation of vegetable oils**
Kévin Cousin, Frédéric Hapiot, Eric Monflier, Univ. Artois, CNRS, Lens, France
- P7 **Retardation of lipid oxidation in (o/w) and (w/o) emulsion systems with addition of natural terpene molecules**
Olivia Dhara*, Mahua Ghosh
Department of Chemical Technology, University College of Science and Technology, University of Calcutta, Kolkata, India
- P8 **Functionalized polyurethanes for surface coatings**
Philipp Schmidt, Steven Eschig, Fraunhofer Institute for Wood Research Wilhelm-Klauditz-Institut WKI, Braunschweig, Germany
- P9 **Stereo selective synthesis of cyclic carbonates based on renewables**
Vivian Stefanow, Thomas Werner, Leibniz Institute for Catalysis at University of Rostock, Rostock, Germany
- P10 **Synthesis of bio-sourced Non-Isocyanate Polyurethanes and their incorporation into water-borne NIPU-Acrylic hybrid systems**
Boris Bizet^{1,2}, Étienne Grau¹, José M. Asua², Henri Cramail¹
¹LCPO – UMR 5629, Université de Bordeaux, CNRS, ENSCBP / Bordeaux INP – 16, PESSAC, France ; ²POLYMAT, University of the Basque Country UPV/EHU, Centro Joxe Mari Korta –San Sebastián, Spain

- P11 **Agglomerated stone materials based on acrylated vegetable oils as thermosetting binder**
Stefano Zeggio, Fabio Bassetto, Breton SpA, Castello di Godego, Italy
- P12 **Sustainable synthesis of bio-based surfactants from cashew nutshell liquid (CNSL) (D)**
Valentina Bragoni, J. Pollini, R. K. Rit, R. Kirchmann, A. S. Trita, Lukas J. Gooßen, Ruhr Universität Bochum, Bochum (Germany)
- P13 **Selective product crystallization as a recycling strategy in the methoxycarbonylation of renewable resources**
N. Herrmann, D. Vogt, T. Seidensticker, TU Dortmund University, Dortmund, Germany
- P14 **Castor Oil Based Polyurethane Perlite Composites with Low Thermal Conductivity**
Gokhan CAYLI, Milkah Wairimu MURUMI, Istanbul University Cerrahpasa, Istanbul, Turkey
- P15 **New Series of Epoxidized Sunflower Oil Based Flame Retardant Monomers: Synthesis and Characterization**
Gokhan CAYLI, Necla BEKTAS, Demet GURBUZ, Adem CINARLI, Istanbul University-Cerrahpasa, Istanbul, Turkey
- P16 **Synthesis and Characterization of Epoxy Acrylate Derivative of Methyl Ricinoleate**
Gokhan CAYLI¹, Pinar CAKIR HATIR², ¹ Istanbul University Cerrahpasa, Istanbul, Turkey, ² Istanbul Arel University, Istanbul, Turkey
- P17 **Polymerization of PEP Resole with Different Types of Oils**
Gokhan CAYLI¹, Pinar CAKIR HATIR², Selim KUSEFOGLU³, ¹ Istanbul University-Cerrahpasa, Istanbul, Turkey, ² Istanbul Arel University, Istanbul, Turkey, ³ Bogazici University, Istanbul, Turkey
- P18 **Epoxy Derivative of Maleate Ester of Castor Oil: A New Alternative to Unsaturated Polyesters**
Gokhan CAYLI¹, Pinar CAKIR HATIR², ¹ Istanbul University-Cerrahpasa, Istanbul, Turkey, ² Istanbul Arel University, Istanbul, Turkey
- P19 **Properties of Epoxidized Maleinated Castor Oil / Hydroxyapatite Composites**
Gokhan CAYLI¹, Yesim Muge SAHIN², Erdi BULUS², Demet Sezgin MANSUROGLU², ¹ Istanbul University-Cerrahpasa, Istanbul, Turkey, ² Istanbul Arel University, Istanbul, Turkey

