11. Kautschuk Herbst Kolloquium

11th Fall Rubber Colloquium
November 26 – 28, 2014

Scientific Program

Deutsches Institut für Kautschuktechnologie e.V.
Scientific Program

Wednesday, November 26, 2014

Opening ceremony

11:00      U. Giese

11:10      I. Hering
            Ministry of Economy, Labour and Traffic

11:30      S. Kawahara
            Nagaoka University of Technology (JP)
            Preparation and Properties of
            Natural Rubber with Organic-Inorganic Nanomatrix Structure

12:00      G. Heinrich
            Leibniz-Institut für Polymerforschung Dresden e. V. (DE)
            The 'Merseburg' - Model of Rubber Elasticity:
            From Molecule to Rubber Components

12:30      Lunch
Elastomer Chemistry

Chairperson: A. Blume

13:30  G. Thielen, Goodyear Innovation Center Luxembourg (LU)
      High Tg Rubber Blend Systems

14:00  C. Döring, Styron Deutschland GmbH (DE)
      Multi-functionalized SSBR & Compound Vulcanizate Performance Characteristics

14:30  M. van Duin, LANXESS Elastomers (NL)
      EPDM: back to basics

15:00  I. Hudec, Slovak University of Technology, Bratislava (SK)
      Application of polymers from renewable resources as a filler or component of rubber blends

15:30  Coffee Break

Elastomer Physics

Chairperson: J. Meier

16:00  S. Nitzsche, Inst. for Machine Elements, TU Freiberg (DE)
      Adhesion of Rubber - from Demolding to a Mechanical Crackmodel

16:30  M. Strangfeld, Research Institute of Leather and Plastic Sheeting (FILK)
      Influencing factors for automotive seal squeak and numerical predictive analysis

17:00  P. Rublon, LRCCP (FR)
      Fatigue crack growth rates measurements in filled SBR samples: effect of antioxidants

17:30  G. Schneider, Forschungszentrum Jülich GmbH (DE)
      From Polymer Conformation and Dynamics to Macroscopic Properties of Nanocomposites

18:00  Poster Session
Simulation is nothing without control (of the right input parameter)

Parameter identification for visco-hyperelastic material models

Simulation and analysis of time-dependent self-organization processes in filled rubber

Viscoelastic Simulation at low temperature of AEM Rubber for Sealing Applications

Coffee Break

Crosslinking of Fluororelastomers and Ethylene Acrylic Elastomers – Influence on Final Properties

New insights into the chemical modification of conventional rubbers

Existence of nano-scalic block co-polymer morphology in ionic elastomer

Hydrogenation of natural rubber in latex stage

Poster Session
Thursday, November 27, 2014

Session A - Morning

New Materials

Chairperson: R. H. Schuster

8:30 C. W. Karl, Nanoinitiative Bayern GmbH (DE)
Properties of elastomer composites based on multilayer graphene

9:00 R. Sýkora, Slovak University of Technology, Bratislava (SK)
Elastomer Composites with the Effects of Electromagnetic Shielding

9:30 D. Wrobel, Momentive Performance Materials GmbH (DE)
Nano structures in silicone rubber – Reinforcement and light scattering on particles

10:00 S. Aloui, Material Concepts and Modeling, DIK Hannover (DE)
Magneto-sensitive elastomers based on magnetic filler hybrid systems

10:30 Coffee Break

Rubber Friction and Physics

Chairperson: M. Klüppel

11:00 V. Popov, Technische Universität Berlin (DE)
Friction between elastomers and differently shaped rough surfaces

11:30 P. Ignatyev, Continental Reifen Deutschland GmbH (DE)
Friction of filled elastomers on rough surfaces: A combined experimental and theoretical study

12:00 A. Lang, Deutsches Institut für Kautschuktechnologie e. V.
Temperature and pressure dependence of the friction properties of tire tread compounds on rough granite

12:30 R. Beyer, Inst. of Mechanics and Numerical Mechanics, LUH (DE)
A multi-scale approach for thermo-mechanical simulations of tire rolling resistance

13:00 Lunch
Thursday, November 27, 2014

Session B - Morning

Simulation and Modelling

Chairperson: D. Juhre

8:30  I. A. Morozov, Inst. of Continuous Media Mechanics UB RAS (RU)
     Structural-mechanical model of filled rubber. From local to macroscopic properties via direct structural mechanical simulation

