15th Fall Rubber Colloquium

September 10–12, 2024

Deutsches Institut für Kautschuktechnologie e. V., Hannover, Germany

15th Fall Rubber Colloquium, September 10 – 12, 2024

Tuesday, September 10, 2024

Opening ceremony

10:30 **Ulrich Giese**
Deutsches Institut für Kautschuktechnologie e. V.

10:40 **Claudia Simon**
Lower Saxony Ministry of Economic Affairs,
Transport, Building and Digitalization

11:00 **Günther Lottmann**
Proyectos Elasticos S.A.
Sustainable rubber and the challenge of deforestation regulation in the EU (EUDR)

11:30 **Liqun Zhang**
Beijing University of Chemical Technology
Progress in Biobased Elastomers Aiming at Sustainability, Green and Low carbon, and High Performance

12:00 **Robert H. Schuster**
Advantages of High Aspect Fillers in Rubber Compounds

12:30 **LUNCH**

Tuesday, September 10, 2024

	Session 1 **Chemistry** Chairperson: **Ulrich Giese**	Session 2 **Sustainability** Chairperson: **Amit Das**	Session 3 **Simulation** Chairperson: **Patrick Schneider**
13:45	**Anke Blume** University of Twente *Thiols as a Potential Surface Modifier for a Lignin-based Renewable Functional Filler*	**Fabio Bacchelli** Versalis *Compounding of devulcanized rubber from thermo-mechanical treatment. Rheology, processability, property trade-off*	**Claus Wrana** Compounds AG *Extension of the Non-affine Reptation Model to Filled Vulcanizates and Implementation in Finite Element Programs*
14:20	**Jukka Koskinen** Tampere University *The effect of different silanes to lignin dispersion and rubber-filler interaction in polybutadiene rubber*	**Danka Katrakova-Krüger** TH Köln, Materials Laboratory *Comparative Investigation of PAH content of Tire Wear from Different Sources*	**Dengpeng Huang** University of Twente *Data-driven modeling of thermo-viscoelasticity of rubber*
14:55	**Siwu Wu** Institute of Emergent Elastomers, School of Materials Science and Engineering, South China University of Technology *Practical Interfacial Regulators with Radical Reactivity toward High-Performance Rubber Composites*	**Sebastian Finger** UPM Biochemicals *Novel solutions for more sustainable elastomers*	**Sebastian Siebert** Deutsches Institut für Kautschuktechnologie e.V. *Describing the mechanical behavior of cellular rubber using the hollow sphere model – assumptions and their effects*
15:25	**COFFEE BREAK**		

Tuesday, September 10, 2024

Session 1
Vulcanization
Chairperson: **Fabio Bacchelli**

15:55 **Kevin Krause**
Deutsches Institut für Kautschuktechnologie e.V.
Model-Compound Vulcanisation for the Elucidation of Peroxide/ Coagent Crosslinking Mechanism in EP(D)M

16:30 **Nikolaus Rennar**
University of Applied Sciences, Würzburg
Kinetic Studies of Accelerated Vulcanization : New Findings on an Old Problem

17:05 **Jakub Wreczycki**
Lodz University of Technology
Low-temperature sulfur vulcanization

Session 2
Physics
Chairperson: **Andrej Lang**

Gert Heinrich
Elas-Ti-C (Elastomer-Tire-Consulting)
Understanding rubber wear phenomena through advanced in-situ X-ray scattering at the synchrotron

Pavel Ignatyev
Continental Reifen Deutschland GmbH
Experimental investigation of rubber sliding friction wet surfaces using Stribeck-curve approach

Evangelos Koliolios
Queen Mary University of London
The influence of smear wear layer thickness on tyre tread wear rate

Session 3
Reinforcement
Chairperson: **Ulrich Giese**

Thomas Gereke
TU Dresden, Institute of Textile Machinery and High Performance Material Technology
Interactive Fiber Rubber Composites

