

Deutsche Kautschuk-Gesellschaft e. V. presents

DKT IRC 2021

June 27 – 30, 2022, Nuremberg, Germany



Conference Programme and Social Events



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Preface

Dear Colleagues and Guests,

Welcome to the German Rubber Conference and the International Rubber Conference!

This event was planned for 2021 and had to be postponed 12 months due to the pandemic. After more than two years of greatly reduced personal contacts, we are sure that you all very much long for direct exchange with experts of all kinds.

Nuremberg offers many opportunities for this currently! We are very pleased that – with the help of a very committed programme committee – we can offer you a wide-ranging interesting lecture programme with 133 presentations, 36 posters, and a diverse trade exhibition (250 exhibitors). The current topics cover sustainability, tires, mobility and TPEs. In addition, young researchers will give an insight into their activities in the "Student Session".

For the first time, we are also offering companies the opportunity to hold technical presentations ("Solutions") in a specially created forum. The Science Campus, which allows you to explore the current focal points of work of various research institutes, has been relocated and is therefore more closely integrated into the conference activities.

In addition, we offer you the opportunity to learn or deepen your knowledge of the fundamentals of rubber technology through our Educational Symposium.

Nuremberg has always been a place of intensive networking and offers the expected 3,000 participants a variety of opportunities to communicate with each other on the fringes of the conference. We would like to invite you to the Barbecue on Monday or to the "Best of-Party" on Wednesday evening.

Enjoy your time in summery Nuremberg! We hope you will go home with many new professional ideas, deepened and new personal contacts, and have a great time.

Your DKG Board of Directors



Dr. H.-Martin Issel

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Deutsche Kautschuk-Gesellschaft e. V.

Synopsis

Lecture Programme and Social Events

CEST

09:00 ▶ **Trade Exhibition**
18:00 Hall 8 and 9, Nürnberg Convention Center – NCC Mitte

12:30 ▶ **Opening Ceremony of the DKT IRC 2021**
12:55 Hall Brüssel 1, NCC Mitte

13:00 ▶ **Scientific Lecture Programme**
17.25 NCC Mitte

Raw Materials

Hall Brüssel 1

Processing

Hall Brüssel 2

TPE Forum

Hall München 1

17:30 ▶ **Bestowal of DKG Awards**
18:00 Hall Brüssel 1

18:00 ▶ **Barbecue**
22:00 Exhibition Park, NCC Mitte

CEST

08:30 ▶ **Scientific Lecture Programme**
17:55 NCC Mitte

Processing

Hall Brüssel 1

Applications

Hall Brüssel 1

Raw Materials

Hall Brüssel 1, 2

Tyres

Hall Brüssel 2

TPE-Forum; Applications

Hall München 1

Student Session

Hall München 2

09:00 ▶ **Trade Exhibition**
18:00 Hall 8 and 9, NCC Mitte

Synopsis

Lecture Programme and Social Events

CEST

08:30
17:55

- ▶ **Scientific Lecture Programme**
NCC Mitte

Testing; Applications

Hall Brüssel 1

Applications

Hall Brüssel 2

Sustainability

Hall Brüssel 2

Educational Symposium

Hall München

09:00
18:00

- ▶ **Trade Exhibition**
Hall 8 and 9, NCC Mitte

18:00
19:30

- ▶ **Best of-Party**
Foyer, NCC Mitte

CEST

08:30
13:30

- ▶ **Scientific Lecture Programme**
NCC Mitte

Simulation

Hall Brüssel 1

Future Mobility

Hall Brüssel 2

08:30
15:30

- ▶ **Educational Symposium**
Hall München

09:00
16:00

- ▶ **Trade Exhibition**
Hall 8 and 9, NCC Mitte

Key Elements

Lecture Programme

In parallel lecture-sessions and during four days experts will present newest developments and knowledge in the areas of raw materials, processing, applications, tyres, testing, sustainability, simulation, future mobility and scientific basis.

TPE Forum

Thermoplastic elastomers of all variations are in the focus of the TPE lecture programme on Monday and Tuesday – in cooperation with VDI FA Polymere Ingenieurwerkstoffe.

Student Session

Young experts are presenting results of their research projects or academic works on Tuesday. Get in touch with the future!

Educational Symposium

Essential basic knowledge and an insight in the fields of activity of the rubber industry will be provided by this symposium on Wednesday and Thursday. Focus group are newcomers to the industry. Questions and discussions are welcome.

Poster Session

You will find a large presentation of scientific posters located nearby the main entrance to exhibition hall 9. There you do have the chance to talk to the authors directly – you will find the corresponding hours noted on the posters.

Trade Fair

More than 250 companies from all over the world are presenting their products and novelties in hall 8 and 9: raw materials, adjuvants, testing and analytic equipment and apparatus as well as special industry software.

Science Campus

Get to know the focuses and projects of renowned research institutes and scientific groups on the Science Campus located at the main entrance to exhibition hall 9.

Solutions

Companies will present their products and services in the DKT FORUM located in hall 8 of the trade fair.

Social Events

Join the rubber- and elastomer-network at our **Barbecue** in the Exhibition Park on Monday. A casual get-together, right in the middle of the DKT IRC 2021. We are looking forward to your registration and participation.

Join the **Best of-Party** (Fair Appearance | IRCO Student Prize) on Wednesday. Price winners will be elected as result of a public voting. The event starts right after the end of the fair and the conference programme.