9:00  D. Sodhani, Inst. of Applied Mechanics, RWTH Aachen (DE)
     Finite element based micromechanical modeling of phase interaction in filler reinforced elastomers

9:30  M. Itskov, Dept. of Continuum Mechanics, RWTH Aachen (DE)
     Micromechanics of inelastic effects in filled rubbers: a generalized network decomposition

10:00 H. Baaser, Freudenberg R&D Services (DE)
     Application of endochronic plasticity on simulation of technical rubber components

10:30 Coffee Break

Elastomer Analysis

Chairperson: U. Giese

11:00 N. Thuong, Dept. of Mat. Science & Tech., Nagaoka UT (JP)
     Structural characterization of rubber from Lactarius Volemus through 2D-NMR spectroscopy

11:30 A. Blume, Evonik Industries AG (DE)
     Infrared Study of the Silica/Silan Reaction

12:00 D.M. Bielinski, Inst. of Polymer & Dye Technology, TU Lodz (PL)
     Application of Infrared Thermography to Analyse Ageing of Rubber

12:30 M. Wilhelm, Karlsruhe Institute of Technology (DE)
     IR Spectroscopy as a novel On-line Detector for Size Exclusion Chromatography

13:00 Lunch
Session A - Afternoon

Thermoplastic Elastomers
Chairperson: M. van Duin

14:00 R. Mruk, Goodyear S.A. (LU)
Functionalized Elastomers with Thermo-responsive Thermoplastic Side Chains

14:30 S. Patermann, University of Bayreuth (DE)
Influence of different crosslinking systems on the mech. and morph. properties of continuously produced Thermoplastic Vulcanizates

15:00 M. Tahir, Leibniz-Inst. für Polymerforschung, TU Dresden (DE)
A new method of preparation and properties of blends based on in-situ synthesized thermoplastic polyurethane-urea and NBR

15:30 Coffee Break

Reinforcement and Fillers
Chairperson M. Galimberti

16:00 W Dierkes, Elastomer Tech. & Engineering, UT (NL)
Influence of silica-polymer bond microstructure on tire-performance indicators

16:30 L. Tunnicliffe, Soft Matter Group, QML (GB)
Mechanisms of Particulate Reinforcement of Elastomers at Small Strains

17:00 L. Guy, Solvay Silica (FR)
High performance silica reinforced elastomers: a better understanding of the interface nature to reveal the potential of elastomers microstructure

17:30 N. Rennar, Plastics and Rubber Technology, FH Würzburg (DE)
Reinforcement of Rubber Compounds by Physical and Chemical Modification of Carbon-Based Fillers

19:00 Social Event
Thursday, November 27, 2014

Session B - Afternoon

Rheology
Chairperson: E. Haberstroh

14:00  J. Ihlemann, Techn. Universität Chemnitz, Inst. of Mechanics and Thermodynamics  
High-precision simulation of rubber components

14:30  J. Meier, Henniges Automotive GmbH & Co KG (DE)  
Interpretation of Rheological Measurements for Mold Filling Simulations

15:00  J. S. Dick, Alpha Technologies (US)  
Applications for the RPA extended dynamic range in measuring silanization reactions from the mixing of silica-loaded stocks

15:30  Coffee Break

Elastomer Chemistry
Chairperson: G. Thielen

16:00  A. F. Halasa, Dept. of Polymer Science, University of Akron (US)  
The Effect of Neodymium-trioctyl Aluminum Catalyst System on the Polymerization of Isoprene-butadiene Rubber and Polyisoprene

16:30  S. Schäfer, Inst. of Plastics Processing, RWTH Aachen (DE)  
Blow Moulding of Silicone Rubber using platinum catalyzed Curing Systems and Investigation of the Pinch-off Weld Formation

17:00  K. Kulbaba, Lanxess Inc. (CA)  
A New Generation of Functionalized Butyl Rubber

17:30  R. Kalkofen, Lanxess Deutschland GmbH (DE)  
Alternative crosslinking concept for Levapren

19:00  Social Event
### Elastomer Physics

**Chairperson:** T. Alshuth

**Session A - Morning**

**8:30**  
**E. Euchler**, Professur Kunststoffe, TU Chemnitz (DE)  
*Fracture behavior of rubber powder modified rubber blends applied for conveying belts*