Minghan Xu
Qingdao University of Science & Technology
Constructing spindle-knotted aramid nanofibers to achieve high-performance in silica filled rubber composites

Hiroyuki Komori
Freudenberg Technology Innovation SE & Co. KG
Effects of Filler Agglomeration and Filler-Polymer Interaction on Compression Set of (ep)-Natural Rubber Composites

Following the lectures **POSTER SESSION**

Wednesday, September 11, 2024

	Session 1 **Chemistry** Chairperson: **Kevin Krause**	Session 2 **Analysis** Chairperson: **Anke Blume**	Session 3 **Processing** Chairperson: **Benjamin Klie**
08:30	**(cancelled)**	**Laura Diñeiro** ICTP (CSIC) *Ultra-soft tailor-made polyurethanes characterised by low-field NMR and their application in tyre filling*	**Gerard Nijman** KraussMaffei Extrusion GmbH *Recent Developments in Rubber Extrusion: By what means the rubber extrusion process can contribute to carbon neutrality?*
09:05	**Lutz Kirchner** Rain Carbon Germany GmbH *High Polarity Low Molecular Weight Hydrocarbon Resins for All-Season Tires*	**Dennis Ludwig** *Characterization of material properties of finished parts influenced by temperature and medium using indentation*	**Leon Schmidt** Kunststofftechnik Paderborn, Paderborn University *Investigation of alternative pinless screw concepts for rubber extrusion*
09:40	**Katharina Nolte** Baker Hughes Inteq GmbH *Elastomers used in Oil, Gas & Geothermal Drilling Applications*	**Lukas Schasse** Deutsches Institut für Kautschuktechnologie e.V. *Detection of Near-Surface Inhomogeneities in Rubber Materials Using Micro-Indentation*	**Prasenjit Ghosh** Hari Shankar Singhania Elastomer and Tyre Research Institute *A simulation study on the effect of different rheological models on the extrusion characteristics of a rubber compound*
10:10	**COFFEE BREAK**		

Wednesday, September 11, 2024

	Session 1 **New Composites** Chairperson: **Ulrich Giese**	Session 2 **Analysis** Chairperson: **Anke Blume**	Session 3 **Processing** Chairperson: **Gerard Nijman**
10:40	**Seiichi Kawahara** Nagaoka University of Technology *Structure and Mechanical Properties of Vulcanized Natural Rubber*	**Manfred Wilhelm** KIT, ITCP *Fatigue Analysis of solid polymers and elastomers via Fourier Transform of the Stress*	**Victor Skyronka** Elanova *Effect of processing conditions on compatibilisation of a reclaimed EPDM in a PP matrix*
11:15	**Amit Das** Leibniz Institute of Polymer Research Dresden *Ionic Adaptive Network in Epoxidized Natural Rubber*	**Hirak Satpathi** Hari Shankar Singhania Elastomer and Tyre Research Institute *Development of test method for the quantitative determination of 18 Nos of PAH in tire by GCMSMS technique*	**Quentin Jean** ELANOVA *Controlled regeneration of vulcanized rubber scrap by twin-screw extrusion*
11:50	**Christian W. Karl** SINTEF AS *Plasma polymerized coatings on elastomers*	**Zenen Zepeda Rodriguez** Instituto de ciencia y tecnología de polímeros *Complete structural characterization of devulcanized rubber from end-of-life tires.*	**Rodrigo Diaz** REP International *Savings and flexibility by using a multi-post injection press with a cold runner block*
12:20	**LUNCH**		