Opening Ceremony

CEST

12:30
12:55

▶ Opening Ceremony of the DKT IRC 2021

Hall Brüssel 1, NCC Mitte

Dr. H.-Martin Issel

Chairman

Deutsche Kautschuk-Gesellschaft e. V.



Bestowal of DKG Awards

CEST

17:30
18.00

▶ Bestowal of DKG Awards

Hall Brüssel 1, NCC Mitte

Dr. H.-Martin Issel

Chairman

Deutsche Kautschuk-Gesellschaft e. V.

▶ Conferment of Honours

Carl-Dietrich-Harries-Medal

Prof. Dr. Manfred Klüppel

Erich-Konrad-Medal

Prof. Dr. Norbert Vennemann

DKG Medal of Merit

Dr. Annette Lechtenböhmer

▶ PhD Award

Dr. Sebastian Teich

▶ Advancement Award

Tobias Schwiddessen

Lecture Programme Hall Brüssel 1

Hall Brüssel 2

TPE-Forum Hall München 1

CEST

▶ Raw Materials

13:00 Malte Wohlfahrt, SYNTHOS SCHKOPAU, Germany
13:25 Driving the future of sustainable rubber –
The challenges

13:30 Olga Kufelt, Evonik Operations, Germany
13:55 Application of high specific surface area HD silica
to improve the service life of mechanical
rubber goods

14:00 Anke Blume, University of Twente, Netherlands
14:25 Manifold role of DPG inside a silica-filled
tire tread compound

14:30 Amrita Roy, Indian Institute of Technology
14:55 Kharagpur, India
Carbon black intercalated graphene as a novel
filler for multifunctional polymer nanocomposite

15:00 ▶ Break
15:25

15:30 Claus Wrana, Compounds, Switzerland
15:55 A novel functional filler for sustainable rubber
applications

16:00 Yoncagul Celik Erez, Kastas Sealing
16:25 Technologies, Turkey
Investigation on NBR sealing products with
nanoparticle addition: An FEA study

16:30 Hermann-Josef Weidenhaupt, LANXESS, Germany
16:55 Perkalink® 900 – The smart solution for sulfur and
peroxide crosslinking

17:00 Manfred Wilhelm, KIT, Germany
17:25 SEC-MR-NMR – a chemically sensitive online
detector for the chromatography of polymers
at 62 MHz

▶ Processing

Ricarda Kendler, Harburg-Freudenberger
Maschinenbau, Germany
Increased throughput and quality thanks to the
new intermeshing PES7 rotor geometry

Melanie Kostka, Institut für
Kunststoffverarbeitung, Germany
Analysis of the influence of process parameters
on processing in the internal mixer and compound
quality using ethylene-propylene-diene rubber

Johannes Jennissen, RADE, Germany
Strainer of rubber compounds

Lion Sundermann, Deutsches Institut für
Kautschuktechnologie, Germany
Additive manufacturing of elastomers using
extrusion based Fused-Filament-Fabrication

▶ Break

Roman Thiel, Deutsches Institut für
Kautschuktechnologie, Germany
Additive manufacturing of sulphur vulcanized
rubber parts based on liquid rubber resins

Clemens Wiesel, Institut für
Kunststoffverarbeitung, Germany
Identification of batch variations in the elastomer
injection moulding process using an
online-rheometer

Thomas Hutterer, Montanuniversität Leoben, Austria
Detecting faults in rubber injection molding:
Mold breathing and multivariate statistics

Fabian Verheyen, Nordmann, Rassmann, Germany
Extrusion of silicone rubber – Challenges and
chances

▶ New applications for TPE materials

Melanie Schroeder, J. Schmalz, Germany
Sealing materials for vanadium redox flow
battery stacks

Johannes Krückel, KRAIBURG TPE, Germany
TPE solutions for applications with high
demands on electrical or thermal conductivity

Stefan Zepnik, MOCOM Compounds, Germany
Alfater XL® FT – Thermoplastic vulcanizate
elastomers (TPV) for fuel cell applications

Manuel Bäßler and Emanuel Sarikas,
COBA Automotive, Germany
TPV extrusion – complex downstream processes
and future materials

▶ Break

▶ Process and simulation

Alexander Simon, Wirth Werkzeugbau, Germany
Sandwich injection moulding with foamed TPE

Michael Stegelmann, ANYBRID, Germany
Injection-Moulding on the fly

Mathias Schlenk, Hexpol TPE, Germany
How to achieve optimal adhesion between
thermoplastics and TPE

Marc Kurz, Simpatec, Germany
Process simulation of TPE materials

Lecture Programme Hall Brüssel 1

CEST

▶ Processing

08:30 Nekane Lozano-Hernandez, Eurecat Technology Center, Spain
08:55 Micro- and nanotextrusion of LSR surfaces by injection moulding

09:00 Michael Drach, Gerlach Maschinenbau, Germany
09:25 UHF guided wave technology – Heating of low / non-polar compounds

09:30 Manuel Beßler, UTH GmbH, Germany
09:55 Increase of sustainability within production process due to new process technology – from idea till manufacturing standard

10:00 Ian Haywood, Clwyd Compounders, United Kingdom
10:25 A compounders approach to raw material and data

10:30
10:55

▶ Break

▶ Applications

11:00 Seichi Kawahara, University of Nagaoka, Japan
11:25 Discovery of island-nanomatrix structure of natural rubber and its application to synthetic cis-1,4-Polyisoprene

