

e-RUBBERCON 2020 - PARIS

- . Sustainable Materials
- . Health & Safety
- . Processing
- . Properties & Environment Impact Performances
- . Applications & Use
- . End of Life of Rubbers

LinkedIn



Special Issue

11 & 12 February 2021



Ladies and Gentlemen, Dear colleagues from IRCO and AFICEP,
It was a great pleasure for AFICEP and myself to welcome you to this RubberCon 2020.

As you can imagine, it was very difficult to organise such a meeting, first in a face-to-face format in Paris in a very friendly venue and then by videoconference.

We had to make a lot of decisions, sometimes painful choices, to get to this day. I would like to thank the office and its understanding of day-to-day events.

It should have been a real pleasure for AFICEP to welcome you to a prestigious venue right next to the Eiffel Tower.

The virus decided otherwise.

So we converted our event into a virtual one and you followed us.

AFICEP would first like to thank you for this choice.

When we launched the call for papers in 2020, we did not think we would be able to offer you such a rich and dense program with 60 high-quality conferences.

It is a great pride for us and for IRCO to concretise through this program your involvement in our RubberCon and to feel your scientific interest in such an event.

For an optimal organisation of this congress, we have set up three committees: an Organising Committee, a Scientific Committee and an International Supervisory Committee.

Each of its members has played its part to the fullest: we would like to thank them personally and also on behalf of your company.

A special mention goes to the members of the Scientific Committee who had the difficult task of selecting the speakers and then validating their video proposals.

A huge thanks also to the members of our office who, given covid, met virtually on numerous occasions with a constructive spirit, always in a good mood, even on the eve of the event.

My thanks also go to all our sponsors without whom this congress would probably not have taken place. Many thanks also to all the companies that have committed themselves in the form of a stand.

In these thanks, how could we forget IRCO and its two representatives, Matthew and Jacques, who were able to listen to all the problems we have encountered over the last two years and God knows there have been many of them. Many thanks to both of them.

Finally, I would like to thank all the people, companies and organizations who have supported this event for two years.



We have worked hard to make this congress a success. I would like to thank Julien in particular, whom you got to know without even meeting him.
A big thank you to all of you.

To conclude, I would like us to have a big thought for our Korean friends and their Organising Committee, whom we strongly support and who we all hope will be hosting at the end of 2021 a new RubberCon.

Philippe DABO
AFICEP Chairman



Opening conference
Philippe DABO (AFICEP)



Opening conference
Matthew THORNTON (IRCO)



AUSTRIA	1
BELGIUM	2
CHINA	1
DENMARK	1
FRANCE	20
GERMANY	8
JAPAN	1
LUXEMBOURG	1
NETHERLANDS	1
SPAIN	7
SWEDEN	1
SWITZERLAND	1
TURKEY	4
U.K.	5
USA	8

1 with U.K.

1 with Germany

64

62 2



Visiteurs / Visitors

173

Nb visionnages des vidéos conférences /
Number of views of conference videos

5679

Visites des stands /
Booths Visits

391

Documents téléchargés /
Downloaded documents

239



Closing conference
Jean-Pierre QUESLEL (LRCCP)

Livre d'OR

Bonsoir Philippe,
Impatiente de me connecter,
Raffaella Ciampa

08/02/2021

Dear Philippe,
Thanks a lot, it was a pleasure.
The event will be successful, we have to optimistic.
Thank for the organization in these difficult times.
It was a pleasure.
Best Regards
Ulrich Giese

Dear Philippe Dabo,
Thank you for the opportunity and we are sure that the event will
be a success.
Best regards,
André Mautone

09/02/2021

Dear Philippe,
Thank you for your kind invitation. I wish successful meeting to
you, your team and all participants.
Best wishes.
Murat Şen

10/02/2021

Bonsoir,
Nous sommes très heureux d'être partenaires de l'événement.
Très cordiales salutations,
Patrick Vuillemoz

Bonjour Mr Dabo,
Merci pour cette invitation, les interventions ont l'air intéressantes et
je serais heureux de pouvoir les écouter.
Thomas Grandin

11/02/2021

Bonjour,
Félicitations pour avoir réussi le passage au numérique.
Tangi Sénéchal

Bonjour Julien et Philippe,
J'allais justement vous écrire un mail pour vous féliciter !!!
C'est super !!!
C'est un énorme boulot que vous avez fait avec toute l'équipe qui a
préparé l'organisation, les conférences, les conférenciers.
Le choix technique du support informatique est excellent et la
technique d'accès et de navigation est parfaite, le timing super précis.
On peut avancer, reculer dans les présentations, revoir un passage,
un slide. Emballé
Amitiés
Maurice Navarro

Bonjour,
J'ai particulièrement apprécié le fait que les participants,
même sans remarque spécifique sur la présentation,
remercient le présentateur.
Cela souligne la bonne ambiance du congrès. C'est très
agréable.
Bien cordialement
Karine Mougín

Julien,
Thank you and congratulations on your virtual conference. All went well for us this morning. We very much appreciate being included in this
conference, and are enjoying seeing the work of the other presenters.
Best to you!
Gigi Obrecht

Livre d'OR

Dear Julien,
Thank you for the organization and all the communication.
I know how much work this means.
Best Regards
Ulrich Giese

12/02/2021

Bonjour Julien,
Merci à vous pour cette organisation formidable.
Mit freundlichen Grüßen / Best regards
Sahbi Aloui

Dear Julien,
Very much enjoyed day 1 of the conference, you and your team have done a fantastic job in making this virtual event. Thank you for the invitation to take part.
Have a great day!
Best wishes,
Ruhi Patel

Merci à Philippe, Bruno et Julien,
La possibilité de mettre en pause, revenir en arrière, c'est vraiment utile.
Donc en fait il y a aussi du bien dans cette version online.
En tout cas selon moi c'est globalement un bilan très positif !
Cordialement,
Alfredo Defrancisci

Dear Philippe, Julien and Matthew,
Congratulations on a successful Rubbercon, in spite of all the restrictions you had to face because of Covid. I must admit that it was my first virtual conference and that I was a bit skeptical how it would work out. But overall I am more satisfied than usual with normal conferences. It needed a bit of "organizing", but it worked. Well done!
Best Regards,
Jacques W. M. Noordermeer

Dear Julien,
Congratulations for the complex organization of this on-line congress.
Best regards,
Juan Lopez Valentin

