

**ANJA BERTHOLD**

Long-term creep behavior and creep-fracture mechanics of polymer materials

**AKSHAY KAREKAR**

Ageing effects on the distribution of crosslink densities in elastomer blends as studied by solid-state <sup>1</sup>H NMR

**FANFAN DU**

Crystallization-controlled PLLA scaffold structure for tailoring mosquito-deadly drug delivery

**GOLBARG ESFAHANI**

Lipidized starch for parenteral controlled drug release applications

**IRFAN SHAHZAD**

Synthetic modification of plants oil based epoxidized plasticizer to reduce migration from NBR rubber and its effects on the mechanical properties

**JONAS STEINER**

Modified poly(glycerol adipate) as a versatile platform for parenteral controlled release

**JONAS VOLMER**

Tuning Function and Processability of (Bio-)Polymeric Materials Using Aqueous Ionic Liquid Mixtures and Deep Eutectic Solvents

**KATALEE JARIYAVIDYANONT**

Crystallization of polyamide 11 at processing-relevant cooling and shear conditions

**NICO HACKEL**

Kinetic investigation for coordinativ polymerization of 1,3-butadiene with transition metals

**RANA HORE**

Structure Formation of HES Grafted With Stearic acid

**REEMA ANOUZ**

Novel Surface Coatings as Biocompatible Reservoirs for Controlled Release of BMP-2 for Bone Regeneration

**SELIN SÖKMEN**

Investigation of rubber-filler interactions in SBR/BR blends

**YI-TUNG LU**

Development of biogenic thermoresponsive polyelectrolyte multilayers for the application on tissue engineering

DISCUSSION MEETING

08:30 Registration

**WELCOME**

09:00-09:10 René Androsch

**STRUCTURE AND PROPERTIES OF POLYMERS**

Chair: René Androsch, Katrin Reincke

09:15-10:15 Alicyn Rhoades  
(Penn State Berend)

10:15-10:30 Lama Tannoury

10:30-10:45 Assam Raja

- Coffee break and Poster Session -

11:30-11:45 Katalee Jariyavidyanont

11:45-12:00 Akshay Karekar

- Lunch break -

**POLYMERS FOR CONTROLLED DRUG DELIVERY**

Chair: Karsten Mäder

13:00-14:00 Felicitas Guth  
(BASF)

14:00-14:15 Reema Anouz

14:15-14:30 Jonas Steiner

- Coffee break and Poster Session -

**FUNCTIONALIZATION OF POLYMERS**

Chair: Michael Bartke

15:30-16:30 Tomáš Etrych  
(Czech Academy of Sciences)

16:30-16:45 Kshitij Shinde

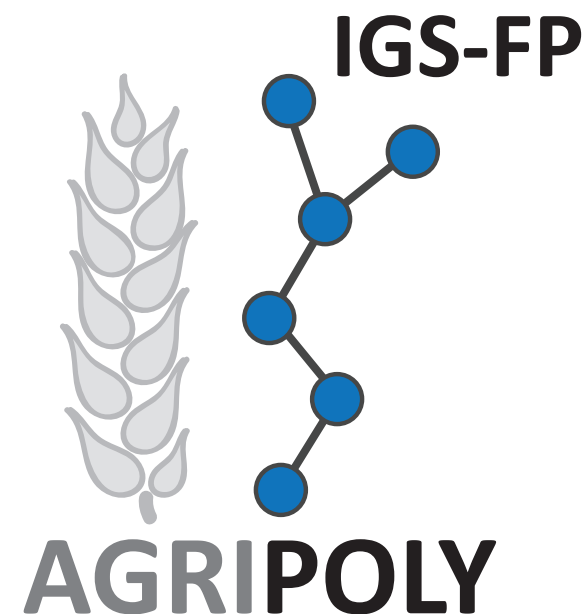
16:45-17:00 Md Mahbubur Rahman

**FAREWELL**

17:00-17:10 Wolfgang Paul

„FUNCTIONAL POLYMERS“ (AGRIPOLY)

## Discussion Meeting International Graduate School „Functional Polymers“



Fraunhofer-Institut für Mikrostruktur von  
Werkstoffen und Systemen (IMWS)

Walter-Hülse-Straße 1, 06120 Halle (Saale)