11:30 Sebastian Seibold, ContiTech, Germany
11:55 ContiClean conveyor belt technology

12:00 Mario Kröger, nora by Interface, Germany
12:25 Sustainable rubber floor coverings with a focus on carbon footprint reduction

12:30
13:55

▶ Break

Hall Brüssel 2

▶ Tyres

Matthias Bode, Kumho Tire, Germany
The effect of EV and autonomous driving on tire technology

Alexander Paasche, Evonik Operations, Germany
A birds-eye view on ground tire rubber as a raw material

Sven Thiele, SYNTHOS SCHKOPAU, Germany
Functionalized high molecular weight SSBR for excellent rolling resistance and wear of EV tyres

Christian Geidel, Schill+Seilacher "Struktol", Germany
Winter is coming – Novel functional chemicals for every season

▶ Break

Fabian Grunert, University of Twente, Netherlands
Influence of functionalized polymers on the processing behavior and in-rubber properties of passenger car tire tread compounds

Niclas Lindemann, Continental Reifen, Germany
Rigidity of plasticizers and their miscibility in silica-filled synthetic rubbers

Gerd Schmaucks, GS Chemconsult, Germany
Impact of silica surface properties on physical performance of tire tread compounds

▶ Break

Lecture Programme Hall Brüssel 1

CEST

▶ Applications

14:00 Andrea Ravasio, MESGO, Italy
14:25 Sustainability at HEXPOL

14:30 Yusuf Güner, Standard Profil Otomotiv, Turkey
14:55 Sustainable-light weight EPDM based sealing system compounding with renewable functional fillers (RFF)

15:00 Jaap Havinga, Kiwa, Netherlands
15:25 Rubber coated fabric as surge barrier

15:30 Gözde Tuzcu, Kiwa, Netherlands
15:55 Friction behaviour of bearings

16:00
16:25

▶ Break

▶ Applications

16:30 Chris Stevens, NGF Europe, United Kingdom
16:55 Rubber reinforcement by rubber impregnated chopped strands

17:00 Wilma Dierkes, University of Twente, Netherlands
17:25 The influence of polymer ratio and filler type on marching modulus and other related properties of silica-filled SBR/BR compounds

▶ Raw Materials

17:30 Yayoi Akahori, The Yokohama Rubber Co., Japan
17:55 Effect of water on the ionic sulfur vulcanisation of natural rubber

Hall Brüssel 2

▶ Tyres

Luciano Tadiello and Francesco Romani, Pirelli Tyre, Italy
Lignin as potential filler in rubber compounds

Andrej Lang, Deutsches Institut für Kautschuktechnologie, Germany
Wear behaviour characterisation of elastomeric materials using a new prototype of a wear and friction machine

William Kyei-Manu, Queen Mary University of London, United Kingdom
Characterization of cut and chip resistance of elastomers filled with different grades of carbon black

Stephan Rau, Wirtschaftsverband der deutschen Kautschukindustrie, Germany
Panel discussion: AZuR – A circular economy network

▶ Break

▶ Raw Materials

Bharat B Sharma, TWC Group, India
Non-Cobalt base adhesion promoters for steel tire cords

Katharina Gottfried, ARLANXEO, Germany
Developments in Krynac® NBR and Baypren® CR responding to recent health and safety demands

Jun Liu, Rain Carbon, Germany
Hydrocarbon resins in rubbers: Versatility meets functionality

TPE-Forum Hall München 1

CEST

▶ New developments for automotive sealing processes

08:30 Peter Radosai, LWB Steinl, Germany
08:55 **New ideas for new competitiveness – Vertical large-scale machines**

09:00 Moritz Hummel, Stefan Pfaff Werkzeug- und Formenbau, Germany
09:25 **New potential: How a small innovation for flexible profiles can revolutionize the production process in the sealing industry**

09:30 Ger Vroomen, Teknor Apex, Netherlands
09:55 **TPV based coolant hoses for plug-in hybrid electrical vehicles (PEHV) and battery electrical vehicles (BEV)**

10:00 Alexander Heinze, ALLOD, Germany
10:25 **New materials for EPDM/TPE hybrid applications**

10:30 **▶ Break**
10:55

▶ TPE and environment

11:00 Massimo Cattaneo, Sipol, Italy
11:25 **Co-polyester elastomers with renewable sources content**

11:30 Rocio de la Cruz Garcia, Covestro, Germany
11:55 **TPU as a driving force for more circularity: Mass balancing to support customers with high performance drop-in solutions**

12:00 Kristof Verschueren, Kraton Polymers, Germany
12:25 **Kraton high performance solutions to enhance sustainability and circular economy**

12:30 **▶ Break**
13:55

Student Session Hall München 2

Christian Egelkamp, Deutsches Institut für Kautschuktechnologie, Germany
Settings sensitivity of computed tomography based dispersion evaluation for CB-reinforced SBR and NR compounds

Carmela Mangone, University of Twente, Netherlands
Electrically conductive elastomers: Key factors and new insight in determining the percolation threshold

Hiron Raja Padmanathan, LIST, Luxembourg
Influence of silica surface area on fatigue crack initiation of silica filled S-SBR

Mithun Das, Indian Institute of Technology Kharagpur, India
Influence of ionic liquid modified graphene oxide on mechanical and self-healing application of an ionic elastomer