Bonjour à tous,
C'est fait !
Le point le plus important, pour moi, c'est que les confs étaient vraiment d'un bon niveau général, voire d'un très bon niveau pour certaines, et que les speakers ont vraiment respecté le temps.
Techniquement, la plateforme est assez performante.
En tout cas un grand merci à Philippe, Bruno et Julien, qui ont vraiment bien e-géré l'e-organisation de l'e-RubberCon
Et merci à tous, j'ai apprécié travailler avec vous pour la préparation de l'événement
Bon weekend
Emmanuel Richaud

Bonsoir Monsieur Sorbon,
Toutes mes félicitations pour cette belle réussite et toute mon admiration pour la compétence dont vous et votre équipe avez fait preuve dans l'organisation de cet événement !
Je tiens à vous remercier aussi pour votre gentillesse et l'attention portée aux conférenciers.
Bien cordialement !
Brigitte Laquière

Bonjour à vous deux,
Toutes mes félicitations pour la parfaite organisation de RubberCon.
C'était vraiment facile à suivre et le programme était très intéressant.
Merci beaucoup pour tous vos efforts pour rendre l'AFICEP si attrayante.
A bientôt j'espère
Christophe Rognon

Livre d'OR

Bonjour Philippe ,
Super choix du média de communication, Youtube a été super pratique dans l'accès aux conférences.
Et puis j'ai trouvé qu'il y avait non pas la moitié, mais un bon tiers de conférencières, ce qui montre l'intérêt croissant des femmes pour la chose scientifique contrairement à ce qui est dit en général.

Amitiés
Maurice Navarro

13/02/2021

Bonjour Philippe, et bonjour Julien,
Félicitations pour l'organisation et le programme de ce WEBINAR AFICEP RUBBERCON.
En ce qui me concerne, tout s'est parfaitement déroulé, aucun problème .
Ayant participé à l'organisation de la conférence ETRA pendant de longues années, je sais que c'est déjà difficile, mais en virtuel, j'imagine que cela est encore plus compliqué.
Bon week end à vous !
Bien cordialement,
Jean-Paul Bouysset

Dear Julien,
First of all, I would like to express my compliments for the great conference organization and the high quality of the presentations.
Congratulations!
Best regards,
Roberto Pérez Aparicio

15/02/2021

Dear Julien,
Thanks again for organizing the brilliant conference.
Best regards,
Florian Diehl

Dear Julien,
The conference was very useful and impressive.
Thanks for all.
Saygılarımla, Best Regards,
Ezgi Erbek Cömez

Bonsoir,
Je me joins aux félicitations pour les organisateurs de l'évènement dans des conditions vraiment pas faciles.
J'ai apprécié de pouvoir regarder les conférences en décalé, que le chat soit ouvert.
La majorité des présentations vues étaient de très bonne qualité.
Au plaisir de débriefer avec vous.
Bon week-end à tous.
Edith Peuvrel-Disdier

Bonsoir,
Je souhaiterais vous féliciter pour le bon déroulement de cet événement. Vous avez dû beaucoup travailler pour régler toutes sortes de difficultés !
Bien cordialement
Laina Guo

16/02/2021

Dear Philippe,
Thank you RubberCon 2020 organiser, you in particular, for inviting me to attend the e-RubberCon 2020.
It has been a difficult time for everyone concerned to try to live and adapt to the Covid-19 pandemic.
I am writing to congratulate you and your colleagues for the courage to organise the RubberCon 2020, despite all the unfavourable conditions experienced. The results were excellent which surely will provide a future model for others to follow. The content of the Conference were also interesting. I myself have learned a lot from the scientific and technological progresses reported.
So, very well done to you and your team once again.
Hope to see you in person at the next IRC and RubberCon. Let's hope that they can be organised.
Best regards,
Krisda Suchiva

Dear Philippe and Julian,
I enjoyed the conference and it was so great.
The conference was so well organized and ran very well.
Stay healthy and strong.
Best regards,
Eunkyung Kim

Dear Julien,
It was a pleasure to be part of the e-RubberCon, which as you say was a historical event. Many thanks and well done to you all for this great organization.
Best Regards
Kamyar Alavi

Livre d'OR

Hi Julien,
Thanks a lot for the chat and thanks also for the great conference. It was a pleasure being part of it.
Best regards from Aachen,
Timo Gebauer

It was my pleasure!
Iyi çalışmalar
Halit Levent Hosgün

Thank you very much Julien!
As I said before, very interesting and well organized conference! Bravo!
Best regards,
Roberto Pérez

17/02/2021

Bonjour,
Les interventions étaient très intéressantes et de qualité, j'ai passé un bon moment et vous remercie encore de votre invitation.
Bien cordialement,
Philippe Zinck

Hi Julien,
Please give my thanks to all the organising committee for all their hard work. It truly was an excellent conference and for a first time online, it ran exceptionally smoothly. Thank you for giving me the opportunity to present my work and I wish you all the best for the future.
Thank you once again,
Kind regards
Jamie Boden

Bonjour Julien,
Bravo pour le RubberCon, j'ai trouvé le format très intéressant et finalement on gagne du temps. C'est une bonne expérience.
Bonne journée
Jean-Philippe Faure

Thank you Julien.
It was a pleasure to participate!
Stay safe and healthy.
Best regards,
Mandana MacPherson

Dear Julien,
It was also a honor for me to have an oral presentation in the conference.
Hope to have this type of meetings face to face in future.
Thanks again for your support and nice organization.
Saygılarımla/ Best Regards
Gökçe Bakiler

Bonjour,
Merci à vous également pour la superbe organisation de ce congrès !
Bien cordialement
Chloé Simet

Dear Julien and AFICEP,
Thank you very much for the organization of this event and for giving me this opportunity.
Have a good day and keep safe,
Pilar Posadas

Bonjour Julien,
Tout d'abord félicitations pour l'organisation de cette édition RubberCon si particulière.
C'était très bien.
Bien cordialement,
Manon Guyader

Bonjour,
À mon tour de vous remercier pour votre confiance et surtout pour cette très belle organisation.
Le programme était très riche et l'organisation sans faille !! Je vous souhaite d'excellentes retombées des suites de cet événement.
Au plaisir de vous retrouver lors de prochains événements.
Bien cordialement,
Carine Lefèvre

e-RUBBERCON 2020 - PARIS

Sustainable Materials

Nanofibrillated Cellulose as a Special Type of Renewable Material as Filler for Lightweight Elastomers

Ulrich GIESE DIK
GERMANY

Biobased Synthetic Rubbers and TPEs Based on Myrcene

Philippe ZINCK UCSC – UNIVERSITÉ DE LILLE
FRANCE

Towards a European Dandelion Rubber Supply Chain!