Wednesday, September 11, 2024

	Session 1 **Physics** Chairperson: **Andrej Lang**	Session 2 **Analysis** Chairperson: **Dariusz Bielinski**	Session 3 **Rheology** Chairperson: **Jens Meier**
13:20	**Sunghyun Lee** Hyundai Motor Company *Development of Mageto-Rheological Elastomers for Automotive Anti-Vibration System*	**Pilar Posadas** Institute of Science and Technology, Spanish National Research Council (ICTP CSIC) *Recent advances in the Nanoscale characterization of Sulfur-modified Carbon Nanotube Elastomeric Materials*	**Jorge Lacayo-Pineda** Continental Reifen Deutschland GmbH *Lissajous Figure Analysis for Characterizing the Nonlinear Viscoelasticity of Elastomers*
13:55	**Uiseok Hong** Hyundai Motor Company *Development of Tire Tread Wear Prediction Technology*	**Clemens Wiesel** Institute for Plastics Processing (IKV) in Industry and Craft at RWTH Aachen *Cure monitoring by means of dielectric analysis*	**Saeid Kheirandish** ARLANXEO Deutschland GmbH *A Test of Universality of Branching-Processability Correlations Based on BR and EPDM Compounds*
14:30	**Fanzhu Li** Beijing University of Chemical Technology *A crosslinking kinetic model considering reversion effect with verification and application in vulcanization process*	**Fernando Martin-Salamanca** Institute of Polymer Science and Technology (ICTP-CSIC) *Diverse NMR approaches to elucidate molecular structure and dynamics on reinforced elastomers*	**Uwe Nillius** Institute for Plastics Processing (IKV) in Industry and Craft at RWTH Aachen *Development of a novel approach for shear viscosity determination using a membrane rheometer*
15:05	**COFFEE BREAK**		

Wednesday, September 11, 2024

	Session 1 **Sustainability** Chairperson: **Ulrich Giese**	Session 2 **New Composites** Chairperson: **Maurizio Galimberti**	Session 3 **Rheology** Chairperson: **Jens Meier**
16:05	**Yusuf Güner** Standard Profil Otomotiv A.S. *The Using of Recycled Plastic Filler in EPDM Rubber Compounds: Exploring Sustainable Alternatives to Carbon Black*	**Vincenzina Barbera** Politecnico Milan *Tailor made functionalizations of white fillers: The understanding of mechanisms and their applications*	**Dario Nichetti** Rheonic srl *Does nonlinear viscoelasticity inherently exist in rubber?*
16:40	**Anu Muthukamatchi** University of Oslo *Characterization and Performance Evaluation of Elastomers for Carbon Capture and Storage Infrastructure*	**Norbert Nizel** Lodz University of Technology, Faculty of Chemistry, Institute of Polymer and Dye Technology *Shaping Mars-Ready Materials: The Role of Vinyl Groups and Carbon Black in BR/VMQ Blend Morphology*	**Michele Scacchi** Alpha Technologies U.K. *TPV characterization with ESR: characterization of the linear and the non-linear behavior of TPVs by FT-Rheology*
17:15	**Marina Montero Escrivá** Instituto de Ciencia y Tecnología de Polímeros (ICTP-CSIC) *Incorporation of recycled material in the manufacture of new elastomeric materials with high-technological performance.*	**Dino Šimić** Deutsches Institut für Kautschuktechnologie e.V. *Enhancing the Magnetorheological Effect in Elastomers through Systematic Conditioning*	**Eduardo Yanes Nunez** Datwyler *Rheological analysis silica filled rubbers with pre-silanised fillers compared to mixer silanisation process*
19:00	**SOCIAL EVENT**		

