13. Kautschuk-Herbst-Kolloquium
6. - 8. November 2018

13th Fall Rubber Colloquium
November 6 - 8, 2018

Deutsches Institut für Kautschuktechnologie e. V.
Hannover, Germany

Scientific Program

13th Fall Rubber Colloquium
November 6 - 8, 2018

Tuesday, November 6, 2018

Opening ceremony

10:30 **U. Giese**

10:40 **S. Johannsen**
Lower Saxony Ministry of Science and Culture

11:10 **T. Nishi**
Tokyo Institute of Technology
International ultimate behavior investigation of various elastomeric seismic-protection isolators for buildings

11:40 **R.H. Schuster**
Dual Filler Networks - a potential route to better Performance

12:10 **I. Hudec**
Slovak University of Technology
Sulfur and peroxide curing of rubber compounds based on NR and NBR

Tuesday, November 6, 2018

Session 1
Materials
Chairperson: **M. Galimberti.**

13:45 **D.-M. Bielinski**
Politechnika Lodzka
Ceramizable rubber composites. Possibilities and challenges

14:20 **A. Das**
Tampere University Of Technology
Water-responsive Rubber Composites

14:55 **P. Posadas**
Institute of Polymer Science and Technology
Advanced characterization of novel Ionic elastomers by a combination of different experimental techniques

Session 2
Environment - Sustainabilty
Chairperson: **H. Geisler**

E. Peuvrel-Disdier
MINES-ParisTech, PSL Research University, CEMEF
Analysis of an industrial thermo-mechanical devulcanization process

A. Neige
LRCCP
BIOPROOF project: Recovered carbon blacks as new raw material for rubber applications

I. Weilert
Deutsches Institut für Kautschuktechnologie e.V.
Polysaccharides - An interesting category of reinforcing fillers

Session 3
Simulation
Chairperson: **N. Kröger**

C. Zimmermann
Institut für Kunststoffverarbeitung
Modeling of the temperature-dependent visco-elasto-plastic material behaviour of thermoplastic elastomers

A. Ricker
Deutsches Institut für Kautschuktechnologie e.V.
Hyperelastic Modelling and Experimental Characterisation of Cellular Rubber

M. Ludwig
Toyoda Gosei Meteor GmbH
Pratical Difficulties Modelling Elastomeric Foams (and Solutions)

Tuesday, November 6, 2018

Session 1
Reinforcement
Chairperson: **H. Geisler**

15:55 **J. Noordermeer**
University of Twente
Silica Reinforced Natural Rubber: Synergistic Effects by Addition of Small Amounts of Secondary Fillers to Silica-Reinforced Natural Rubber Tire Tread Compounds

16:30 **M. Staropoli**
Luxembourg Institute for Science and Technology
Structural evolution of silica filler clusters in SBR under quasi-static deformation

17:05 **W. Kaewsakul**
University of Twente
Influence of silane modifiers with different functionalities on silica-filled NR compounds

Session 2
Physics
Chairperson: **J. Meier**

R. Hjelm
New Mexico Consortium
Interrelation of molecule scale polymer melt response to shear and rheology in the non-linear rheological domain

S. Kheirandish
Arlanxeo Deutschland GmbH
Non-Linear Strain Measures and Elongational Rheology of Branched Butadiene-Based Polymers

F. Kremer
University of Leipzig
Molecular dynamics at external and internal nanometric constraints

Session 3
Vulcanization
Chairperson: **H.-J. Weidenhaupt**

L. Klafke de Azeredo
Dätwyler Sealing Solutions
A more efficient calculation of vulcanization time from the use of isothermal and non-isothermal kinetics for EPDM based rubber compounds with different types of peroxides

B. Basterra Beroiz
Goodyear Innovation Center Luxembourg
Network structures in carbon black filled rubbers: Towards a quantitative analysis

A. Blume
Evonik Resource Efficiency GmbH
Determination of the crosslink density of tire tread compounds – Which analytical method delivers the most reliable results?