Michel DORGET CTTM
FRANCE

Design and Preparation of Functionalized Elastomer from Itaconic Acid Resource

Runguo WANG BEIJING UNIVERSITY OF CHEMICAL TECHNOLOGY
CHINA

Improving the Processing Properties of SBR-Silica Compounds by the Addition of Neuburg Siliceous Earth

Carine LEFÈVRE XATICO BENELUX FRANCE
LUXEMBOURG

An Overview of CIRAD and Partners' Research Activities to Address the Question of the Variability of Latex and Natural Rubber Quality

Céline BOTTIER CIRAD
FRANCE

ARBOCEL® natural cellulose fibers for sustainable rubber composites

Kim FLAIG J. RETTENMAIER & SÖHNE
GERMANY

Towards a European Guayule Rubber Supply Chain!

Michel DORGET CTTM / GUATECS
FRANCE

Factice, a Bio-based Additive for Rubber Industry

Élodie MICHEL LEFRANT RUBCO
FRANCE

The Best of Two Worlds: Conventional and Hybrid Renewable Naphthenic Oils as Plasticisers for Rubber Materials

Kamyar ALAVI NYNAS
SWEDEN

Health & Safety

Social Responsibility, Health and Environment: A Global Worldwide Policy of Sustainable Management of Chemical Substances

Philippe ROLLAND GROUPE RENAULT
FRANCE

Rubber Reinforcement by In-situ Generated Non Isocyanate Polyurethane (NiPU) for Lightweighting

Laina GUO HUTCHINSON CRI
FRANCE

Imerys Technical Mineral Fillers for Reduced Environment Impact in Rubber Applications

Juliette CAUCHY & Gilles MELI IMERYS
FRANCE

Micro Rubber Quantification Using Raman Microscopy

Morten NORMANN-FYHN DANISH TECHNOLOGICAL INSTITUTE
DENMARK

Societal Acceptability of Technological Innovations: What Future for Plastics and Rubber?

Brigitte LAQUIEZE ACADÉMIE D'AGRICULTURE DE
FRANCE

Non Eco-toxic Zinc Activator for Rubber to Provide Sustainable and Environmental-friendly Materials

Arnaud PIPERS SILOX
BELGIUM

The Energy Transition Journey Towards a Downstream Sustainable Future

Miguel Angel GARCIA GARREÑO & Gloria MONTEALEGRE GARCIA
REPSOL TECHNOLOGY LAB RLESA: SPECIALTIES BUSINESS
SPAIN

Ecodesign: As Solution to Control Environmental Impacts of Polymers through their Entire Life Cycle?

Carole CHARBUILLET ENSAM
FRANCE

How to Face the Challenges of the Ecological Transition by Integrating Environmental Impact Measures, Eco-design and Eco innovation?

Claire JACQUET-LASSUS APESA
FRANCE

Thursday February 11

Processing

How to Reduce your Waste and Improve your Profitability?

Isabelle YARZABAL MLPC INTERNATIONAL
FRANCE

HSM: A Rubber Recycling Solution

Rodrigo DIAZ REP INTERNATIONAL
FRANCE

Environmental Challenges Related to Silicone Rubber Processability

Marie MANGAVEL HUTCHINSON CRI
FRANCE

Evaluating the Processing Properties of Natural Rubber Composites for Paper Coating Applications

Pieter SAMYN HASSELT UNIVERSITY
BELGIUM

Improving the Cure Performance of Ultra Accelerators Using a New Thiazole Free, Nitrosamine Safe Delayed Action Curative

Ranvir VIRDI ROBINSON BROTHERS
U.K.

Energy Consumption and Quality-Productivity Compromise in Rubber Molding

Rémi DETERRE
UNIVERSITÉ DE NANTES
FRANCE

Ecological Design of Nitrile Glove Production: Quantifying the Benefit of a New Nitrile Emulsion Production

Tangi SÉNÉCHAL MATERIANOVA / SYNTHOMER
BELGIUM / U.K.

Improving Physical Properties of Rubber Compounds Containing Devulcanized Rubber

Frank PAPPAS ACE PRODUCTS & CONSULTING
U.S.A.