## Alicyn Rhoades, Ph.D.

Associate Professor  
Penn State University, Behrend College



### INDUSTRIAL/ACADEMIC PARTNER- SHIPS TO INVESTIGATE POLYMER CRYSTALLIZATION

In recent years, major progress has been achieved in understanding the fundamental crystallization behavior of polymers, largely thanks to the introduction of fast scanning calorimetry and other insightful tools. Industrial polymer engineers, motivated by academic progress, have joined forces with academic partners at Penn State University to develop creative, fundamental insights needed to solve longstanding problems in polymer bearing and automotive part design, and to enhance commercial polymer flow simulation. This talk will discuss industrial/academic cooperative research investigating the crystallization of poly(etheretherketone) (PEEK) and polyamide 66 under manufacturing conditions. Key aspects of building functional industry/academic relationships, student engagement and intellectual property development will also be discussed.

## Felicitas Guth

Development Pharma Solutions,  
BASF SE 67056 Ludwigshafen



### NEW EXCIPIENTS – FROM CONCEPT TO LAUNCH

New functional excipients can improve the quality of drug products and are needed for the development of innovative drug delivery systems. Even though in recent years, a number of new modified or co-processed excipients have been introduced in the market, almost all manufacturers refrain from the development of novel excipients, since it takes time, requires resources and is associated with a certain risk of failure. This presentation gives an overview of the types of new excipients and explains with several case studies why the development of a new polymeric excipient is particularly challenging. In addition, the regulatory framework for the approval of new excipients is introduced, which creates a dilemma for the manufacturers and users.

## Tomáš Etrych, Ph.D.

Research Professor  
Institute of Macromolecular Chemistry,  
Czech Academy of Sciences

### HYDROPHILIC AND AMPHIPHI- LIC POLYMERS AS PRECURSORS OF EFFICIENT NANOTHERA- PEUTICS OR DIAGNOSTICS

Nanotechnology-based therapeutics, with many so called "nanomedicines", such as water-soluble polymers, polymeric micelles, liposomes, polymersomes and nanoparticles, are being explored intensively to improve disease treatment. Nanomedicine has been increasingly utilized to treat neoplastic and inflammatory diseases. Among studied nanomedicines the significant position belongs to water-soluble synthetic copolymers based on N-2-hydroxypropylmethacrylamide (HPMA) because of their excellent biocompatibility and non-immunogenicity. Moreover, combination of their therapeutic potential with simultaneous non-invasive diagnostics can yield to highly efficient theranostics, which enable to concurrently observe the disease progression and system pharmacokinetics. Obtained results showed a high potential and capability of nano-sized copolymer-drug conjugates for specific delivery of drugs and their combinations to aggressive solid tumors and thus for their efficient treatment. Main emphasis will be given to description of potential of water-soluble polymers in the field of nanomedicine. Polymer-based systems, micellar and star polymer-drug conjugates, will be presented and their potential for enhanced passive tumor accumulation and release of drug in the acidic milieu of a tumor will be shown. Moreover, in vivo noninvasive multispectral optical imaging and positron emission tomography of fluorescently or radio labeled polymer carriers will be discussed. Finally, utilization of these system in the fluorescence guided endoscopic surgery will be mentioned.



## Short Talks

LAMA  
TANNOURY  
(PAUL GROUP)

Relaxation Processes of Polybutadiene confined  
in an Alumina pore

ASSAM  
RAJA  
(REICHERT GROUP)

Investigation of chain mobility in different  
polymorphs of poly(lactic acid) (PLA)

KATALEE  
JARIYAVIDYANONT  
(ANDROSCH GROUP)

Crystallization of polyamide 11 at processing-  
relevant cooling and shear conditions

AKSHAY  
KAREKAR  
(SAALWÄCHTER GROUP)

Ageing effects on the distribution of crosslink  
densities in elastomer blends as studied by  
solid-state <sup>1</sup>H NMR

REEMA  
ANOZ  
(GROTH GROUP)

Novel Surface Coatings as Biocompatible  
Reservoirs for Controlled Release of BMP-2 for  
Bone Regeneration

JONAS  
STEINER  
(MÄDER GROUP)

Modified poly(glycerol adipate) as a versatile  
platform for parenteral controlled release

KSHITIJ  
SHINDE  
(BINDER GROUP)

Self healing and mechanochemically active  
polymers

MD MAHBUBUR  
RAHMAN  
(LANGER GROUP)

Influence of modified renewable oils on the  
fracture mechanics behavior of polymers