Following the lectures **POSTER SESSION**

Wednesday, November 7, 2018

Session 1
Aging and Lifetime
Chairperson: **M. van Duin**

08:30
U. Giese
Deutsches Institut für Kautschuktechnologie e.V.
Aging stability of sealing materials in lubricants

09:05
N. Meghiref
LRCCP
Multi-scale and multi-technique analysis of acrylonitrile content on the thermal aging of peroxide cured HNBR

09:40
M. Hemstede-van-Urk
ARLANXEO Netherlands B.V.
Therban HT - a plastic re-inforced HNBR with improved high temperature properties

Session 2
Processing
Chairperson: **B. Klie**

S. Teich
Deutsches Institut für Kautschuktechnologie e.V.
The influence of the rubber recipe on the adhesion between PA and EPDM in a multi-component injection molding process

S. Kammer
Institut für Kunststoffverarbeitung
Efficiency analysis of different continuous vulcanization types

S. Breithaupt
Deutsches Institut für Kautschuktechnologie e.V.
Application of LIBS to analyze the distribution of mixing additives

Session 3
Analysis
Chairperson: **D. Bielinski**

J. Ludwig
Ludwig Nano Präzision GmbH
Determination of spatially resolved elastomer parameters by the method of Micro-Indentation

E. Euchler
Leibniz-Institut für Polymerforschung Dresden
Exploring the failure behavior of rubber vulcanizates under constraint conditions via small-angle-X-ray-scattering

Y. Aoyagi
Freudenberg Technology Innovation SE & Co. KG / DIK
The analysis of aging processes of EPDM-elastomers using low field NMR and stress relaxation measurements

Wednesday, November 7, 2018

	Session 1 **Reinforcement** Chairperson: **J. Noordermeer**	Session 2 **Processing** Chairperson: **B. Klie**	Session 3 **Analysis** Chairperson: **K. Nakajima**
10:40	**W. Dierkes** University of Twente *Silane-grafted natural rubber as compatibilizer in silica-reinforced natural rubber*	**G. Nijman** KraussMaffei Berstorff GmbH *Rubber extrusion screw lay out based on rheological behavior of the material.*	**M. Wilhelm** Karlsruhe Institute of Technology (KIT) *Medium Resolution 1H-NMR at 62 MHz as Chemically Sensitive Online Detector for Size Exclusion Chromatography (SEC‑NMR)*
11:15	**I.H. Syed** Continental Reifen Deutschland GmbH *Characterizing the influence of reinforcing resin on the mechanical response of filled elastomers*	**S. Kammer** Institut für Kunststoffverarbeitung (IKV) *Optimization of screw geometry for silicone extruder considering wall slip behaviour*	**F. Grunert** University of Twente *Comparison and Evaluation of Different Analytical Methods to Predict the In-Rubber Dispersibility of Silica*
11:50	**N. Gundlach** Bergische Universität Wuppertal *Modelling Filler Dispersion in Elastomers: Relating Filler Morphology to Interface Free Energies via SAXS and TEM Simulation Studies*	**S. Kammer** Institut für Kunststoffverarbeitung (IKV), RWTH Aachen *Foam extrusion of elastomers using water as physical blowing agent*	**D.H.C. Wong** Eastman Chemical Company *Evaluation of Sulfur Dispersion using Population Survival Analysis*

Wednesday, November 7, 2018

Session 1
Simulation
Chairperson: **M. Klüppel**

13:20
H. Baaser
Univ. of Applied Sciences Bingen
Constructing the Transfer Function of any Topology of Rheological Elements by Numerical Laplace Transformation

13:55
K.N. Vu
Department of Continuum Mechanics, RWTH Aachen University
Physically-based modeling of strain-induced crystallization in natural rubber

14:30
C. Krauter
Schrödinger GmbH
Unravelling critical polymer properties with efficient computational approaches

15:05
H. Wulf
Chemnitz University of Technology
Using an abstract model of rubber microstructure to predict rubber compound properties