Modelling of Reversion Effects in Injection Molding Process

Timo GEBAUER SIGMA ENGINEERING
GERMANY

Friday February 12

Properties & Environment Impact Performances*Influence of Network Structure in Rubber Elasticity***Fernando MARTIN SALAMANCA** INSTITUTO DE CIENCIA Y TECNOLOGÍA DE POLÍMEROS
SPAIN*Levapren NPG - a Functional EVM as Impact Modifier in Biodegradable Thermoplastic Materials***Andreas KAISER** ARLANXEO
GERMANY*New Struktol Plasticizers for Improved Service Life of Tire Curing Bladders***Eleonora DOEHL** SCHILL + SEILACHER "STRUKTOL"
GERMANY*Simultaneous Dynamic-mechanical and Dielectric Analysis to Improve Understanding of the Behavior of Elastomeric Materials During Application***Sahbi ALOUI** NETZSCH GERÄTEBAU
GERMANY*New Insights in the Structure-Property Relationships of CNT Rubber***Juan LOPEZ-VALENTIN** INSTITUTO DE CIENCIA Y TECNOLOGÍA DE POLÍMEROS
SPAIN*Understanding the Effect on Cross-linking on the Self-healing Ability of Epoxidised Natural Rubber (ENR)***James BODEN** UNIVERSITY OF BATH
U.K.*Influence of Formulation and Processing Conditions on Network Structure, Material Properties and Lifetime under Dynamic Load of Sulfur Cross-linked NR/BR***Franziska KIRSCH** FRAUNHOFER INSTITUTE FOR STRUCTURAL DURABILITY AND SYSTEM RELIABILITY LBF
GERMANY*Basalt Fiber Reinforced EPDM Composites - Rheological and Mechanical Properties***Gökçe BAKİLER** ERENLI SAÇ PROFİL KAUKUK VE PLASTİK
TURKEY*Thermo-reversible Supramolecular Polyurethanes Based on PCL with Self-healing Behaviour***Rodrigo NAVARRO** INSTITUTO DE CIENCIA Y TECNOLOGÍA DE POLÍMEROS
SPAIN**Application & Use***Environmental and Regulatory Issues on Polymer Materials Applied to the Automotive Industry - PSA Expectations and Needs***Maurice CARFANTAN & Sophie RICHET** PSA GROUPE
FRANCE*Ethylene Acrylate Elastomers – A Perfect Fit for Requirements in E-Mobility***Serge BOUVIER** DUPONT
U.S.A.*Damping Materials Based on Liquid Poly(butadienes): Structure-Property Relationships***Olivier DEFRAIN** TOTAL CRAY VALLEY
FRANCE*A New Fluoroelastomer Precompound for Improved Durability in the Most Demanding Turbocharger Hose Applications***Éric CHAUVIGNÉ** CHEMOURS INTERNATIONAL OPERATIONS
U.S.A.*Development of EPDM Rubber Compounds to Enable Automotive Lightweighting***Varun THAKUR** DOW EUROPE
U.S.A.*New Generation of Renewable Functional Fillers for Automotive Lightweight Applications***Florian DIEHL** UPM GMBH
GERMANY*Improvement of Low Dense EPDM Based Compound for Sealing System for Vehicles***Yusuf GÜNER** STANDARD PROFIL
TURKEY*Development of a Novel Rubber as Damping Interlayer in Lightweight Armor Applications***Janis KARL** FRENCH-GERMAN RESEARCH INSTITUTE OF SAINT-LOUIS
FRANCE / GERMANY*Application: Fuel Cell Stacks Gaskets Molding in Automatic***Matthieu WOLFF** REP INTERNATIONAL
FRANCE*New Insights into Silica-reinforced Tire Tread Compounds Based on Carboxylated Styrene Butadiene Rubber***Pilar POSADAS** INSTITUTO DE CIENCIA Y TECNOLOGÍA DE POLÍMEROS
SPAIN*The Heart Valve: On the Cusp of a Durable Polymeric Replacement***Ruhi PATEL** UNIVERSITY OF CAMBRIDGE & QUEEN MARY UNIVERSITY OF
LONDON
U.K.**End of Life of Rubbers***Feasibility of Real De-vulcanization for Elastomer Products***Jacques W. M. NOORDERMEER** UNIVERSITY OF TWENTE
NETHERLANDS*A Multi-instrumented Device to Study the Mechanical De-vulcanization of Rubber as a Recycling Process***Nicolas CANDAU** CENTRE CATALÀ DEL PLÀSTIC
SPAIN*Evaluation of Microbial Behavior by Wood Rotting Fungi for Recycle of Rubber Wastes***Shin SATO** TOTTORI UNIVERSITY OF ENVIRONMENTAL STUDIES
JAPAN*Optimising the Revulcanization of Solid-state Shear Milled (S3M) Rubber***James Robert INNES** UNIVERSITY OF BRADFORD
U.K.*End of Life Tyres - An Alternative to Devulcanization to Obtain a New Raw Material***Pamela PASETTO** UNIVERSITÉ DU MANS
FRANCE*Advanced Characterization of Recycled Rubber from End-of-life Tyres***Roberto PÉREZ-APARICIO** SIGNUS ECOVALOR
SPAIN*Recycling End-of-life Tyres into High performance Materials Through Innovative Valorization Methods***Nicolas SCHÜWER** TYRE RECYCLING SOLUTIONS
SWITZERLAND*Challenges, Trends and Opportunities for End-of-life Tires from a French Perspective***Robert WEIBOLD** WEIBOLD
AUSTRIA*Pushing the Boundaries of Recycled Rubber Content in High Performance Elastomers***Izaak WATSON** MARTIN'S RUBBER COMPANY
U.K.*Problems and Solutions of Ground Rubber Recycling***Li JIA** THE UNIVERSITY OF AKRON
U.S.A.*Evaluation of Reclaiming HCR Silicone***Erick SHARP** ACE PRODUCTS & CONSULTING
U.S.A.*G3C Process gives New Life to Pyrolysis Plants***Vitaly KHUSIDMAN** G3C TECHNOLOGIES CORPORATION
U.S.A.

CONFERENCES

Sustainable Materials

Nanofibrillated cellulose as a special type of renewable material as filler for lightweight elastomers

Ulrich Giese, Irina Weichert
February / 11th-12th /2020
Rubbercon, France

AFICEP

Comparison carbon black vs. cellulose

Carbon black:	Cellulose:
<ul style="list-style-type: none"> Oil based Spheric particles Reinforcing: large quantities required Unipolar, higher compatibility to rubber High density (1.8 g/cm³) 	<ul style="list-style-type: none"> Renewable High softness Low oxygen permeability High aspect ratio, fibrillar Hydrophilic (similar to silica) High water content Low density (1.4-1.6 g/cm³)

RubberCon 2021
February 11-12th

Philippe ZINCK

Biobased Synthetic Rubbers and TPEs based on Myrcene

The Catalysts for Functional and Biobased polymers grow

UCCS

Natural Hevea Rubber Market

14 M tons/year!

Big market Low value

Small market high value

Michel DORGET, CTTM

Itaconic acid based elastomers

Design and preparation of functionalized elastomer from itaconic acid resource

Runguo Wang, Xinxin Zhou,
Weiwei Lei, He Qiao, Liqun Zhang

Center of Advanced Elastomer Materials
State Key Laboratory of Organic-Inorganic Composites, Beijing
University of Chemical Technology, Beijing, 100029, China

An overview of CIRAD and partners' research activities to address the question of the variability of latex and natural rubber quality

cirad
AGRICULTURAL RESEARCH FOR DEVELOPMENT

#RubberCon 2020 - 11-12 February 2021

Céline BOTTIER, CIRAD

XATICO
PERFORMANCE MINERALS

Carine LEFÈVRE, XATICO
Performance Minerals
for Innovative Solutions

Welcome

ARBOCEL® natural cellulose fibers for sustainable rubber composites

RubberCon, February 2021
Dr. Kim Flaig

Guatecs
The new natural latex good for the planet & the people

Towards a European Guayule Rubber Supply Chain!

Michel DORGET, CTTM

More comfortable because thinner!
Safer because hypoallergenic!
More sustainable!

