

MACROMOLECULAR COLLOQUIUM FREIBURG

21 – 23 FEBRUARY 2018

WEDNESDAY, 21 FEBRUARY 2018

Registration desk opens at 11 a.m.

14:00 **Opening Remarks**

ANDREAS WALTHER, Institute for Macromolecular Chemistry, University of Freiburg

SPECIAL SESSION

Far from Equilibrium Macromolecular Systems

Chair: Andreas Walther

14:10 SIJBREN OTTO (University of Groningen, The Netherlands)
Towards De-Novo Life: Self-Replication Driven by Supramolecular Polymerization

14:40 JOB BOEKHOVEN (Technical University of Munich, Germany)
Supramolecular Materials with a Tunable Lifetime

15:10 ANNA BALASZ (University of Pittsburgh, USA)
Modeling the Dynamic Behavior of Responsive Gels

15:40 COFFEE BREAK

16:30 NICOLAS GUISEPPONE (University of Strasbourg, France)
Out-of-Equilibrium Integration of Molecular Machines

17:00 MARTIN MÖLLER (DWI Leibniz Institute for Interactive Materials, Germany)
Light Driven Microgel Objects - Motion out of Equilibrium

17:30 JOHN A. POJMAN (Louisiana State University and Pojman Polymer Products, LLC, USA)
Time-Lapse and Cure-On-Demand Polymerizations for Adhesives, Wood Repair and Art

18:00 THOMAS HERMANS (University of Strasbourg, France)
Dissipative Non-Equilibrium States in Supramolecular Polymerization

18:30 GET TOGETHER (Foyer)

THURSDAY, 22 FEBRUARY 2018

Chair: Rolf Mülhaupt

9:00 EVONIK LECTURE

JOSEPH M. DESIMONE (Carbon, Inc. UNC, Chapel Hill. North Carolina State University)
Digital Light Synthesis to Drive Additive Manufacturing: Convergence of Hardware, Software and Molecular Science

9:30 SANJAY RASTOGI (Maastricht University, The Netherlands)
Equivalence of Non-Equilibrium Melt State with Unlinked Cyclic Polymers; Rheological, Crystallization and Mechanical Response

10:00 INTRODUCTION OF POSTERS

Chair: Alex Kühne

- 1 I. APSITE (University of Bayreuth), G. Stoychev, W. Zhang, D. Jehnichen, J. Xie, L. Ionov
Fibrous Multilayer Stimuli-Responsive Self-Folding Mats for Biofabrication
- 2 L. WÖCKEL (TU Chemnitz), T. Windberg, R. John, A. Seifert, St. Spange
Hierarchically Structured Resin-, Hybrid Material-, Carbon- and Silica-Foams
- 3 L. BRAUN (University of Mainz), T. Hessberger, R. Zentel
Actuating LCE-Particles of Complex Shape by Microfluidic Processing
- 4 N. AL NAKEEB (Max Planck Institute of Colloids and Interfaces), M. Antonietti, B. Schmidt
Self-Assembly and Crosslinking of Double Hydrophilic Brush Block Copolymers in Aqueous Solution
- 5 M. MÜLLER (Leibniz Institute for Polymer Research), D. Vehlow, B. Urban, M. Hofmaier, K. S. Lips
Switchable Release of Bone Therapeutic Drugs from Thermoresponsive Polyelectrolyte Complex Coatings
- 6 E. SCHÖNEMANN (University of Potsdam), A. Laschewsky, J. Koc, A. Rosenhahn
Thin Polymer Hydrogel Films with Efficient Antifouling Performance
- 7 M. S. HAIDER (University of Wuerzburg), M. M. Lübtow, M. Kirsch, L. Keßler, S. Dahms, R. Luxenhofer
Determination of Micellar Core Compatibility towards Cargo: An approach using Hansen Solubility Parameters, by Various Group Contribution Methods and their Experimental Determination
- 8 J. TOM (University of Jena), Felix Wendler, M. Köhler, F. H. Schacher
Synthesis of Amphiphilic Block Copolymers with a Light-Responsive Block Containing Photoacids
- 9 A. WITTMER (Fraunhofer IFAM, University of Bremen), T. Urbaniak, A. Hartwig, K. Koschek
Better to Bend than to Break - Water as Driving Force for Self-Healing and Mouldability of Thermosetting Materials
- 10 M. MÄNNEL (Leibniz Institute for Polymer Research), G. Mur, A. Fery, J. Thiele
Tailored Photosensitive Polymers for High-Resolution Additive Manufacturing of Microflow Cells