Session 2
Materials
Chairperson: **S. Kawahara**

M. Galimberti
Politecnico di Milano
Facile and sustainable functionalization of sp2 carbon allotropes, as fillers for rubber composites

P. Bernal Ortega
Institute of Polymer Science and Technology
Sulfur-modified carbon nanotubes for the development of advanced elastomeric materials

A. Shakun
Tampere University of Technology
Study of material-related losses in nanodiamond-rubber composites

M. Omelan
Deutsches Institut für Kautschuktechnologie e.V.
Development of PDMS nanocomposites for neuro-medical application

Session 3
Materials
Chairperson: **R. Schuster**

M. Martinez Velencoso
Kuraray Europe GmbH
Modified Compound Characteristics with Liquid Rubber

M. De Greiff Palacio
Proantex S.A.S
Skim-Latex: Is it really the source of low specification rubber?

B. Pary
The 3D Dandelion concept: a paradigm change to establish a financially viable alternative to Hevea Natural Rubber

J. Stumbaum
Arlanxeo Deutschland GmbH
Therban® with improved media resistance and low temperature flexibility

Wednesday, November 7, 2018

	Session 1 **Materials** Chairperson: **H. Geisler**	Session 2 **Analysis** Chairperson: **I. Chodak**	Session 3 **Vulcanization** Chairperson: **A. Blume**
16:05	**W. Rahimi** *Thermodynamical approach to determine the adhesion of plasma polymers on various rubber vulcanizates*	**K. Nakajima** Tokyo Institute of Technology *Viscoelasticity of rubbers investigated by nanorheological AFM*	**M. van Duin** Keltan R&D, ARLANXEO Performance Elatomers *Sulfur vulcanisation of low- and high-unsaturated rubbers (IIR & EPDM vs. NR & BR)*
16:40	**L. Rodriguez-Guadarrama** Dynasol Group *In-chain Functionalized SEBSs for Rubber-Silica Network*	**C. Karl** Fakultät für Bauingenieurwesen und Geodäsie, ForWind/Leibniz-Universität Hannover *Wetting of elastomer surfaces*	**H.-J. Weidenhaupt** LANXESS Deutschland GmbH *The Way to Improve Network Performance*
17:15	**M. Boomhoff** Trinseo Deutschland GmbH *Functionalized SSBR for Fuel Efficient & Safe Tires*	**E. Ueda** Zeon Corporation *Nanorheological atomic force microscope for silica-filled SBR vulcanizes*	**E. Cansell** ArianeGroup *Study of vulcanization bonding process' mechanisms of natural rubber onto metallic substrates*
19:00	**SOCIAL EVENT**		

Thursday, November 8, 2018

	Session 1 **Analysis** Chairperson: **T. Nishi**	Session 2 **Processing** Chairperson: **G. Nijman**	Session 3 **Physics** Chairperson: **J. Meier**
08:30	**N.N.**	**J.-U. Walter** Universität Paderborn, Kunststofftechnik Paderborn (KTP) *Scale Up of "Garvey-die" test setup*	**I. Chodak** Polymer Institute of the Slovak Academy of Sciences *Behavior of mixtures of various rubbers with electroconductive carbon blacks under cyclic mechanical stress*
09:05	**D. Nichetti** Rheonic srl *Oscillating Shear Capillary Rheometry (OSCAR) of Rubber Compounds*	**J. Jennissen** RADO Engineering GmbH *Strainer process issues*	**M. Kröger** IMKF - TU Bergakademie Freiberg *Roughness influence on adhesion*
09:40	**M. Yazici** Uludag University Engineering Faculty, Automotive Eng. Dept. *Investigation of the Crack Propagation in The Graphene/Elastomer Nanocomposite Materials with DIC Technique*	**A. Lipski** Institute of Plastics Processing (IKV) in Industry and the Skilled Crafts at RWTH Aachen University *Flow paths in a tangential internal mixer - Visualization and analysis for an optimized mixing*	**M. Jaunich** Bundesanstalt für Materialforschung und -prüfung (BAM) *Low temperature properties of rubber seals - Influence of crystallite formation on seal performance -*

