MACROMOLECULAR COLLOQUIUM FREIBURG
26 – 28 FEBRUARY 2020

WEDNESDAY, 26 FEBRUARY 2020

Registration desk opens at 11 a.m.

14:00 **Opening Remarks**

PRASAD SHASTRI
Meeting Chair
Director of the Institute for Macromolecular Chemistry, University of Freiburg

SESSION 1
Polymerisation Catalysis and Sustainability

Chair: N.N.

14:15 **LYONDELLBASELL LECTURE**
GEOFFREY W. COATS (Cornell University New York, USA)
New Polymers from Old Monomers: Advances Enabled through Catalyst Design and Discovery

15:00 ERIK LICHT (LyondellBasell, Germany)
Polyolefin Success Story Enabled by Science and Innovation. Beginning – Way Up – Closing the Loop

15:20 STEFAN MECKING (University of Konstanz, Germany)
Toward Non-Persistent Polyethylene-Like Materials

15:40 CHRISTIAN FRIEDRICH (University of Freiburg, Germany)
Non-linear Viscoelasticity of Multimodal PE Blends and Flow Induced Crystallization

16:00 COFFEE BREAK

16:40 MICHAEL BUCHMEISER (University of Stuttgart, Germany)
Functional Precision Polymers

17:00 NICO BRUNS (University of Strathclyde Glasgow, United Kingdom)
Marrying Enzyme Engineerg with Polymer Chemistry for Biocatalytic ATRP

17:20 ANDREAS GREINER (University of Bayreuth, Germany)
New Biobased Polypolycarbonates –Candidates for a Novel Class of Sustainable Engineering Plastics?

17:40 CHRISTIAN LAFORSCH (University of Bayreuth, Germany)
Microplastics in the Environment

18:00 THOMAS SPECK (University of Freiburg, Germany)
When Two Worlds Collide - Macromolecular Chemistry Meets Biology: the Development of Novel Bioinspired Material Systems Monomers

18:30 GET TOGETHER (Foyer)

THURSDAY, 27 FEBRUARY 2020

SESSION 2
Soft Matter Science and Engineering

Chair: N.N.

9:00 OLLI IKKALA (Aalto University, Finnland)
Associative Learning with Soft Matter

9:40 CHRISTOPH WEDER (University of Fribourg, Switzerland)
Stimuli-responsive Supramolecular Polymers

10:00 ULRICH SCHUBERT (Friedrich Schiller University Jena, Germany)
Tailormade Polymers and Nanoparticles for Applications in Nanomedicine

10:20 INTRODUCTION OF POSTERS

Chair: N.N

1 M. HECHENBICHLER (University of Potsdam), M. Gradzielski, A. Laschewsky, A. Prause.
Self-Assembly of Thermoresponsive Block Copolymers with Varying Chemical Structure and Architecture

2 A. HUPPERTSBERG (Max Planck Institute for Polymer Research Mainz), L. Kaps, N. Choteschovsky, D. Schuppan, L. Nuhn
Squarogels – pH-Degradable Nanogels Based on Squaric Ester Amide Precursor Block Copolymers

3 J. M. KOHN (Humboldt-Universität zu Berlin), S. Arias, H. G. Börner
Chasing Mussels and Getting Closer: About a Modular Strategy to Artificial Mussel-Glue Polymers and On-Demand Cohesion Control

4 U. LAPPAN (Leibniz Institute of Polymer Research Dresden), C. Rau, C. Naas, U. Scheler
Segmental Dynamics of Spin-Labeled Polyacid Chain Segments in Polyelectrolyte Multilayers Studied by Electron Paramagnetic Resonance (EPR) Spectroscopy

5 L. HUSSMANN (RWTH Aachen University), K. Kleemann, A. Pich
Stimuli-Responsive Degradable Poly(N-vinyllactams) by Radical Ring Opening Polymerization

6 P. ACKER (University of Freiburg), L. Rzesny, C. Marchiori, M. Araujo, B. Esser
π-Conjugated Redox Polymers as Electrode Materials for Organic Batteries

7 B. SPIEGELBERG (Leibniz Institute for Catalysis Rostock), B. Stadler, S. Hinze, S. Tin, J. G. de Vries
Polyesters as New Resource for the Production of Polyethers

8 H. A. CHRIST (TU Braunschweig), Y. Bourgat, K. Beier, S. Brose, A. M. Heidrich, F. Li, H. Menzel
Nanofiber Production from Photoreactive Biotinylated Chitosan with Integrated Photocrosslinking under Environmentally Controlled Conditions

