RENEWABLE MATERIALS CONFERENCE 2023

23–25 May • Siegburg/Cologne (Germany)
renewable-materials.eu

Program & Award

The brightest stars of Renewable Materials

The unique concept of presenting all renewable material solutions at one event hits the mark: bio-based, CO_2-based and recycled are the only alternatives to fossil-based chemicals and materials.

The Renewable Materials Conference has established itself as one of the most important conferences for renewable materials worldwide. Expect 80 presentations, 20 panel discussions and several expert workshops, 40 exhibitors and 500+ participants on site. A matchmaking area throughout the three days, long lunch breaks and three evening meeting points guarantee comprehensive and effective networking.

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BOREALIS

Contact
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Conference Manager
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dominik.vogt@nova-institut.de

Evening before the Conference
22 May 2023 • 19:00
Meeting Point for Networking:
Siegburger Brauhaus (Brewery),
Holzgasse 37–39, 53721 Siegburg

renewable-materials.eu

Day 1 • 23 May 2023 • 9:00 (CET)

Parallel Sessions
Conference Room 1

9:10 – 10:50
Future of the Chemical Industry

Jennifer Lovell • New Normal (CH/GB)
The Future of the European Petrochemical Industry

Peter Nieuwenhuizen • GC3 – Green Chemistry & Commerce Council (NL/US)
Elements of a Roadmap to Transition the Chemical Industry Toward Sustainable Chemicals and Materials

Rafael Cayuela • DOW (CH/US)
Path To Zero – A Massive Growth Opportunity

Michael Carus • nova-Institute (DE)
The Vision of the Renewable Carbon Initiative

11:20 – 13:00
Renewable Refineries

Lars Börger • Neste Germany (DE/FI)
Towards the Fossil-Free Future – The Neste Way

Marvin Strüfing • UPM Biochemicals (DE/FI)
UPM BioPura Glycol: Enabling Packaging, Fashion, Automotive and Other Industries to Achieve Carbon Footprint Goals

Jo-Ann Innerlohinger • Lenzing (AT)
Circularity – The View and Approach of a Cellulose Fibre Producer

Peep Pitk • Fibenol (EE)
Fibenol Journey Towards Realising the Industry Dream of Lignocellulosics Derived Biomaterials and Biochemicals Production

14:30 – 16:10
Circularity and Chemical Recycling

Carolin Deregowski • BASF (DE)
Meta Analysis of Life-Cycle Assessments of Chemical Recycling

Floris Buijzen • Borealis (AT)
Circular Polyolefins – It Starts with ABC

Frank Riedewald • Composite Recycling (IE)
Lower OPEX and CAPEX Waste Plastic Chemical Recycling Facilities with Molten Metals

Sandra Weinmann • Institut für Kunststofftechnik, University of Stuttgart (DE)
Recycling of PA66/Silicone-Wastes

16:40 – 18:00
Renewable Carbon: New Label, Product Environmental Footprint (PEF) and Mass Balance

Michael Carus & Philippe Dewolfs • nova-Institute (DE) & TÜV Austria (BE)
Renewable Carbon Share Certificate and Label

Jenny Reuber & Jan Schoeneboom • BASF (DE)
Mass Balance – The Chemical Industry's Transition to Circular Economy

Benjamin Nummert & Ivana Krkljus • BASF (DE)
Substantiating Green Claims in a Meaningful Way – the Challenge of PEF

Workshops
Conference Room 2

13:00 – 14:30
Workshop

Karin Öhgren Gredegård
Alfa Laval (SE)
The Net-Zero City 2050 – Disruptive Industrial Transformation Towards a Defossilised Future

Parallel Sessions
Conference Room 1

11:20 – 13:00
Carbon Flows and Carbon Management

Ferdinand Kähler • nova-Institute (DE)
Comprehensive Assessment of Global and European Carbon Flows

Ronja Hermanns • Carbon Minds (DE)
Climate-Positive Chemistry – Strategies for Minimising CO_2 Emissions and Maximising Carbon Stocks in the Chemical Value Chain

Christopher vom Berg • nova-Institute (DE)
Biomass Utilisation Factor (BUF) – New Metric for Circular Economy

14:30 – 16:10
PHA Deep Dive: Circularity in the Biosphere

Rick Passenier • GO!PHA (NL)
The Importance of Biodegradable Materials in a Circular Economy

Christian Lott • HYDRA Marine Sciences (DE)
Biodegradation of PHAs in Open Environment

Marcus Eriksen • 5Gyres (US)
A Field Study of the Fragmentation of Biodegradable Packaging in Six Different Environments

Linda Amaral-Zettler • NIOZ (NL)
Biodegradation and the Plastisphere Community of Biodegradable Substrates in a Marine Environment

16:40 – 18:00
Meet & Discuss "Biodegradable Plastics – Opportunities and Challenges"

Miriam Weber & Christian Lott
HYDRA Marine Sciences (DE)

19:30
Dinner Buffet in the Conference Centre

Day 2 • 24 May 2023 • 9:00 (CET)

Parallel Sessions
Conference Room 1

9:10 – 10:50
Renewable Chemicals and Building Blocks

Patrick van Waes • CovationBio (US)
Regenerative Farming of Industrial Corn as Feedstock for the Production of 100 % Bio-based Susterra 1,3-propanediol