Thursday, September 12, 2024

	Session 1 **Chemistry** Chairperson: **Kevin Krause**	Session 2 **Simulation** Chairperson: **Claus Wrana**	Session 3 **Sustainability** Chairperson: **Ulrich Giese**
08:30	**Daisuke Hayata** Asahi Kasei Europe GmbH *Enhancing Rubber Performance: Selectively Hydrogenated Functionalized SBR*	**Herbert Baaser** University of Applied Sci. - Bingen *Balloon Inflation: Material Instability and Biaxial Loading- and Unloading Cycles*	**Dariusz M. Bielinski** Lodz University of Technology *New bio-based approach to dispersion of silica in NR matrix*
09:05	**Nanying Ning** Beijing University of Chemical Technology *Formation mechanism and regulation of microstructure of EPDM/PP TPVs*	**Lutz Zybell** Leibniz-Institut für Polymerforschung *Combined experimental and numerical study of creep fracture in highly stretchable elastomers*	**Jacques Noordermeer** Noordermeer Rubber Consultancy *Implications of pending ECHA PFAS restriction proposal for ela rotary propeller/screw seals for marine applications*
09:40	**Christoph Gögelein** ARLANXEO Deutschland GmbH *TPVs for 3D Printing Based on Blends of PLA with EVM-GMA and ENR*	**Radek Stocek** PRL Polymer Research Lab *Determination of the crack energy threshold for crack initiation in rubber under ozone exposure*	**Baochun Guo** Institute of Emergent Elastomers, School of Materials Science and Engineering, South China University of Technology *Network Design and Performance of Crosslinked Rubber by Involving Dynamic Covalent Bonds*
10:10	**COFFEE BREAK**		

Thursday, September 12, 2024

	Session 1 **New Composites** Chairperson: **Seiichi Kawahara**	Session 2 **Physics** Chairperson: **Radek Stocek**	Session 3 **Processing** Chairperson: **Benjamin Klie**
10:40	**Maurizio Galimberti** Politecnico Milan *Adducts of natural fillers and janus molecules for the reinforcement of elastomer composites*	**Mathieu Badard** ACOEM *DMA crack growth monitoring on rubber material*	**Edith Peuvrel-Disdier** Mines Paris, PSL University *Chemical foaming of rubber - Coupled experimental and modelling approach*
11:15	**Federica Magaletti** Politecnico Milan *Reactive Carbon black as alternative filler for Silica in tyre treads compounds*	**Takahiro Anzai** NOK Corporation *Study of the Mullins Effect in Carbon Black-Filled Rubber by Atomic Force Microscopy*	**Alexander Olbrich** Deutsches Institut für Kautschuktechnologie e.V. *Predictive quality for injection molded elastomer products*
11:50	**Wenjie Wu** SCUT(South China University of Technology) *Self-powered Smart Tire Based on Triboelectric Nanogenerators*	**Dennis Kleinschmidt** Paderborn University, Kunststofftechnik Paderborn *Influence of pre-shearing on the rheological properties of filled rubber compounds*	**(cancelled)**
12:20	**LUNCH**		

Thursday, September 12, 2024

	Session 1 **Simulation** Chairperson: **Herbert Baaser**	Session 2 **Physics** Chairperson: **Andrej Lang**	Session 3 **Processing** Chairperson: **Benjamin Klie**
13:20	**Anke Bardehle** Institute for Plastics Processing (IKV) in Industry and Craft at RWTH Aachen *Modelling of the masterbatch process in the internal mixer using ethylen-propylen-dien-rubber*	**Norbert Kendziorra** NoKendzi Elastomer Materials & Statistics Consulting *New approach for the design of high wet grip silica tread compounds via the solid percolation point*	**Johannes Jennissen** RADE GmbH *Analysis of existing strainer concepts and discussion / testing of constructive conclusions*
13:55	**Benjamin Martin** Elanova *A local definition of multiaxiality in elastomers and application to fatigue testing*	**Eathan Plaschka** Queen Mary University of London *Laboratory Evaluation of Tire Tread Compound Performance: Exploring Surface Wear Morphology and Friction Characteristics*	**Annemarie Hillebrecht** UTH GmbH *New process for Continuous Milling of technical rubber*
14:30	**(cancelled)**	**Jens Meier** Deutsches Institut für Kautschuktechnologie e.V. *Influence of Viscoelasticity on Structure-borne Sound Transmission in Attenuation Layers*	**Maximilian Backenstos** DatenBerg GmbH *End-to-end: Connect and leverage production data from mixing to finishing*
15:05	**CLOSING REMARKS**		