9 J. MOLL (University of Hamburg), A.T. Neffe
Polydepsipeptides: Differences in Synthesis and Purification Properties of Morpholine-2,5-dione Monomers

10 L. WIEDENHOEFT (Friedrich-Schiller University Jena), M. M. A. H. El-Leithy, M. Ulbricht, F. H. Schacher
Poly(2-acrylamidoglycolic acid): a Polyelectrolyte with High Metal Chelation Capability

11 M. MUELLER (Leibniz Institute of Polymer Research Dresden), B. Reis, L. Wirth, D. Vehlow, B. Urban, D. Kuckling, A. Grab, E. A. Cavalcanti-Adam, K. S. Lips
Up- and Downloading Bone Healing Drugs at Thermoresponsive Polyelectrolyte Complex Coatings

12 S. ZHU (Chemnitz University of Technology), M. Sommer, S. Choudhury
Hierarchical, 3D, Nitrogen-doped Porous Carbons via Phase Inversion for High Performance Supercapacitors

00 INDUSTRY PRESENTATION: POSTNOVA ANALYTICS GmbH

13 A. GRUBER (Freie Universität Berlin), D. Işık, A. A. Joshi, B. B. Fontanezi, Ch. Böttcher, M. Schäfer-Korting, S. Hedtrich, D. Klinger
A Versatile Synthetic Platform for Amphiphilic Nanogels with Tunable Hydrophobicity

14 M. MATHIEU (University of Potsdam), M. Schwieters, U. Glebe, A. Böker
Transmembrane Protein-Polymer Conjugates for the Generation of Nano-Thin Membranes

15 T. KAISER, (Johannes Gutenberg University Mainz), T. Johann, H. Frey
Variation of the Degree of Branching of Hyperbranched Polyether Polyols by Copolymerization of Glycidol with Substituted Analogues

16 S. KIRCHHECKER (Leibniz Institute for Catalysis Rostock), B. Stadler, A. Brandt, A. Kux, H. Beck, J. G. de Vries
Unexpected Properties of Bio-based Polyester Polyols for Adhesives Applications

17 J. MERNA (University of Chemistry and Technology Prague), O. Kotyza, K. Nunvářová, R. Mundil, A. Sokolohorskyj, S.Hermanová
Strategies for Introducing Functionality to Chain-Walking Polyolefins

18 Z. WANG (TU Dresden), H. Qi, R. Dong, X. Feng
Control of Conformational Effect in Layered Two-Dimensional Conjugated Metal-Organic Frameworks

19 J. WINDBIEL (Karlsruhe Institute of Technology), M. A. R. Meier
Synthesis and Copolymerization of Biginelli-Polycondensates

20 D. IŞIK (Freie Universität Berlin), A. A. Joshi, F. Rancan, A. Klossek, E. Rühl, S. Hedtrich, D. Klinger
Sulfoxide-Functionalized Nanogels to Mimic Skin Penetration Enhancing Properties of DMSO

21 T. HAUBOLD (Fraunhofer IFAM, University of Bremen), L. Puchot, A. Trejo-Machin, P. Verge, K. Koschek

Phosphorous-Based Flame Retardants as Building Block for Bio-Based Benzoxazine Monomers

22 R. MEYER (University of Hamburg), I. Smirnova, G. A. Luinstra
Synthesis of Lignin Containing Resorcinol Formaldehyde Aerogels with Tailored Pores Structure by Investigating Catalyst Type and Concentration

23 S. PARK (TU Dresden), Z. Liao, H. Qi, R. Dong, X. Feng
Surfactant-Assisted On-Water Synthesis of Layer-Stacked Boronate Ester Two-Dimensional Polymer Single Crystals

24 O. DOLYNCHUK (Martin Luther University Halle-Wittenberg), M. Tariq, T. Thurn-Albrecht
Substrate Induced Prefreezing in Polymer Crystallization: Theory and Quantitative Analysis of Experimental Results

11:40 COFFEE AND POSTERS

Chair: N.N.

12:30 HANS-WERNER SCHMIDT (University of Bayreuth, Germany)
Supramolecular Nanofibers: Current Capabilities and Future Perspectives

12:50 WALTER RICHTERING (RWTH Aachen, Germany)
Microgels: Macromolecules or Colloids?

13:10 LUNCH BREAK

Chair: N.N.