AND IT IS MADE OF GUAYULE LATEX

The only:
Natural, European,
Hypoallergenic & Flexible Latex

RUBBERCON 2020

FACTICE, A BIO-BASED ADDITIVE FOR RUBBER INDUSTRY

Elodie MICHEL, LEFRANT RUBCO

Biobased solid polymer (Bisoximant >SuNc)
Result of Polymerization between:
Unsaturated vegetable oils:
e.g.: Soya bean oil, rapeseed oil, castor oil
Monomer element: Sulphur, peroxide

THE BEST OF TWO WORLDS:
Conventional and Hybrid Renewable
Naphthenic Oils as Plasticizers for Rubber
Materials

Dr. Kanyar Alavi
Senior Specialist
Type & Rubber Analysis
Nynas Naphthenics

Kanyar ALAVI

. Health & Safety

RUBBERCON
 « Environment and Recycling: A Strategic Challenge for Rubber Materials » 11 et 12 février 2021, on line

SOCIAL RESPONSIBILITY, HEALTH AND ENVIRONMENT : A GLOBAL WORLDWIDE POLICY, OF SUSTAINABLE MANAGEMENT OF CHEMICAL SUBSTANCES.

Philippe.roland@renault.com

MAZDA | HUPAC | HENKEL | GROUPE RENAULT

Supress - 100% zinc activator

REACH - Know better 30 000 chemical substances, plan their use and manage. Companies are in charge of demonstrating compliance in substance.

Phase out - 100 chemical substances

RubberCon 11-12 FEBRUARY 2021

Rubber Reinforcement by in-situ generated non isocyanate polyurethane (NiPU) for lightweighting

HUTCHINSON | Laina GUO

Rubber reinforcement :

From physical reinforcement to chemical reinforcement ?

Imerys technical mineral fillers for reduced environmental impact in rubber applications

Rubbercon | February 2021
 Juliette Cauchier - CSR Specialist

Measuring sustainable solutions: Imerys' mission is to proactively share the social, product and project-related benefits, respect sustainability performance and sustainable solutions.

Sustainability Score - A synthetic and simplified score based on CSR performance (2019-2020) under the UN SDG framework

Market Trends | Full Life cycle | Multi-criteria

Technical part two:
 Gilles Mail - Senior Development Manager Rubber

Tyre inner liner | Tyre sidewall | Car body sealing | Gaskets, hoses & seals

Micro rubber quantification using Raman microscopy

RubberCon 2020 February 2021
 Morterl Normann-Fyhn

Use of 31 coordinates | Chemical fingerprint of each particle | Comparison to specific reference

Measuring each particle with Raman spectroscopy

AFICEP RUBBERCON February 11 et 12 - 2021

Environment and Recycling : A strategic Challenge for Rubber Materials

Brigitte Laquieze topic : Societal acceptability of technical Innovations : What future for plastics and Rubber ?

Pr. Brigitte Laquieze - Sciences Humaines et Sociales - AMF - SECT

silox

Amaud PIPERS, SILOX

SILOX history

- Head office in Engis Belgium
- Manufacturing since 1949
- 3 manufacturing sites worldwide (Belgium, Canada & India)
- Staff > 1800
- Turnover 340 M€
- Products & activities : sodium hydrosulfite, sulfur dioxide, active zinc oxide, zinc & sodium sulfosulfates, zinc dust

SILOX ZINECO ACTIF
 Non Eco-Toxic zinc activator for rubber to provide sustainable and environmental-friendly materials

Rubbercon 2020 11th February 2020

REPSOL

Leading the Journey to an ambitious destination

Miguel Angel GARCIA GARRENO & Gloria MONTEALEGRE GARCIA, REPSOL

Benefits and Advantages of Repsol Sustainable Process Oil

- Not significant changes in Rubber vulcanization process
- Very low PAHs Residues
- Improvement Properties in Rubber products: Wet Grip, Rolling Resistance
- Good filler dispersion
- Does not compete with the food market
- Renewable Source
- Contributes to Circular Economy

Ecodesign: a solution to control environmental impacts of polymers through their entire Life Cycle?

CHARRUILLET Carole | February 11th-12th 2021

Rubbercon 2020 | Charrouillet | Arts et Métiers

APESA

RÉVÉLATEUR DE SOLUTIONS DURABLES

How to face the challenges of ecological transition by integrating environmental impact measures, the eco-conception and eco-innovation ?

Claire Jacquet-Lassus
 Materials and Environment Project Manager
 claire.jacquet@apesa.fr

www.apesa.fr

Processing

ENVIRONMENT AND RECYCLING: A STRATEGIC CHALLENGE FOR RUBBER MATERIALS

HOW TO REDUCE YOUR WASTE AND IMPROVE YOUR PROFITABILITY?

Anti-wastage and circular economy law (AGEC) have defined

- New obligations
- New prohibitions
- New tools for control

Presented by Isabelle YAZZALI

MLPC INTERNATIONAL ARKEMA

HSM: a rubber recycling solution

Rodrigo Diaz, Edith Peuvrel-Disdier, Rémi Deterre

repa

PSL * Comar

GEPEA

IRC RUBBER CON

02/2021

Circular economy

Environmental challenges related to silicone rubber processability

Marie Mangavel
E-RubberCon2020
11&12 february 2021

HUTCHINSON

WHAT WE DO
From customized materials design to integration of connected solutions.

INNOVATION
To give our customers a competitive advantage, we design more efficient, lighter, more connected solutions.

EXPERIENCE
We have a multiple market, multiple expertise offering. Our technologies is the backbone of our success.

CUSTOMER ADVANTAGES
We respond to our customers' challenges in creating environments, its contribute to safer, more sustainable and more responsible, reliability.

Evaluating the Processing Properties of Natural Rubber Composites for Paper Coating Applications

Pieter Samyn, Dirk Stanssens, Frank Driessen
Institute for Materials Research - Applied and Analytical Chemistry

RubberCon 2020, 11-12 february 2021

UHASSELT **IMMO-IMOMECC** **imec**

Pieter.Samyn@outlook.be

INTRODUCTION - SPEAKER AND THE COMPANY

Speaker : Ranvir Singh Viridi
Company : Robinson Brothers Limited, UK

Chemical Intermediates
• Specialty & Fine Chemicals

Robac Technology
• Rubber Accelerators
• Polymer Chemicals

Safety Concerns
Thiazoles and N-Nitrosamines

3-mercaptobenzothiazole

Carbonylic N-nitrosamines
R¹ and R² are alkyl or aryl groups

Robac Technology **RobinsonBrothers**

« Energy consumption and quality-productivity compromise in rubber molding »

Julien LAUNAY, Nadine ALLANIC, Pierre MOUSSEAU, Alain SARDA, Rémi DETERRE
Nantes University – GEPEA

e-RUBBERCON 2020
Paris 11-12 FEBRUARY 2021

UNIVERSITE DE NANTES **GEPEA**

MATERIA NOVA
Materials R&D Center
Tangi SÉNÉCHAL, MONTERIANOVA

Life cycle / value - chain

Synthermer's customer

User

First improvement

second improvement

Low mass materials

Low mass consumption

Improving Physical Properties of Rubber Compounds Containing Devulcanized Rubber

Frank Pappas
Director of Sales and Business Development
ACE Products and Consulting LLC