▶ Break

Saikat Das, Indian Institute of Technology Kharagpur, India
Morphology-property relationship of new mercapto silane grafted rubber/silica composites

Surya K P, Indian Institute of Technology Kharagpur, India
Enhanced failure resistance of natural rubber based tire tread composition using the synergistic reinforcement of nanofiber - carbon black dual reinforcing system

Pilar Bernal Ortega, University of Twente, Netherlands
Comparison of different techniques to measure crosslink density for silica filled tire tread compounds

▶ Break

TPE-Forum Hall München 1

CEST

▶ **Newest research in the TPE sector**

- 14:00 Markus Kämpfe, Leibniz-Institut für Polymerforschung, Germany
14:25 **Characterisation of flow behaviour of thermoplastic elastomers (TPE) – Effect of shear conditions on pressure-driven flow**
- 14:30 Axel Nechwatal, Thüringisches Institut für Textil- und Kunststoff-Forschung, Germany
14:55 **Effects of short fibers in thermoplastic elastomers**
- 15:00 Keisuke Chino, ENEOS, Japan
15:25 **Multi network elastomer using hydrogen bond, covalent bond, and clay plane bond**
- 15:30 Eric Euchler, Leibniz-Institut für Polymerforschung, Germany
15:55 **On the deformation and fatigue behavior of thermoplastic elastomers**

16:00
16:25▶ **Break**

Lecture Programme

▶ **Applications**

- 16:30 Bağdagül Karaağaç, Kocaeli University, Turkey
16:55 **Self-healing behaviour of lignin containing epoxidized natural rubber compounds**
- 17:00 Bettina Strommer, Bundesanstalt für Materialforschung und -prüfung, Germany
17:25 **Anisotropy in natural rubber / graphene nanocomposites**
- 17:30 José Santos, Cikautxo, Spain
17:55 **Strut mounts metal replacement & suspension bushings: Swaging effect on dynamic static ratio**

Student Session Hall München 2

Fabian Fey, Institut für Kunststoffverarbeitung, Germany
Novel approach to quantify the cross-linking degree of rubber parts by means of acoustic measurements

Julia Uth, Hochschule für angewandte Wissenschaften Würzburg-Schweinfurt, Germany
About the influence of fine mesh straining upon the rheological and physical properties of rubber compounds

Jannik Laages, Deutsches Institut für Kautschuktechnologie, Germany
Recycling of tire tread rubber

Anureet Kaur, Queen Mary University of London, United Kingdom
Development of self-healable and recyclable elastomers

▶ **Break**

Riya Koley, Indian Institute of Technology Kharagpur, India
Waste moringa oleifera gum: A sustainable multifunctional additive for rubber

Yasamin Mirzaei, Deutsches Institut für Kautschuktechnologie, Germany
A coupled chemical-mechanical model for oxidative ageing in elastomers

Martin Traintinger, Polymer Competence Center Leoben, Austria
Cycle time reduction in rubber injection molding – a numerical approach to optimize the process window and maintain the quality of the rubber part

Lecture Programme Hall Brüssel 1

CEST

▶ Testing

08:30 Dariusz Bieliński, Lodz University of Technology, Poland
08:55 **Advanced characterization of rubber**

09:00 Drahomír Čadek, University of Chemistry and Technology Prague,
09:25 Czech Republic
The gel in natural rubber – Differences of gel and sol materials

09:30 Peter Reichert, Freudenberg Technology Innovation, Germany
09:55 **Magnetic resonance imaging (MRI) of elastomer parts with a low-field NMR device for spatially resolved information on crosslink density and ageing**

10:00 Josef Ludwig, Ludwig Nano Präzision, Germany
10:25 **Anisothermal stress analysis to characterize local material inhomogeneities using dynamic micro-indentation**

10:30
10:55 **▶ Break**

11:00 Md Mahbubur Rahman, Hochschule Merseburg, Germany
11:25 **Investigation of the physicochemical properties of bio-based plasticizers for enhancement of the crack resistance behavior of carbon black filled SBR and NBR materials**

11:30 Thomas Rauschmann, Bareiss Prüfgerätebau, Germany
11:55 **Steady shear viscosity measurements of filled rubber compounds using new enhanced RPA technology**

12:00 Bernadette Schlüter, Fraunhofer-Institut für Werkstoffmechanik,
12:25 Germany
Determination of friction and wear of elastomers under different friction and environmental conditions

12:30
13:55 **▶ Break**

Hall Brüssel 2

▶ Applications

Zhicheng Zheng, Ultima, Germany
Active protection against corrosion under insulation by innovative system approach based on flexible elastomeric insulation foams

Friederike Kühne, Bundesinstitut für Risikobewertung, Germany
Revision of BfR recommendation XXI for commodities based on natural and synthetic rubber

Ulrich Giese, DIK Prüfgesellschaft, Germany
Elastomers in contact with drinking water – requirements, challenges, solutions

Nicole Holzmayr, HOFFMANN MINERAL, Germany
Safe and sealed: Neuburg siliceous earth in potable water gaskets (DIN EN 681-1)

▶ Break

▶ Sustainability

Fabio Bacchelli, Versalis, Italy
A multi-perspective model for sustainable synthetic rubber

Michael Carus, nova-Institut, Germany
Renewable carbon as a guiding principle for sustainable carbon cycles

Ruth Bieringer, Freudenberg FST, Germany
Contribution of a technical rubber goods' producer to sustainability