15:00 BELA IVAN (Eötvös Loránd University, Budapest, Hungary)
Polymer Conetworks as an Unique Nanostructured Material Platform with Disordered Bicontinuous, Mutually Nanoconfined Morphology: The Freiburg Connection

15:20 MICHAEL SOMMER (Chemnitz University of Technology, Germany)
Polymers Feel the Force: Tuning Mechanochromic Behaviour of Spiropyran-Functionalized Polymers by Steric and Electronic Effects

15:40 JÖRG KRESSLER (Martin Luther University Halle-Wittenberg, Germany)
Crystallization and Electronic Conductivity of Poly(sulphur nitride) - An Old Polymer with New Challenges

16:00 GÜNTER REITER (University of Freiburg, Germany)
Entropy in Stock in Non-equilibrated Polymer Melts:Translating Molecular Relaxations into Lifting Macroscopic Weights

16:20 COFFEE BREAK

Chair: N.N.

17:00 SABINE LUDWIGS (University of Stuttgart, Germany)
Bioinspired Multiresponsive Polymer Films

17:20 JAN-GEORG ROSENBOOM (Massachusetts Institute of Techonology, USA)
Cyclic Polymers for a Circular Economy

17:40 JÖRG TILLER (TU Dortmund University, Germany)
Poly(2-oxazoline)s with Biofunctional End Groups as Polymeric Enzyme Inhibitors

18:00 RAINER HAAG (Freie Universität Berlin, Germany)
Synthesis and Biomedical Applications of Dendritic Polyanions

18:20 JÜRGEN RÜHE (University of Freiburg, Germany)
Tailor-made Surfaces for the Generation of Novel Bioinspired Metamaterials

18:40 End of the Session

19:30 DINNER (Mensa Rempartstrasse) Doors open 19:15

FRIDAY, 28 FEBRUARY 2020

Chair: N.N.

9:00 IAN KINLOCH (University of Manchester, United Kingdom)
Graphene- and Carbon Nanotube- Polymer Composites: From Fundamental Micromechanics to Bulk Properties

9:30 ANDREAS WALTHER (University of Freiburg, Germany)
Hierarchical Design of Mechanical Properties in Adaptive Bioinspired Nanocomposites

9:50 KAY SAALWÄCHTER (Martin Luther University Halle-Wittenberg, Germany)
New (Macro)molecular Facets of an Old Problem: What Controls the Morphology of Semicrystalline Polymers

10:10 HOLGER FREY (Johannes Gutenberg University Mainz, Germany)
Building Bridges by Blending: How to Transform AB Block-Copolymers into Tough Nanostructured Materials

10:30 INTRODUCTION OF POSTERS

Chair: N.N.

1 S. BRAUN (RWTH Aachen University), G. Dilarri, L. Novaes, H. Ferreira, F. Jakob, U. Schwaneberg, A. Pich
Protecting Plants with Supramolecular Crosslinked Microgels

2 T. LAUSTER (University of Bayreuth), M. Retsch
Chitosan/Silica Composite Material for Radiative Daytime Cooling: Broadband Optical Characterization

3 P. WALTHER (University of Stuttgart), F. Markus, A. Balint, S. Naumann
N-Heterocyclic Olefins and Their Application for Anionic and Zwitterionic Ring-Opening

Polymerization of Epoxides

4 P. VERKOYEN (Johannes Gutenberg University Mainz), H. Frey
Controlled Polymerization of Long-Chain Alkyl Glycidyl Ethers and Ethylene Oxide: A Simple Approach to Block Copolymers with Precisely Tunable Amphiphilic Properties

5 C. PESTER (The Pennsylvania State University), K. Bell, S. Freeburne, C. Werther
Heterogeneous Photoredox Catalysis for Controlled Polymerization

6 K. WAIBEL (Karlsruhe Institute of Technology), M. A. R. Meier
Synthesis of Uniform Star-Shaped Polymers

7 M. LUKSIN (Hamm-Lippstadt University of Applied Science), P. Frank, U. Jonas, S. Fuchs
Novel Flame Retardant Concepts for Styrenic Polymers

8 N. HAUCK (Leibniz Institute of Polymer Research Dresden), Y. Xu, Y. Zhang, J. Thiele
Processing of Fast-Gelling Hydrogel Systems in Droplet Microfluidics by Picoinjection

9 M. LALLEMANG (University of Freiburg), J. Dengler, A. Kolberg, Th. Hugel, B. N. Balzer
Self-healing of Bioinspired Catechol-Based Monolayer Coatings Investigated by Atomic Force Microscopy

10 J. MARTIN (University of Potsdam), U. Glebe, X. Dai, A. Böker
Creating (multiple) Connections Between Natural and Synthetic Polymers: Sortase-Mediated Ligation to Form Protein-Polymer Conjugates