- 11 M. HUMENIK (University of Bayreuth), Th. Scheibel
Hybrid Spider Silk Nanostructures
- 00 INDUSTRY PRESENTATION: Malvern Instruments GmbH
- 00 INDUSTRY PRESENTATION: PSS Polymer Standards Service GmbH
- 12 J. SUN (University of Paderborn), W. Birnbaum, M.-T. Picker, J. Anderski, K. Langer, D. Kuckling
Light-Triggered Degradation in Aliphatic Poly(carbonate)s via Intramolecular Cyclization
- 13 E. T. RÖCHOW (Leibniz Institute for Polymer Research), D. Fischer, M. Coeler, B. Voit, D. Pospiech
Synthesis of Imidazolium-Based Polymer Electrolytes for Solid State Batteries
- 14 L. ELOMAA (FU Berlin), D. Stöbener, S. Heinen, M. Weinhart
Synthesis of A Biodegradable, Photocrosslinkable Poly(ϵ -caprolactone) Methacrylate and Thermoresponsive Poly(glycidyl ether)s for the Combined Approach of 3D Printing and Cell Sheet Engineering
- 15 J. MARBACH (University of Hamburg), Th. Höfer, G. A. Luinstra
Synthesis of CO₂-Based Polyols Using Nanoscopic Zinc Glutarate Catalysts
- 16 P. M. REICHSTEIN (University of Bayreuth), B. M. Yavitt, Y. Gai, J. J. Watkins, M. Thelakkat
Self-Organized Hybrid Materials: Incorporation of ZrO₂ Nanoparticles into Double-Crystalline P3HT-b-PEG Block Copolymers
- 17 S. FIRDAUS (Leibniz Institute for Polymer Research), M. Geißler, H. Komber, P. Formanek, P. Friedel, S. Banerjee, B. Voit, A. Lederer
Glyco-Pseudodendrimers on a Polyester Basis: Synthesis and Investigation of Protein-Pseudodendrimer Interaction
- 18 M. J. TAUBLÄNDER (TU Wien), S. Thiele, M. M. Unterlass
Expanding the Scope of Hydrothermal Polymerization Towards Polybenzimidazoles
- 19 Ch. SYNATSCHKE (Max Planck Institute for Polymer Research), S. Chin, S. Liu, R. J. Nap, Q. Wang, Z. Álvarez, A. N. Edelbrock, T. Fyrner, L. C. Palmer, I. Szleifer, M. O. de la Cruz, S. I. Stupp
Covalent-Supramolecular Hybrid Polymers as Muscle-Inspired Anisotropic Actuators
- 20 J. HORSCH (Humboldt University of Berlin), H. G. Börner
Specifically Interacting Polymers: Can Polymer Chemists still Learn Anything from Mussels?
- 21 M. N. LEISKE (University of Jena), F. H. Sobotta, St. Hoeppener, J. C. Brendel, A. Traeger, U. S. Schubert
How to Tune the Cellular Uptake of Amino Functionalized Poly(2-oxazoline)s by Appropriate Self-Assembly
- 22 N. SCHMIDT (University of Paderborn), K. Huber, J. Meyer
Investigation of the Crystallization Behavior of Nucleated Poly(lactic acid)
- 23 Y.H. SHIN (TU Chemnitz), H. Komber, T. Thrun-albrecht, D. Nava, M. Caironi, M. Sommer
Regioregular Polymer Analogous Thionation of PNDIT2

11:40 COFFEE AND POSTERS

Chair: Prasad Shastri

- 12:30 JACQUES LALEVÉE (University of Mulhouse, France)
Silyl Glyoxylates as a New Class of High Performance Blue Light Photoinitiators
- 13:00 THOMAS RÖLLE (Covestro AG, Germany)
Fully Controlled Photo-Polymerization for Advanced Diffractive Optical Applications – Today and Tomorrow