- P20 **The Effect of Plant Oil-Based Monomer Unsaturation on Properties of Latexes and Latex Materials with High Biobased Content**
Zoriana Demchuk¹, Oleh Shevchuk², Vasylyna Kirianchuk², Ananiy Kohut², Stanislav Voronov², Andriy Voronov¹, ¹Coatings and Polymeric Materials Department, North Dakota State University, Fargo, ND, USA, ²Organic Chemistry Department, Lviv Polytechnic National University, Lviv, Ukraine
- P21 **Synthesis of novel acrylated cardanol diphenyl phosphate based reactive diluent for UV curable flame retardant coating application**
Ganesh Phalak, Shashank Mhaske, Institute of Chemical Technology, Mumbai, India
- P22 **Modified Fatty raw materials as PHBV PLASTICIZERS**
Hanna Nosal¹, Marek Warzała¹, Kevin Moser², Andrei Holzer², Dorota Stańczyk¹, ¹Institute of Heavy Organic Synthesis "Blachownia", Kedzierzyn-Kozle, Poland, ²Fraunhofer Institute for Chemical Technology, Pfinztal, Germany
- P23 **Autoxidation of oils according to their composition: Applications to the drying of alkyd paints**
Raphael Lebeuf, Laura Dubrulle, Pr. Véronique Rataj, Univ. Lille, CNRS, Centrale Lille, ENSCL, Univ. Artois, UMR 8181 - UCCS - Unité de Catalyse et Chimie du Solide, Lille, France
- P24 **Oxo-functionalization of unsaturated lipids by a photooxidation / molybdate catalysis sequence**
Raphael Lebeuf, Pr. Véronique Rataj, Univ. Lille, CNRS, Centrale Lille, ENSCL, Univ. Artois, UMR 8181 - UCCS - Unité de Catalyse et Chimie du Solide, Lille, France
- P25 **A specific kinetic study to understand better the ring-opening of epoxydes from unsaturated fatty acid systems**
Julien Peyrton, Luc Avérous, BioTeam/ICPEES-ECPM, UMR CNRS 7515, Strasbourg, France
- P26 **Sustainable synthesis of ureas and amines via CO₂-based Lossen rearrangement**
Luca Filippi, Michael a. R. Meier*, Karlsruhe Institute of Technology (KIT), Institute of Organic Chemistry (IOC), Karlsruhe, Germany
- P27 **Immobilized Molecular Catalysts for Lipid Isomerization**
Felix Einsiedler, Stefan Mecking, Chair of Chemical Material Science University of Konstanz, Konstanz, Germany
- P28 **Immobilized Olefin Metathesis Catalysts for the Conversion of Renewable Raw Materials**
Stefanie Kulpa, Natalie Schunck, Stefan Mecking, Chair of Chemical Material Science University of Konstanz, Konstanz, Germany
- P29 **Modification of starch via the Biginelli multicomponent reaction**
Eren Esen, Michael A. R. Meier, Institute of Organic Chemistry (IOC), Karlsruhe Institute of Technology (KIT), Karlsruhe, Germany

- P30 **Enzymatic conversions of renewables to tailor-made glycolipid biotensides in uncommon media**
André Delavault, Jens Grüninger, Christoph Syldatk; Karlsruhe Institute of Technology (KIT); Institute of Process Engineering in Life Science; Section II: Technical Biology, Karlsruhe, Germany
- P31 **Synthesis and Copolymerization of Biginelli-Polycondensates**
J. T. Windbiel, M. A. R. Meier, Karlsruhe Institute of Technology, Karlsruhe, Germany
- P32 **Microbial synthesis of long chain sophorolipids and their potential as emulsifiers**
Christian Zerhusen, Timo Bollmann, Birgit Glösen, Ulrich Schörken, TH Köln, Cologne University of Applied Sciences, Leverkusen, Germany
- P33 **Pheno- and genotypic characterization of three *Yarrowia lipolytica* strains**
Silke Hackenschmidt, Stefan Bruder, Felix Bracharz, Johannes Kabisch
Computer-aided Synthetic Biology, TU Darmstadt, Darmstadt, Germany
- P34 **Sustainable synthesis of biobased recyclable thermosets**
P. S. Löser¹, M. A. R. Meier¹, A. Llevot², ¹ Karlsruhe Institute of Technology, Karlsruhe, Germany; ² University of Bordeaux, Bordeaux, France
- P35 **Single cell oil production by *Y. lipolytica* for the chemical conversion to hydrocarbons**
Eva J. Moldenhauer¹, Stefan Bruder¹, Martin Peters², Andreas Menne², Stefan Junne³, Johannes Kabisch¹, ¹ Computer-aided synthetic biology, Technical University of Darmstadt, Germany, ² Fraunhofer UMSICHT, Oberhausen, Germany, ³ Departement of Bioprocess Engineering, Technical University of Berlin, Germany
- P36 **A novel approach on isomerization of long chain carboxylic acids based on inspiration from isomerization of hydrocarbons**
Maghrebi Ramin¹, Bondioli Paolo³, Chiaramonti David^{1,2}, ¹ Department of Industrial Engineering, University of Florence, Italy, ² RE-CORD, Research and Demonstration for R&D, Florence, Italy, ³ Innovhub Stazioni Sperimentali per l'Industria S.r.l., Milan, Italy
- P37 **Structural investigation of natural deuterated phospholipid multilayers**
Krishna Batchu, Yuri Gerelli, Michael Haertlein, Giovanna Fragneto
Institute Laue-Langevin, Grenoble, France
- P38 **Optimization of the extraction of glucose monodecanoate synthesized in deep eutectic solvents by response surface modeling**
Rebecca Hollenbach, Christoph Syldatk, Karlsruhe Institute of Technology, Karlsruhe, Germany

- P39 **Plant Oil-Based Monomers for Reversible Deactivation Radical Polymerisation**
P.B.V. Scholten,^{1,2} C. Detrembleur,² M.A.R. Meier¹, ¹ Karlsruhe Institute of Technology, IOC, Materialwissenschaftliches Zentrum MZE, Karlsruhe, Germany; ² Université de Liège, Center for Education and Research on Macromolecules, CESAM Research Unit, Liège, Belgium
- P40 **Progress in homogeneously catalyzed oxidation reactions of fatty acids – sustainability through catalyst recycling**
Johanna Vondran, Dieter Vogt, Thomas Seidensticker, Technical University, Dortmund, Germany