11 D. DAUBIAN (University of Basel), J. Gaitzsch, W. Meier
Efficient Synthesis and Complex Self-Assembly of the Amphiphilic PEO-b-PEHOx Polymers into Multicompartment Micelles, Pseudo-Vesicles and Yolk/Shell Nanoparticles

12 E. ESEN (Karlsruhe Institute of Technology), M. A. R. Meier
Modification of Starch via the Biginelli Multicomponent Reaction

00 INDUSTRY PRESENTATION: TOSOH BIOSCIENCE

13 H. STRITTMATTER (Fraunhofer IGB Straubing), S. Gultom, A. Popp, M. Richter, L. Vieira, V. Sieber
Electrochemical Lignin Degradation for Material Applications

14 A. SCHWEIGERDT (Freie Universität Berlin), D. Stöbener, M. Weinhart
Bulk vs. Surface Phase Transition of Thermoresponsive Hydrogels – Mechanistic Insights into Cell Adhesion and Cell Sheet Detachment

15 J. KREDEL (TU Darmstadt and Saarland University), M. Gallei
Synthesis of Fluorine-Containing Core-Shell Particles for the Preparation of Functional Opal and Inverse Opal Architectures

16 A. MARKOVINA (Johannes Gutenberg University Mainz), K. Johann, M. Barz
Molecular Polymer Brushes for Pretargeted Nuclear Imaging and Therapy: Labeling Polypept(o)ides by In Vivo Click Chemistry

17 C. M. GEISELHART (Karlsruhe Institute of Technology), H. Mutlu, Ch. Barner-Kowollik
Orthogonal Light-Induced Folding of Multicomponent Reaction Polymers

18 H. ALTMANN (University of Stuttgart), M. Clauss, S. König, E. Frick-Delattre, C. Koopmans, A. Wolf, Ch. Guertler, S. Naumann, M. R. Buchmeiser
Synthesis of Linear Poly(Oxazolidin-2-one)s by Cooperative Catalysis Based on N-Heterocyclic Carbenes and Simple Lewis Acids

19 A. HOFFMANN (University of Ulm), M. Usselmann, A. J. C. Kuehne
Melt-Spinnable Polyacrylonitrile Carbon Fiber Precursor for 3-D Printing

20 M. MAENNEL (Leibniz Institute of Polymer Research Dresden), N. Weigel, J. Thiele
Higher-Order Emulsions Formation by Combining 3D-Printed Materials that Are Dissimilar in Their Wettability

21 J. N. BLEICH (Swiss Federal Institute of Technology Lausanne), M. M. Marcinek, H. A. Klok
Mechanochemical Activation at Interfaces Driven by Swelling of Polymer Brushes

22 D. MOATSOU (Karlsruhe Institute of Technology), D. Barther
Sequence-Controlled Polymers via Ring-Opening Metathesis Polymerization

23 C. MALACRIDA (University of Stuttgart), D. Neusser, S. Ludwigs
Electroactive Polymers, Exploring Conductivity Behaviors and Doping Methods

24 P. B. V. SCHOLTEN (University of Fribourg), A. Manfrin, M. Lütolf, Ch. Weder, N. Bruns
Light-Responsive Polymersomes as a Delivery System for Organoids on a Chip

11:45 COFFEE AND POSTERS

12:45 LUNCH BREAK

SESSION 3 SPONSORED BY BASF SE
3D Printing

Chair: N.N.

13:30 **BASF LECTURE**
HAYDEN TAYLOR (University of California, Berkeley, USA)
Computed Axial Lithography for Volumetric Additive Manufacturing with Photopolymers

14:15 KLAUS STOLL (BASF SE, Germany)
From Scouting to Business Building with 3D-Printing

14:35 BASTIAN RAPP (University of Freiburg, Germany)
3D printing of High-Performance Materials

14:55 GABRIELE GOTTSCHALK-GAUDIG (3M, Germany)
Additive Manufacturing @ 3M

15:15 CARLOS CARVALHO (EnvisionTec, Germany)
Thermoplastic Materials in 3D Printing for Biomedical Applications

15:35 PRASAD SHASTRI (University of Freiburg, Germany)
3D Bioprinting

15:55 **POSTER AWARDS donated by WILEY**

16:00 **Closing Remarks**
ROLF MÜLHAUPT
Meeting Chair
Director of the Institute for Macromolecular Chemistry, University of Freiburg

16:10 End of the Colloquium