13:20 LUNCH BREAK

Chair: Prasad Shastri

- 15:00 JÖRG TILLER (TU Dortmund University, Germany)
Critically Cross-Linked High Polymers for Smart and Predictive Materials
- 15:30 MARTIN LINNENBRINK (BASF Polyurethanes GmbH, Germany)
Thermolatent PIR-Catalysis
- 15:50 FELIX PLAMPER (RWTH Aachen, Germany)
Stimulated Transitions of Directed Non-Equilibrium Self-Assemblies
- 16:10 MATTHIAS BARZ (Johannes Gutenberg University Mainz, Germany)
Poly(pept(o))ides: From Novel Polymers to Functional Systems for Diagnosis and Therapy

16:30 COFFEE BREAK

Chair: Ulrich S. Schubert

- 17:00 BRIGITTE VOIT (Leibniz Institute of Polymer Research Dresden, Germany)
Multifunctional, Responsive Hydrogels and Nanoreactors as Selective Compartments in Microfluidic Application
- 17:20 JUNLIANG ZHANG (Friedrich Schiller University Jena, Germany)
Gradient Copolymers - a Class of Interesting and Useful Materials
- 17:40 DAVID BLEGÉ (Humboldt-Universität zu Berlin, Germany)
Visible-Light-Activated Polymer Networks
- 18:00 BIZAN N. BALZER (Albert-Ludwigs Universität Freiburg, Germany)
Dynamics in Polymer Films Investigated by AFM Based Single Polymer Force Spectroscopy

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

FRIDAY, 23 FEBRUARY 2018

Chair: Holger Frey

9:00 RAINER HAAG (Freie Universität Berlin, Germany)
Dynamic Multivalent Nanosystems as Potent Inhibitors for Pathogens

9:20 ULLRICH SCHERF (University of Wuppertal, Germany)
Conjugated Polymers Containing the Tetraphenylethylene Motif

9:40 INTRODUCTION OF POSTERS

Chair: Annabelle Bertin

- 1 S. KERNBICHL (TU Munich), M. Reiter, B. Rieger
CO₂-Controlled One-Pot Synthesis of AB, ABA Block, and Statistical Terpolymers from β -Butyrolactone, Epoxides, and CO₂
- 2 D. E. MARSCHNER (Karlsruhe Institute of Technology), H. Frisch, J. T. Offenloch, D. Hoenders, P. Tzvetkova, A. Goldmann, A. Walther, Ch. Barner-Kowollik
Visible Light Activated Photoreversible Polymer Ligation as a Technology Platform for Light Reprogrammable Materials
- 3 P. WALTHER (University of Stuttgart), St. Naumann
N-Heterocyclic Olefin-Based Lewis Pairs for the (Co)Polymerization of a Challenging Monomer: Homopolymerization of ω -Pentadecalactone and its Copolymers with Various Lactones
- 4 A. MIKOSCH (Leibniz Institute for Interactive Materials), S. Ciftci, F. Deschler, A. J.C. Kuehne
Energy Transfer between Hybrid Metal-Halide Perovskites and Conjugated Polymer Colloids
- 5 K. WETZEL (Karlsruhe Institute of Technology), M. A. R. Meier
Monodisperse, Sequence-defined Macrocycles via the Passerini Three-component Reaction
- 6 L. KUNZE (University of Mainz), A. D. Ziegler J. Herzberger, H. Frey
Anionic and Catalytic Ring-Opening Polymerization of a Cationic Epoxide
- 7 E. BOTHE (TU Braunschweig), H. Menzel
Polypeptides with Phosphonate Side-Chains - Synthesis and Characterization
- 8 E. A. APEBENDE (University of Fribourg), O. Rifaie-Graham, N. Bruns
Bio-Inspired Force Responsive Polymersomes
- 9 S. H. JUNG (RWTH Aachen University), C. Molano-López, A. Pich
Supramolecular Colloidal Gels
- 10 M. MATLOUBI (University of Freiburg), V. P. Shastri
Activate-able Surface Wetting Change on An Engineered Responsive Biomaterial Surface
- 11 St. VOWINKEL (TU Darmstadt), M. Rehahn, M. Gallei
Convenient Preparation of Porous Architectures by Smart Particle Design and Processing
- 12 I. GUNKEL (University of Fribourg), J. Dolan, K. Korzeb, M. Stefik, U. Wiesner, B. D. Wilts, U. Steiner
Robust Gyroid Morphology in Triblock Terpolymer Films During Solvent Vapor Annealing