**9:00**  
**R. Hentschke**, Bergische Universität Wuppertal (DE)  
*Molecular modeling approach to the prediction of mechanical properties of silica-reinforced rubbers*

**9:30**  
**S. D. Gupta**, HASETRI (IN)  
*Determination of Heat Build-up of Rubber Compounds by Dynamic Mechanical Analyser – A New Test Method*

**10:00**  
**M. Ludwig**, Elastomer Physics, DIK Hannover (DE)  
*Development of a predictive viscoelastic rolling resistance test*

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### New Applications

**Chairperson:** H. Geisler

**11:00**  
**G. Nijman**, Apollo Tyres Global R&D BV (NL)  
*Morphing car body surfaces made of rubber for active aerodynamics control*

**11:30**  
**H. Benning**, Baker Hughes (DE)  
*Oilfield requirements and drilling fluid influence on elastomers*

**12:00**  
**A. Das**, Dept of Materials Science, TU Tampere (FI)  
*Exploitation of general purpose rubbers to sensors, actuators, and flexible ion conductors*

**12:30**  
**G. Buytaert**, Bekaert NV/SA (BE)  
*Bekaert steel cord technologies driving sustainable tire solutions*

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**13:00** **Lunch**
Nanocomposites
Chairperson: S. Kawahara

8:30 L. Zhang, University of Chemical Technology, Beijing (CN)
Nonlinear Behavior and Nature of Nanoparticles/Elastomer System by Molecular Dynamic Simulation

9:00 B. Bechem, Rhein Chemie Rheinau GmbH (DE)
CNT-Masterbatches for Elastomers

9:30 M. Galimberti, Politecnico di Milano (IT)
Carbon Allotropes for nanocomposites based on Poly(1,4-cis-isoprene)

10:00 A. Rul, Nanocyl SA (BE)
Next generation CNT/Rubber solutions for Automotive, Oil and Gas and Tire Industries

10:30 Coffee Break

Reinforcement and Fillers
Chairperson: M. Gerspacher

11:00 A. Schröder, Rhein Chemie Rheinau GmbH (DE)
Rhenowave®: Inline Quality Control for Black Rubber Compounds

11:30 J. W. M. Noordermeer, Elastomer Tech. & Engineering, UT (NL)
Filler-to-Filler and Filler-to-Rubber Interactions in Silica-Reinforced Natural Rubber as visualized by TEM Network Visualization

12:00 T. Dilman, Elastomer Chemistry, DIK Hannover (DE)
Innovative polymer-filler systems with optimized damping and energy dissipation for the application in truck tires

12:30 K. Yamaguchi, Bridgestone Corporation (JP)
Approaches towards Sustainable Tyre Materials over the next decade

13:00 Lunch
10 | Scientific Program

Friday, November 28, 2014

Session A - Afternoon

New Materials

Chairperson: G. Heinrich

14:00 S. Kelbch, Lanxess Deutschland GmbH (DE)

*Levapren PXL: New Uniformly Pre-Crosslinked EVM Rubbers*

14:30 I. Chodák, Polymer Institute of the Slovak Academy of Sciences (SK)

*Structure of reinforcing carbon network determined by electrical conductivity of the vulcanized rubber mixture*

15:00 M. Jaunich, Federal Inst. for Materials Research & Testing (DE)

*Low temperature properties of rubber seals - Influence of gamma irradiation*

15:30 M. A. Malmierca, Inst. of Polymer Science & Tech., CSIC (ESP)

*New smart rubbers: Shape memory ionic elastomers with temperature memory effect Marta*

16:00 Prof. Dr. Ulrich Giese

*Closing Remarks*
Friday, November 28, 2014

Session B - Afternoon

Compounding and Processing

Chairperson: G. Nijman

14:00 M. Zabel, TROESTER GmbH & Co. KG (DE)
   Determination of the pre-distribution of flow channels using computational fluid dynamics

14:30 R. Bantle, Klöckner DESMA Elastomertechnik GmbH (DE)
   Automated elastomer moulding cells

15:00 F. Lemke, Inst. of Plastics Processing, RWTH Aachen (DE)
   Extrusion of physically foamed silicone rubber

15:30 S. Brockhaus, Kunststofftechnik Paderborn (DE)
   Investigations about High-Speed Rubber Extrusion

16:00 Prof. Dr. Ulrich Giese
   Closing Remarks
We thank all sponsors for their support.
See you again in Hannover in 2016