▶ Break

Lecture Programme Hall Brüssel 1

CEST

▶ Testing

14:00 Eric Euchler, Leibniz-Institut für Polymerforschung, Germany
14:25 Rubber failure analysis – About defect growth and crack propagation in vulcanizates

14:30 Christoph Gögelein, ARLANXEO, Germany
14:55 A simple statistical analysis of tensile strength data

15:00 Jens Meier, DVM Berlin, Germany
15:25 A round-robin test for the characterization of elastomer components

15:30 Stefan Frosch, Hochschule für angewandte Wissenschaften
15:55 Würzburg-Schweinfurt, Germany
Migration of sulfur in compounds filled with recycled ground rubber

16:00
16:25 ▶ Break

16:30 Bernhard Richter, O-Ring Prüflabor Richter, Germany
16:55 How long do rubber seals remain elastic? About the long-term behavior of O-rings and other elastomer seals in theory and practice

▶ Applications

17:00 Dominik Schramm, Cooper Standard, Germany
17:25 Extrudability rated by a 5 finger die – Evaluation of geometry factors for flow improvement

17:30 Marjan Hemstede-van Urk, ARLANXEO, Netherlands
17:55 Therban® HT – a polyamide reinforced HNBR with improved high temperature properties

Hall Brüssel 2

▶ Sustainability

Raffaele Bernardo and Philip Hough, ARLANXEO, Netherlands
Sustainability in the rubber world: green compounding

Amit Das, Leibniz-Institut für Polymerforschung, Germany
Next generation sustainable rubber compounds

Thuy Mai-Moulin, Emamou, Netherlands
Sustainability performance of natural rubber value chains: assure sustainable sourcing and intercontinental transport decarbonisation

Yukino Miyagi-Inoue, Sumitomo Rubber Industries, Japan
In vitro natural rubber biosynthesis by various prenyltransferases introduced onto rubber particles from *Hevea brasiliensis*

▶ Break

Florian Diehl, UPM Biochemicals, Germany
UPM BioMotion™ renewable functional fillers (RFF) for a lighter and more sustainable future

Larissa Gschwind, Hochschule Osnabrück, Germany
Recycling of EPDM rubber waste. Effect of diphenyl disulfide derivative on devulcanization and re-vulcanization process

Nicolas Sary, ARLANXEO, Germany
N-Nitrosamine free Baypren sulfur grade for dynamic applications

Educational Symposium

Hall München

CEST

08:30
09:25

▶ Rubber – an Introduction

Rüdiger Engehausen, ARLANXEO, Germany

- Polymer Types – Comparison of Properties
- Rubbers – Ways to Influence the Properties
- Production of Synthetic Rubber

09:30
09:55

▶ Break

10:00
11:25

▶ Simulation of Rubber Components

Jörn Ihlemann, Technische Universität Chemnitz, Germany;
Herbert Baaser, Technische Hochschule Bingen, Germany

- Material Models – Basics of Continuum Mechanics, Classification, Modeling Approaches
- Parameter Identification
- Simulation of Components – Finite Element Method, Modeling, Coupled Simulations

11:30
12:25

▶ Break

12:30
13:55

▶ Vulcanisation

Ulrich Giese, Deutsches Institut für Kautschuktechnologie, Germany;
Ruth Bieringer, Freudenberg FST, Germany

- Relation between Constitution and Properties of Networks
- Curing Systems
- Crosslinking Kinetics
- Curing with Sulfur and Accelerator
- Peroxid Crosslinking
- Curing without Sulfur

14:00
14:25

▶ Break

Hall München

CEST

14:30
15:55

▶ Mixing

Andreas Limper, Deutsche Kautschuk-Gesellschaft, Germany;
Maik Rinker, Harburg-Freudenberger Maschinenbau GmbH, Germany

- Definition of the Process Requirements
- Typical Configurations of Mill Rooms
- Internal Mixers, Designs and Characteristics
- Downstream Equipment
- Compounding Technology

16:00
16:25

▶ Break

16:30
17:55

▶ Rubber Extrusion

Frank Lennartz, Hutchinson, Germany;
Fabian Fey, Institut für Kunststoffverarbeitung, Germany

- Machine Design Types
- Die Technology
- Extruder Process Behaviour
- Profile Extrusion
- Compound / Process / Product Properties

18:00

▶ End

Lecture Programme Hall Brüssel 1

CEST

▶ Simulation

08:30 James Busfield, Queen Mary University of London, United Kingdom
08:55 Simulation and modelling of elastomers

09:00 Mariia Viktorova, Bergische Universität Wuppertal, Germany
09:25 A coarse grained model for the simulation of dynamic properties of filled elastomers

09:30 Jörn Ihlemann, Technische Universität Chemnitz, Germany
09:55 Structural mechanics of hybrid cord rubber composites

▶ Break

10:30 Rainer Kreiselmaier, Freudenberg Process Seals and Christoph Naumann,
10:55 Freudenberg Technology Innovation, Germany
Predictive maintenance by smart sealing technologies

11:00 Noah Mentges, Institut für Kunststoffverarbeitung, Germany
11:25 Simulative implementation of the influence of the load direction on the long-term behaviour of thermoplastic elastomers

11:30 Rebecca Wolff, SKZ – KFE, Germany
11:55 Experimentally validated, numerical simulation of viscoelastic rubber melts with emphasis on filler-polymer interactions