Approaches to Devulcanization

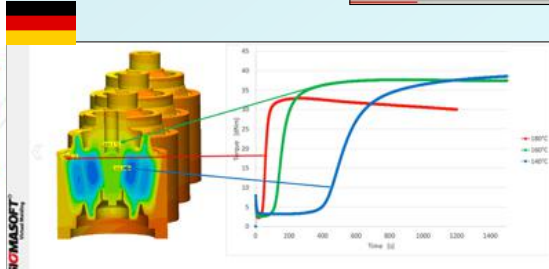
- Mechanical Grinding
- Cryogenic Grinding
- Twin screw processes
- Water jet

Modelling of reversion effects in injection molding process

IRC
International Rubber Conference Organisation

Dipl.-Ing. Timo Gebauer
SIGMA Engineering GmbH
www.sigmasoft.de
Aachen

SOMASOFT



Properties & Environment Impact Performances

Fernando MARTÍN SALAMANCA (ICTP) - Influence of Network Structure

Influence of network structure in rubber elasticity

F. M. Salamanca*, J. L. Valentin, R. Navarro

Double Quantum Nuclear Magnetic Resonance (DQ-NMR) experiments made to study the amount of defects or the fraction of the sample that is not elastically active.

elastomers group

ICTP CSIC

ARLANXEO
Performance Elastomers

Rubber & Thermoplastic Materials Benefits from both worlds?

Bio-sourced, degradable Thermoplast

- PLA (Polylactic acid)
- Bio-sourced, Bio-degradable and compostable polymer
- Various applications like packaging, bio-medical, textile (transparent, high strength)
- Very brittle, stiff, low tear → requires impact modifier

The FRNC Rubber

- Levapren: Ethylen-Vinylacetate Copolymer EVM
- Statistical monomer distribution
- Broad range of monomer ratios from 40 to 90 % VA, polarity determined by VA content
- Halogen-free
- media & heat resistance (up to 175°C) → perfect polymer for FRNC cable compounds

Levapren® NPG
a functional EVM as impact modifier in bio-degradable thermoplastic materials
Dr. Andreas Kaiser | Rubbercon 02 / 2021

Schill+Seilacher
STRUKTOL

New Struktol Plasticizers for Improved Service Life of Tire Curing Bladders

Volkmar Boering, Eleonora Duffel, Christian Gabel, Colin Clarke

PROPERTY	STRUKTOL 100	STRUKTOL 150	STRUKTOL 200
MOLECULAR WEIGHT	1000	1500	2000
INHERENT VISCOSITY	0.15	0.20	0.25
DIENE MONOMER	0.05	0.05	0.05
MOLECULAR WEIGHT	1000	1500	2000
DIENE MONOMER	0.05	0.05	0.05
MOLECULAR WEIGHT	1000	1500	2000
DIENE MONOMER	0.05	0.05	0.05
MOLECULAR WEIGHT	1000	1500	2000
DIENE MONOMER	0.05	0.05	0.05

NETZSCH
Proven Excellence

Analyzing & Testing

Carbon black agglomerate

Simultaneous dynamic-mechanical and dielectric analysis to improve understanding of the behavior of elastomeric materials during application

RUBBERCON 2020, Dr. Sahbi Abou, 17/04/2021

NEW INSIGHTS IN THE STRUCTURE-PROPERTY RELATIONSHIPS OF CNT-RUBBER COMPOUNDS

J. L. Valentin*, P. Bernal-Ortega, M. Mar Bernal, A. González-Jiménez, F. M. Salamanca, R. Navarro

*jvalentin@ictp.csic.es

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ICTP CSIC

Centre for Sustainable and Circular Technologies

Understanding the effect on cross-linking on the self-healing ability of epoxidised natural rubber (ENR)

James Boden*, Matthew Davidson, Chris Norris, Antoine Buchard, Chris Bowen

Centre for Sustainable & Circular Technologies

- Greenhouse Gas Emissions
- Land Use Change
- Temperature Change
- Chemical Weight Distribution
- Heavy Metals
- Energy Efficiency
- Durability
- Recycling

INFLUENCE OF FORMULATION AND PROCESSING CONDITIONS ON NETWORK STRUCTURE, MATERIAL PROPERTIES AND LIFETIME UNDER DYNAMIC LOAD OF SULFUR CROSS-LINKED NR/BR

Franziska Kirsch, M.Sc.
franziska.kirsch@lbf.fraunhofer.de

Fraunhofer LBF

BASALT FIBER REINFORCED EPDM COMPOSITES RHEOLOGICAL AND MECHANICAL PROPERTIES

e-RUBBERCON 2020

GÖKÇE BAKILER-ERENLİ KAUÇUK, IZMIR, TURKEY
PROF. DR. ÖZGÜR SEYDİBOĞLU- IZMIR KATIP CELEBI UNIVERSITY, TURKEY

Short basalt fibers are blended with EPDM rubber to increase:

- Mechanical properties
- Ageing properties
- Acoustic insulation properties

of EPDM rubber.

EPDM-Basalt rubber composites are environmentally friendly.

Thermo-reversible supramolecular polyurethanes based on PCL with self-healing behaviour

www.elastomers.ictp.csic.es

F. Muscas, V. Sessini, R. Navarro, J.L. Valentin, A. González-Jiménez, A. Ureña, A. Marcos-Fernández

mavarro@ictp.csic.es

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ICTP CSIC

. Applications & Use

STELLANTIS

« Environmental and regulatory issues on polymer materials applied to the automotive industry – PSA expectations and needs »

2021/02/12 RD2DCHMMXPE

Sophie Richet - Ecodesign & Environment Expert
Maurice Carfantan - Polymer Expert

Vamac® Ethylene Acrylate Elastomers

A Perfect Fit for Requirements in E-Mobility

e-RUBBERCON 2020 , February 2021

Serge Bouvier



TOTAL
COMMITTED TO BETTER ENERGY

CRAY VALLEY

Damping Materials based on Liquid Poly(butadienes): Structure-Property Relationships

O. Defrain, S. Henning, O. Klein
12/02/2021
Total Cray Valley

- Liquid poly(butadienes) can be crosslinked either with sulfur-based systems or with organic peroxides
- Behavior of liquid poly(butadienes) follows basic Elastomer science principles
- Benefits of peroxide technology:
 - Low content of curing package
 - Highly reticulated network
 - Consistent curing profile
 - Alternative curing systems

Viton™ Fluoroelastomers

A new fluoroelastomer precomp... improved durability in the most demanding turbocharger hose applications

Eric Chauvignat
Technical Service Senior Scientist

February 11th and 12th, 2021

AFICEP

IRC RUBBER CON

Development of EPDM Rubber Compounds to Enable Automotive Lightweighting

Vanun Thakur, Veronica Colombo, Sharon Wu
Dow Europe GmbH, Switzerland

12/02/2021

We take concrete actions to ensure forest growth!