- 00 INDUSTRY PRESENTATION: Postnova Analytics GmbH
- 00 INDUSTRY PRESENTATION: PlasticsEurope Deutschland e.V.
- 13 A. SPINNROCK (University of Konstanz), H. Cölfen
Synthesis of Polymer Gradient Materials in Ultracentrifugal Fields
- 14 A. ECKERT (RWTH Aachen University), T. Rudolph, Th. Mang, A. Walther
Ultra Tough Biomimetic Barrier Films
- 15 A. STEINHAUS (University of Duisburg-Essen), R. Chakroun, T.-L. Nghiem, M. Hildebrandt, A. H. Gröschel
Janus Nanostructures with Complex Topology from Triblock Terpolymer Multicompartment Microparticles
- 16 M. YASIR (University of Fribourg), P. Liu, S. Pal, A. Kilbinger
Catalytic Living ROMP and One Pot Heterotelechelic Polymer Synthesis
- 17 N. RAUNER (TU Dortmund), M. Meuris, J. C. Tiller
Ultrastiff and Tough Hydrogels by Enzyme-Induced Mineralization
- 18 A. SOUTHAN (University of Stuttgart), G. Majer
Model-Independent Measurements of ATP Diffusion in PEG-DA Hydrogels with Various Mesh Sizes
- 19 St. SCHRETTL (University of Fribourg), C. Calvino, Ch. Weder
Self-Calibrating Mechanochromic Fluorescent Polymers Based on Encapsulated Excimer-Forming Dyes
- 20 Ph. TANNER (ETH Zurich), W. Desiante, G. Maier, T. Ishikawa, P. Walde, A. Dieter Schlüter
Making 2D Polymers Accessible: A Technical Synthesis and A Vesicular Approach
- 21 V. L. ALBERNAZ (University of Stuttgart), A. Weber, G. E. M. Tovar, A. Southan
Controlled Surface Functionalization of Polymeric Nanoparticles via Miniemulsion Polymerization Using Surface Active Monomers
- 22 G. GUNKEL-GRABOLE (University of Basel), M. Lomora, C. Spinnler, S. Lörcher, S. Mantri, C. Palivan, W. Meier
Polymeric Nanoreactors Catalyze Metabolic Reactions on Functional Surfaces
- 23 T. HEES (University of Freiburg), M. Gliem, F. Zhong, C. Koplin, R. Jäger, R. Mülhaupt
Converting Polyethylene Commodities into High Performance Materials
- 24 C. BOTHA (Karlsruhe Institute of Technology), J. Höpfner, M. Wilhelm
Medium Resolution (MR) ¹H-NMR Spectroscopy as Chemical Selective Detector for on-line Size-Exclusion Chromatography (SEC-MR-NMR)

11:20 COFFEE AND POSTERS

Chair: Rolf Mülhaupt

- 12:00 HOLGER WARTH (Evonik Industries, Germany)
High Performance Polymers for Additive Manufacturing

12:30 ANNABELLE BERTIN (German Federal Institute for Materials Research and Testing (BAM)/Freie Universität Berlin)
Building Macromolecular Mimetics of Cell Constituents

12:30 **CANCELLED** - INDRAJIT MAITY (Ben-Gurion University of the Negev, Israel)
Bistability and Multistability in Coiled Coil Peptide Networks

12:45 SI WU (Max Planck Institute for Polymer Research Mainz, Germany)
Photoswitching of T_g of azopolymers induces reversible solid-to-liquid transitions

13:00 LUNCH BREAK

Chair: Andreas Greiner

14:30 FREDERIK WURM (Max Planck Institute for Polymer Research Mainz, Germany)
The “Ugly Brothers” of Epoxides: The Living Anionic Polymerization of Aziridines

14:50 MARLEEN KAMPERMAN (Wageningen University, The Netherlands)
Bioinspired Adhesive Ionic Gels

15:10 MARKUS RETSCH (University of Bayreuth, Germany)
Thermal Transport in Nanostructured Polymers

15:30 POL BESENIUS (Johannes Gutenberg University Mainz, Germany)
Transient Hydrogels Mediated by Redox-Responsive Supramolecular Polymerization

15:50 CLEMENS LIEDEL (Max Planck Institute of Colloids and Interfaces Potsdam, Germany)
Truly Sustainable Biopolymer-Based Electrodes for Electrochemical Energy Storage

16:10 **POSTER AWARDS donated by WILEY**

16:20 Closing Remarks

Meeting Chair

Professor of Experimental Polymer Physics, University of Freiburg