Thursday, November 8, 2018

	Session 1 **Simulation** Chairperson: **H. Baaser**	Session 2 **Reinforcement** Chairperson: **G. Heinrich**	Session 3 **Tires** Chairperson: **W. Dierkes**
10:40	**C. Liu** Beijing Univ. of Chemical Technology *Fabrication of advanced elastomer nanocomposites designed by computer simulation towards extremely energy-saving tires*	**H. Westenberg** Orion Engineered Carbons GmbH *Tuning electrical conductivity by applying a tailored carbon black morphology*	**E. Borchardt** Continental Reifen Deutschland GmbH *Processing behaviour of highly filled SBR compounds - A lab evaluation using the 'Garvey-die' test setup*
11:15	**S. Gelke** Chemnitz University of Technology *A material model for the thermomechanical simulation of rubber*	**A. Bernardi** Politecnico di Milano *Facile and sustainable functionalization of carbon black, as filler for rubber composites*	**M. Heinz** Evonik Resource Efficiency GmbH *Influence of Polymer Type, Filler Property and Coupling System on Crosslink Density of Summer Tire Tread Compounds*
11:50	**C. Penisson** BMW Group *Designing rubber subframe mounts in the pre-development phase*	**R. Hickmann** TU Dresden, ITM *Innovative hybrid-yarns for textile reinforced elastomer components*	**U. Hong** Hyundai Motor Company *Study on the effect of aging on the internal parts of tires*

Thursday, November 8, 2018

	Session 1 **Materials** Chairperson: **I. Hudec**	Session 2 **Aging and Lifetime** Chairperson: **U. Giese**	Session 3 **Tires** Chairperson: **M. Klüppel**
13:20	**S. Kawahara** Nagaoka University of Technology *Preparation and Mechanical Properties of Natural Rubber with Nanodiamond Nanomatrix Structure*	**B. Schrittesser** Polymer Competence Center Leoben GmbH *Effect of swelling and thermal induced ageing of HNBR in oil and gas field applications*	**F. Grasso** Versalis S.p.A. *Developing solutions for truck tyres*
13:55	**H. Murakami** Nagasaki University *Thermal and Elastic Properties of Polyurethanes Crosslinked by Polyroaxanes*	**H. Benning** Baker Hughes, a GE company *Elastomer Development for Oil Based Mud Moineau Motors*	**J. Vervelde** Kraton Chemical B.V. *The influence of tread enhancement additives on the performance of filled tread compounds - an insight into the effect of SYLVATRAXX™*
14:30	**N. Rennar** formerly: University of Applied Sciences Würzburg *Synthesis, Structure, and Properties of Rigid Rod Networks*	**B. Karaagac** Kocaeli University, Chemical Engineering Department *Improved Crosslink Structure and Thermal Resistance of EPDM Formulations*	**R. Stocek** PRL Polymer Research Lab, s.r.o. *Influence of loading force on resistance against chipping and cutting phenomena of fundamental rubber materials*
15:05	**G. Heinrich** Leibniz-Institut für Polymerforschung Dresden e.V. *Ionic modification and weak cross-links in polymer networks: a new paradigm for robust rubbers?*	**M. Achenbach** Ingenieur- und Sachverständigenbüro Achenbach GbR *Life Time Prediction of Seals by Numerical Simulation*	**F. Abraham** University of Plymouth *Abrasion Resistance and Fatigue Crack Growth in Dependence of Recycled Tyre Filler Content and its Interface Morphology*
15:45	**CLOSING REMARKS**		

See you in Hannover

Deutsches Institut für Kautschuktechnologie e.V.

Eupener Straße 33

D-30519 Hannover

Phone: +49 511 84201-17

khk@dikautschuk.de

www.dikautschuk.de