▶ Break

12:30 Georg Weinhold, MAGMA, Germany
12:55 Integrative simulation of mechanical behavior of injection modeled parts

13:00 Kevin Klier, Universität Kassel, Germany
13:25 Simulative representation of an LSR injection molding process

▶ End

Hall Brüssel 2

▶ Future Mobility

Andreas Würsig, Fraunhofer-Institut für Siliziumtechnologie, Germany
Status and current developments of energy storage systems for the E-mobility

Manfred Stefener, Freudenberg Fuel Cell e-Power Systems, Germany
Technical expertise meets power to industrialize

Nahal Wesemann, ARLANXEO, Germany
Improving the elastomer sealing performance in hydrogen fuel cells

▶ Break

Matthieu Wolff, REP, France
Fuel cells gaskets molding in automatic

Nadia Vleugels, Kiwa, Netherlands
Hydrogengas compatibility of soft materials

Martin Bellander, Scania, Sweden
DLO effects of rubber in oil for heavy truck electric powertrains

▶ Break

David Kistner, DuPont, Germany
Are we part of the future? Rubber to plastic combination on the path towards light weight mobility

Panel Discussion
Future Mobility

▶ End

Educational Symposium Hall München

CEST

08:30
09:25

▶ Thermoplastic Elastomers – An Overview

Norbert Vennemann, Hochschule Osnabrück, Germany

- Definition of Thermoplastic Elastomers – Distinction between Thermoplastic and Elastomer Materials
- Classification of TPE Material Groups Based on their Phase Morphology
- TPE Materials Properties, Physical and Chemical Performance, Limitations
- Processing of TPE, Characteristics
- Areas of Application, Market Potential, Ongoing Developments

09:30
09:55

▶ Break

10:00
11:25

▶ Reinforcement

Michael Warskulat, Orion Engineered Carbons, Germany;
André Wehmeier, Evonik Operations, Germany

- Definition of Reinforcement
- Influence of Morphology and Surface Activity of Fillers
- Influence of Polymer-Filler-Interaction
- Effects of Reinforcement on Dynamic Mechanical Properties and Life Time

11:30
12:25

▶ Break

Hall München

CEST

12:30
13:55

▶ Rubber Injection Moulding

Clemens Behmenburg, LWB Steinl, Germany;
Clemens Wiesel, Institut für Kunststoffverarbeitung, Germany

- Machine Design Types
- Tooling Technology
- Rheological and Thermal Layout
- Runner Systems
- Injection Moulding Process
- Factors Influencing Finished Part Properties
- Process Control

14:00
14:25

▶ Break

14:30
15:25

▶ Rheology

Harald Geisler, Deutsches Institut für Kautschuktechnologie, Germany;
Gerard Nijman, KraussMaffei Extrusion, Germany

- Rheology in General
- Rheological Phenomena Relevant for Rubber Processing
- The Influence of Fillers and Plasticizers on Rheological Properties
- The Importance of Rheological Properties for Processing
- Testing of Rheological Properties

15:30

▶ End

Poster Session

- 01** Sahbi Aloui, Erich Netzsch, Germany
Application-oriented understanding of the mechanical behavior of elastomeric materials using the simultaneous dynamic-mechanical and dielectric analysis
- 02** Vitaly Boiko, Institute of Macromolecular Chemistry, Ukraine
Some practical applications of functionalized liquid rubbers
- 03** Simon Braun, Klöckner DESMA Elastomertechnik, Germany
DESMA SmartConnect 4.U Ecosystem – Basis on the way of digital transformation
- 04** Duane da Silva Moraes, Unisinos, Brazil
Epoxidized natural rubber as a possible self-healing material
- 05** Alfredo Defrancisci, Arkema, France
Luperox® Air XL3™ organic peroxide for crosslinking EPDM in hot air with improved ageing properties
- 06** María del Mar Vizcaíno Vergara, KTH Royal Institute of Technology, Sweden
Improved torsional pendulum method for the characterisation of the viscoelastic behaviour of filler reinforced rubber
- 07** Metin Erenkaya, Arsan Kaucuk Plastik Makine, Turkey
Evaluation of liquidambar orientalis mills as a natural resin in natural rubber compounds
- 08** Joseph Hallett, Birla Carbon, United Kingdom
Bending towards circularity – sustainability in the carbon black industry
- 09** Niklas Hanne, Deutsches Institut für Kautschuktechnologie, Germany
Spatially resolved investigation of dynamic crack growth for carbon black reinforced SBR
- 10** Lukas Hermeling, Universität Siegen, Germany
Optimization of final-mixing processes
- 11** Halit Levent Hosgun, Bursa Technical University, Turkey
Investigation of the rheological, mechanical and flammability of ethylene/acrylic elastomer (AEM)
- 12** Johannes Jennissen, RADE, Germany
Automation of laboratory – comparative testing
- 13** Klaus Kammerer, DuPont de Nemours, Germany
Requirements for elastomers in E-Mobility and how these can be met with Vamac® (AEM) Ethylene Acrylate Polymers
- 14** Bağdagül Karaağaç, Kocaeli University, Turkey
Improving fluoroelastomer/silicone rubber interphase adhesion by using wollastonite
- 15** Ehsan Khoshbazzm Farimani, Baspar Sazeh Toos Co, Iran
Optimization of hybrid curing system for CSM rubber compound with simultaneous improvement in properties, using RSM methodology
- 16** Ján Kruželák, Slovak Technical University, Slovakia
Electromagnetic absorption properties of rubber magnetic composites
- 17** Stefan Mark, L. Brüggemann, Germany
Materials for easier rubber mixing using reactive extrusion technology
- 18** Martin Müller, Deutsches Institut für Kautschuktechnologie, Germany
Correlation between phase morphology, nanoscopic and macroscopic viscoelastic response of SBR-NR blends characterized by AFM and DMTA
- 19** Hans Naus, Kiwa, Netherlands
Radiation sealing materials for nuclear power plants
- 20** Reinhold Pommer, Polymer Competence Center Leoben, Austria
Shape-memory effect in EPDM/thermoplastic-blends