- 100 new trees every minute
- New carbon sinks

NEW GENERATION OF RENEWABLE FUNCTIONAL FILLERS FOR AUTOMOTIVE LIGHT-WEIGHT APPLICATIONS

Dr. Florian Diehl
e-RUBBERCON 2020

STANDARD PROFIL

Improvement of Low Dense EPDM Based Compound for Sealing System for Vehicles

Yusuf Güner, Yasemin Durmuş, Cansu Coşkun, Ali Erkin Kuttlu

Development of a novel rubber as damping interlayer in light-weight armor applications

Janis KARL, M.Sc.

Fraunhofer IZF

French German Research Institute of Saint Louis ISL
Saint Louis, France
Dr. Dr. Dr. Protection technologies
Group RPI: Rubbers and Explosive Protection
Group IZF@ISL

rep

11-12/02/2021

Application: Fuel cell stacks gaskets molding in automatic

M. Wolff, REP International

IRC RUBBER CON

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Fuel cell vehicles (FCV)

IRC RUBBER CON 2020
Environment and recycling: A strategic Challenge for Rubber Materials

11-12 FEBRUARY 2021
International Conference organized by the French Association of Rubber and Polymer Engineers-AFICEP

New insights into Silica-reinforced tire tread compounds based on carboxylated styrene butadiene rubber

Pilar Posadas
Elastomers Group
Institute of Polymer Science and Technology
C/ Juan de la Cierva, 3, 28002, Madrid, Spain
pposadas@ictp.csic.es

RubberCap 2020

The heart valve: On the cusp of a durable polymeric replacement

Ruhi Patel
rp605@cam.ac.uk
Structured Materials Group

UNIVERSITY OF CAMBRIDGE
Queen Mary

End of Life of Rubbers



RubberCon2020

FEASIBILITY OF REAL DE-VULCANIZATION FOR ELASTOMER PRODUCTS

February 11-12, 2021

Jacques W. M. NOORDERMEER
UNIVERSITY OF TWENTE

Jacques Noordermeer, Wilma Dierker, Anja Blom, Kuno Diphuis, Hans van Hoek, Louis Roelkamp, Sit Sitewati
University of Twente, the Netherlands
Elastomer Research Testing BV, the Netherlands
Prince of Songkla University, Pattani Campus, Thailand



A multi-instrumented device to study the mechanical devulcanization of rubber as a recycling process

Nicolas Candau

Centre Català del Plàstic (CCP), Universitat Politècnica de Catalunya (UPC)

nicolas.candau@upc.edu

Marie Curie fellow - TecnioSpring Grant

RUBBERCON 2021 TECNIOspring

Evaluation of microbial behavior by wood rotting fungi for recycle of rubber wastes



Shin Sato, Ph.D.

Tottori University of Environmental Studies, Japan

Optimising the revulcanization of S3M rubber

J. ROBERT INNES

B. SHRIKY, S. ALLAN, X. WANG, M. HERDA, P. COATES, B. WHITESIDE, H. BENKREIRA, P. CATON-ROSE, A. KELLY

- Devulcanization is the process by which the crosslinked network is broken down by chemical means. This can be done in two ways: chemically (using peroxide) or mechanically (using shear).
- Today's devulcanization (DVM) technology has been developed for the production of low modulus, low strength (S3M) grades. This technology is not suitable for high modulus, high strength (HMS) grades.
- The new devulcanization process, using a novel catalyst, is able to produce high modulus, high strength (HMS) grades.
- Particle size can be reduced to below 100 nm and 500 nm (depending on the process).

End of Life Tyres - an alternative to devulcanization to obtain a new raw material

Pamela PASETTO

Le Mans Université, INM, CITE

Advanced Characterization of Recycled Rubber from End-of-Life Tyres

Roberto Pérez-Aparicio

RUBBERCON 2020
Environment and Recycling: A Strategic Challenge for Rubber Materials
11-12 February 2021

OBJETIVOS SOSTENIBLES, SIGNUS, CSIC, ICTP, ElastomerCon3+

Recycling end-of-life tyres into high-performance materials through innovative valorization methods

International Rubber Conference Organisation (IRCO)

Dr. Nicolas Schiwer, Dr. Petra Martineau, Giorgio Pelland, Dr. Hongping Zhu, Trautmann, Dr. Sonia Megeot

Recycling rates are industry and geography specific

- Recycling is complex and its rates are linked to raw material price and technology challenges
- Thermoset and mixed materials are inherently challenging to recycle

Global average recycling rate: 70%
EU average: 80%
Paper: 90%
Plastic packaging: 80%
New car: 75%
Tyres: 45%

Who is WEIBOLD?

Robert WEIBOLD

Who is WEIBOLD

- Weibold is an international consulting company specialized exclusively on the recycling and end-of-life tyre pyrolysis.
- Founded in 1993, headquartered in Vienna, Austria
- Monthly Newsletter "The Recycling Insights" with 15,000+ subscribers
- Offices in Spain, Mexico, Morocco, Bahrain, Canada, and Argentina
- Clients: Recycling and pyrolysis project initiators, operators, investors, technology suppliers, banks, recycling associations.