Poster Session

- 21** Roberto Quintana, Luxembourg Institute of Science and Technology, Luxembourg
Revealing the phase-specific chemical structure of PI/BR blends by nano-spectroscopy with AFM-IR
- 22** Nikolaus Rennar, Würzburg, Germany
The role of activators in accelerated rubber vulcanization: Recent developments and novel materials
- 23** Steven Roß, Deutsches Institut für Kautschuktechnologie, Germany
Impact of rheology characterization methods on mold filling simulation quality for an EPDM/CB compound
- 24** Alicia Rul, Nanocyl, Belgium
Optimization of a low rolling resistance tire tread formulation with the use of NC7000™ multi wall carbon nanotubes and HSE aspects
- 25** Omidreza Sadryazdi, Baspar Sazeh Toos Co, Iran
Improving fatigue life of NR compound by optimization grades and contents of carbon blacks
- 26** Péter Sebö, Quarzwerke, Germany
Small fillers – Big impact!
- 27** Sebastian Siebert, Deutsches Institut für Kautschuktechnologie, Germany
Modelling and experimental characterisation of cellular rubber considering the microstructure's influence on the macroscopic mechanical behaviour
- 28** Dipak Singh, Danfoss Technologies, India
High performing new rubber composition for hydraulic hose inner tube
- 29** Vanessa Spanheimer, Technische Hochschule Köln, Germany
Flex resistance of NBR compounds for different temperatures before and after the exposition in mineral oil
- 30** Vanessa Spanheimer, Technische Hochschule Köln, Germany
Tire wear airstrip particles (TWAP) as alternative to ground tire rubber in an aircraft tire tread compound
- 31** Patrick Spies, BASF, Germany
Ultradur® and Ultramid® – Tailor-made products for a wide range of mandrel diameters
- 32** Auke Talma, University of Twente, Netherlands
The Elastomer Competence Center: From science to application technology
- 33** Maike Tebben, Deutsches Institut für Kautschuktechnologie, Germany
Characterization of material inhomogeneities from crosslinking in polymer blends
- 34** Sreethu T K, Indian Institute of Technology Kharagpur, India
Investigation on the impact of ZnO having various surface characteristics in natural rubber/carbon black composites
- 35** Tomas Vilniškis, Vilnius Gediminas Technical University, Lithuania
Sound absorption properties of newly created rubber granules boards
- 36** Damian Williams, Rubber Nano Products, South Africa
Novel ionic liquid activation for improved sulfur based vulcanization: real case studies and effects when using Activ8/Premix Acti8

DKG Science Campus and Trade Fair

June 27 – 29
June 30

9.00 a.m. – 6.00 p.m.
9.00 a.m. – 4.00 p.m.

▶ The DKG Science Campus is located at the main entrance to exhibition hall 9

- Deutsches Institut für Kautschuktechnologie e. V.
- Fraunhofer-Institut für Mikrostruktur von Werkstoffen und Systemen IMWS
- Fraunhofer-Institut für Molekularbiologie und Angewandte Ökologie IME
- Fraunhofer-Pilotanlagenzentrum für Polymersynthese und -verarbeitung PAZ
- Institut für Kunststoffverarbeitung (IKV) in Industrie und Handwerk an der RWTH Aachen
- Technikerschule Gelnhausen
- Technische Hochschule Bingen
- Polymer Competence Center Leoben GmbH
- Universität Siegen

▶ The Trade Fair is located in the exhibition halls 8 and 9


Companies from all over the world will present their products and novelties at the DKT IRC 2021: Finished products, raw materials, adjuvants, testing and analytic equipment and apparatus as well as special industry software.

Preliminary list of exhibitors

▶ SOLUTIONS

Companies will present their products and services in the DKT FORUM located in hall 8 of the trade fair.

The detailed event programme „SOLUTIONS“ will be available [for download](#) from the beginning of June 2022.



Social Events

CEST

18:00
22:00

▶ **Barbecue**
Messe Nürnberg, Exhibition Park

The German Rubber Society (DKG e. V.) cordially invites you to the "Barbecue at the Exhibition Park". At the splendid verdancy between exhibition hall and lecture location we are reviving the worldwide rubber and elastomer-network.

This evening is dedicated to reunion or making new acquaintances, to sharing interesting talks with colleagues and friends.



The event starts right after the end of the fair and the conference programme.

39,00 € (incl. buffet and beverages)

We would be pleased to meet you!

Please register until **June 10, 2022** for the "Barbecue at the Exhibition Park" (limited tickets).

CEST

18:00
19:30

▶ **Best of-Party: Fair Appearance | IRCO Student Prizes**
Messe Nürnberg, Foyer NCC Mitte

The German Rubber Society (Deutsche Kautschuk-Gesellschaft e. V.) awards prizes for

- **the best large and the best small trade fair stand at DKT IRC 2021**
- **the best presentation and the best poster by students (IRCO Student Prizes)**

Price winners will be elected as result of a public voting.

The event starts right after the end of the fair and the conference programme.

Free entrance (incl. snacks and beverages)

We would be pleased to meet you!

Please register until **June 10, 2022** for the "Best of-Party" (limited tickets).

Participation Fees · Organizational Information

Participation Fees

4-Days-Ticket Conference and Fair:

Members of DKG	€ 690,-
Non Members	€ 990,-
Retired Members of DKG	Free
Retired Non Members	€ 200,-
Speaker (Industry)	€ 550,-
Speaker (Academia)	Free
Journalists	Free
Students of Rubber Related Courses	Free

Day-Ticket Conference and Fair

Members of DKG	€ 390,-
Non Members	€ 450,-

TPE Forum, Student Session and Educational Symposium are included in the admission to the conference.

Pursuant to § 4 subsection 22 UStG (Turnover Tax Law), participation fees are exempt from Value Added Tax.

Barbecue (incl. buffet and beverages) € 39,-

Best of-Party (incl. snacks and beverages) Free

Day-Ticket Fair

Access to the fair, fair catalogue € 37,-
Access to the Poster Show, Science Campus, SOLUTIONS

Day Ticket Fair & Barbecue (27.06.2022) € 72,-

Access to the fair, fair catalogue
Access to the Poster Show, Science Campus, SOLUTIONS

Catalogue

The fair catalogue will be available on site.



Registration

Conference Documents

Participants of the scientific conference obtain a passcode for an online platform where they can download the written reports of the presentations.

Cancellation

No return or refund of **conference tickets** is permissible **after June 10, 2022**.

No return or refund of **tickets** for the **fair** and participation at the **Barbecue** is permissible.

Conference Venue

NürnbergMesse GmbH
Messezentrum 1
Karl-Schönleben-Straße (Address for navigation system)
D-90471 Nürnberg

Lecture Programme

NCC Nürnberg Convention Center
NCC Mitte: Hall Brüssel 1 + 2, Hall München 1 + 2

Duration of the Conference

June 27 to 30, 2022

Trade Fair

The DKT IRC 2021 is linked with a fair in **hall 8 and hall 9** of the Exhibition Center Nürnberg

Opening Hours of the Trade Fair

June 27, 2022 9.00 a.m. – 6.00 p.m.
June 28, 2022 9.00 a.m. – 6.00 p.m.
June 29, 2022 9.00 a.m. – 6.00 p.m.
June 30, 2022 9.00 a.m. – 4.00 p.m.

Organizer

Deutsche Kautschuk-Gesellschaft e. V. (DKG)

Conference Secretariat

Deutsche Kautschuk-Gesellschaft e. V.
Ms. Ulrike Weber
Zeppelinallee 69 · D-60487 Frankfurt am Main
Phone: + 49 69 / 7936-154
E-Mail: info@dkg-rubber.de
Internet: www.dkg-rubber.de · www.dkt2021.com

Organizational Information

Opening Hours of the Conference Office, NCC Mitte

June 27, 2022 8.30 a.m. – 6.00 p.m.

June 28, 2022 8.00 a.m. – 6.00 p.m.

June 29, 2022 8.00 a.m. – 6.00 p.m.

June 30, 2022 8.00 a.m. – 4.00 p.m.

Phone: + 49 911 / 8606-6165

Fax: + 49 911 / 8606-6166

Hotel Room Reservation

Congress- und Tourismus-Zentrale Nürnberg

Frauentorgraben 3

D-90443 Nürnberg

Phone: + 49 911 / 2336-121, -122

Fax: + 49 911 / 2336-166

E-Mail: tourismus@nuernberg.de

Internet: www.tourismus.nuernberg.de

Booking Link

After the entry of your room reservation the Congress- und Tourismus-Zentrale Nürnberg will send you a confirmation about your accommodation in Nürnberg. You will pay for the room directly at your hotel.

Restaurant

For the duration of the conference and the fair, the restaurants will be open all day.

Medical Services

There is a first-aid station on the spot. Please consult the conference office for information concerning doctors and dentists.

Parking Facilities

There is an adequate number of parking spaces available in the immediate vicinity nearby: Area **West/Mitte/Süd**.

Taxi

There is a taxi stand in front of the ConventionCenter **Entrance West**.

Getting to NürnbergMesse

Accessibility

The **Albrecht Dürer Airport Nürnberg** is very close situated to the city. There are non-stop flights to Nürnberg airport from European capitals. The closeness of the international airports Frankfurt, Munich, Zurich, Amsterdam and Paris ensures connections to the intercontinental flight network.

In 12 minutes' time the **underground line U 2** carries passengers directly from Nürnberg airport to the main train station Nürnberg.

Railway passengers will reach Nürnberg by ICE-, IC-/ EC or IR-trains in every hour intervals.

In 8 minutes' time the **underground line U 1** carries passengers directly from the main train station to the exhibition center.

For the approach by car there are several access roads to the city transport network Nürnberg-Fürth-Erlangen as well as to the most important motorways.

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TPE Forum

VDI FA Polymere Ingenieurwerkstoffe

Organisation DKT IRC 2021

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