Raw Materials, Design & Production, End-of-life -> Waste, Add Technology and know how, Collection & Recycling

Pushing the Boundaries of Recycled Rubber Content in High Performance Elastomers

Isaak Watson - Technical Manager

MARTIN'S RUBBER COMPANY Since 1905

R mould

Reclaiming Process: Grinding, Devulcanized Thermoplastic, Devulcanized Sulfur

- Rubber is a thermoset elastomer - cross links between the polymer chains are formed during heating
- Cannot be melted & reprocessed (once cured - moulded parts difficult to process at end of life)
- One option is to reprocess the rubber - essentially reversing the cross linking reaction
- Some common issues associated with devulcanizing rubber:
 - Quality of the devulcanization
 - Costs of the devulcanization/reprocessing
 - Energy consumption

Problems and Solutions of Ground Rubber Recycling

Dr. Li Jia (l.jia@uakron.edu), Dr. Georg Bohm, Dr. Michelle Calabrese

February, 2021
e-RUBBERCON 2020

AFICEP, IRC, APPIA, UNIVERSITY OF MINNESOTA

PROBLEMS: Grinding rubber & filler -> separation, devulcanization -> HCR, self-assembling particles

SOLUTIONS: Physical chemical events, Chemical events, Self-assembling particles

Evaluation of Reclaiming HCR Silicone

Erick SHARP ACE

RubberCon 2020
February 11th - 12th 2021

Reclaiming Process: Grinding, Devulcanized Thermoplastic, Devulcanized Sulfur

G3C Process Gives New Life to Pyrolysis Plants

Vitaly Khudisman, PhD
Founder and CEO of G3C Technologies Corporation

RUBBERCON 2020
11th - 12th February 2021

One-Stage Model: Milling & Refining, HCR, Single Stage, New plants

Two-Stage Model (HCR valorization): Pyrolysis (HCR or HCR), Milling & Refining, Stage 1, Stage 2, New plants and retrofits to existing pyrolysis plants

Effect of Devulcanized Rubber on Thermal and Mechanical Properties EPDM and NR Rubber Blends

Halit L. HOŞGÜN BURSA TECHNICAL UNIVERSITY / HAKSAN OTOMOTIV - TURKEY

The Rubber Impact Project: Modern Industrial Skins and Direct Material Reuse of Inner Tubes

Mandana MacPHERSON & Gigi OBRECHT CALIFORNIA COLLEGE OF THE ARTS - U.S.A.

Re-Use of Rubber Waste for EPDM Based Compounds

Yasemin DURMUŞ STANDARD PROFIL - TURKEY

Characterization of the Degradation of Elastomeric Gasket by Accelerated Ageing

Chloé SIMET CNRS/IS2M - FRANCE

Effect of Devulcanized Rubber on Thermal and Mechanical Properties EPDM and NR Blends

Merve TOPÇU¹, Ezgi ERBEK ÇÖMEZ², Selda ÖZTÜRK¹, Halit L. HOŞGÜN¹

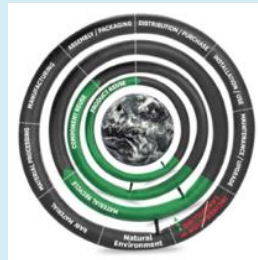
¹ Bursa Technical University, Department of Chemical Engineering, Bursa, Turkey
² Haksan Otomotiv, Organize Sanayi Bölgesi San. Cad. No:10/A Nilüfer Bursa, Turkey



The solid waste problem is one of the important environmental problems. Solid wastes not only cause soil pollution but also water and air pollution.



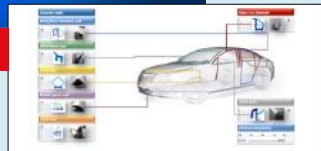
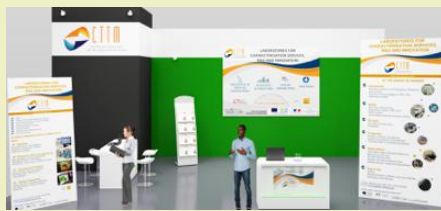
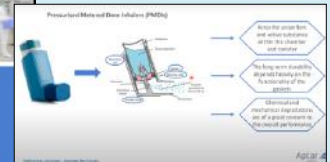
FOCUS:
Issue 1: Tracking and Collection
 What happens to bicycle inner tubes in San Francisco?
Issue 2: Distribution, Education, Reuse
 How can the material be re-used to extend its useful life?
PROCESS
ASSESSMENT AND ACTION
 Evaluation uses:
 - Uncover opportunities
 - Implement ideas
 CCA
 California College of the Arts
 American College of the Arts



Rubber Impact Project
Modern Industrial Skins and Direct Material Reuse of Inner Tubes
 Mandana MacPherson and Gigi Obrecht
RUBBERCON 2020
 Environment and Recycling: A Strategic Challenge for Rubber Materials



Virtual Posters

VIRTUAL EXHIBITOR BOOTH VISIT



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a big THANK YOU to all of you and your companies"

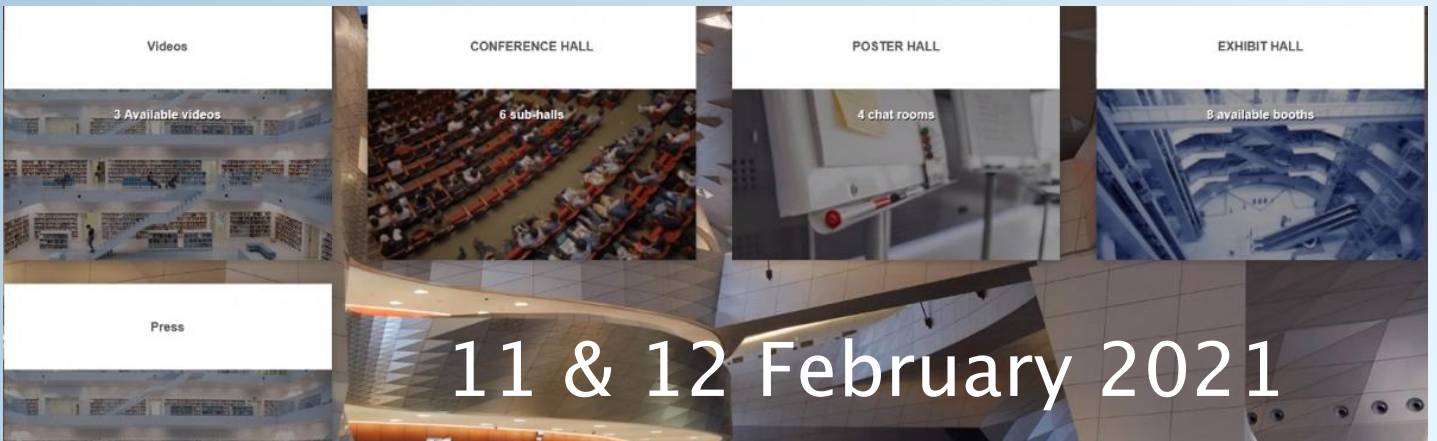


e-RUBBERCON 2020 - PARIS

*Environment and Recycling:
A Strategic Challenge for Rubber Materials*

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