Keith Wiggins • Econic Technologies (GB)
Application of CO_2 Containing Polyols

Johann Kirchner • bse Methanol (DE)
Direct Conversion of CO_2 to Renewable Methanol by Standardised Synthesis Modules

Doris De Guzman • Tecnon OrbiChem (US)
Renewable Chemicals 2023 Update: Building Blocks and Intermediates Comeback

11:20 – 13:20
Renewable Polymers and Plastics

Ángel Puente • nova-Institute (DE)
PEF – A Circular Bio-Based Plastic with Improved Properties. Life Cycle Assessment

Jean-Jacques Flat • ARKEMA (FR)
World's Biggest Integrated Bio-Factory Dedicated to High Performance Bio-Based Polyamides

Martin Clemesha • Braskem Netherlands (NL/BR)
Bio-based PE and its Contribution to a Net-Zero Circular Economy

Mariana Paredinha Araujo • Avantium Chemicals (NL)
Turning CO_2 Into High-Performing and Biodegradable Plastic Materials with Tunable Properties

Christian Lenges • International Flavors & Fragrances (IFF) (US)
Sustainable Material Innovation: Designed Enzymatic Biomaterials

14:20 – 16:00
Fine Chemicals

Adeline Grevillot • L'OREAL (FR)
How can the Circular Economy Contribute to Develop More Sustainable Cosmetic Ingredients?

Adrian Brandt • Henkel (DE)
Transformation to Renewable Carbon – Henkel Adhesive Technologies

Dirk Leinweber • Clariant Produkte Deutschland (DE/CH)
Performance and Sustainability Without Compromise: Innovative Surfactant Solutions

Sasha Calder • Geno (US)
The Materials Transition at Scale

16:30 – 18:00
Innovation Award for the "Best Renewable Materials 2023"

Christoph Gürtler • Covestro (DE)
Brighter Use of Resources – On the Way to Circular Economy

Six presentations by the nominated companies

Sheila Khodadadi • Avantium Renewable Polymers (NL)
Monolayer PEF Bottle: a High-Quality and Sustainable Packaging Material

Max Webers • COLIPI (DE)
Carbon-Light Yeast Oil

Hao Ding • CovationBio (US)
CovationBio™ Sorona® for faux fur

Christian Goldhahn • KUORI (CH)
KUORI – Bio-based and Biodegradable Elastic Materials

Norbert Baum • Qore (US)
QIRA – the Next Generation of Bio-Based 1,4-butanediol (BDO)

Jakob Röskamp • traceless materials (DE)
traceless® – Plastic-Free Natural Polymer

9:10 – 10:50
PLA, PBAT, PBS and PHA

Frédéric Van Gansberghe • Futerro (BE)
PLA and Chemical Recycling

Harris Luk • Sulzer Chemtech (CH)
Moving a Step Forward from Poly(lactic acid) to Bio-Copolymers

Willi Smolan • T.EN Zimmer (DE)
Biodegradable Polyester and Bio-based Monomer Technologies

Phasanti Boonsuit • PTT MCC (TH)
A Journey of High Performance of Home Compostable Films for Flexible Packaging: BOPBSA

14:20 – 16:00
PEF / FDCA / Furanics

Jean-Paul Lange • Shell Global Solutions (NL)
Furfural Manufacture at High Yield

Jian Zhang • Sugar Energy Technology (CN)
Developing Industrial Strategy to Establish a HMF Family

John Zhang • Zhongke Guosheng (Hangzhou) Technology (CN)
Recent Progress on Bio-based HMF's New Materials in China

Tom Claessen • Avantium Renewable Polymers (NL)
Biorefinery Derived Furanic Humins as Basis for Sustainable Thermosets and Adhesives

Workshops
Conference Room 2

11:00 – 12:30
Workshop

Christian Hübsch & Dominik Müller
UPM Biochemicals (DE/FI)
What Role Must Bio-based Feedstock Play in the Chemical Sector of the Future?

15:00 – 16:30
Workshop

Sigvald Harryson
iKNOW-WHO (CH)
Renewable Materials Require Novel Co-Creation Models

19:00
Meeting Point for Networking:
Sion im Carré, Neue Poststraße 15, 53721 Siegburg

Day 3 • 25 May 2023 • 9:00 (CET)

Parallel Sessions
Conference Room 1

9:10 – 10:30
Latest nova Research

Pia Skoczinski • nova-Institute (DE)
Market Update on Bio-based Polymers: Global Capacities, Production and Trends 2022–2027

Lara Dammer • nova-Institute (DE)
Policy Updates – how will PPWR, ESPR and Green Claims Initiative Impact Renewable Materials?

Pauline Ruiz • nova-Institute (DE)
Status and Outlook for CO_2-based Building Blocks and Polymers

Lars Krause • nova-Institute (DE)
Tech4Biowaste – A Dynamic Database of Technologies for Biowaste Utilisation

Matthias Stratmann • nova-Institute (DE)
Peer-reviewed Case Studies on Renewable Materials

Christopher vom Berg • nova-Institute (DE)
Carbon Footprint Fossil vs. Bio-based Materials

11:00 – 12:20
The Policy & Brands View

Algreit Dume • DG Grow, European Commission (Brussels)
Transition Pathway for the Chemical Industry

Adeline Grevillot • L'OREAL (FR)
L'Oréal Sustainability Ambition for 2030

13:50 – 14:30
Renewable Plastics and Composites

Patrick Zimmermann • FKuR Kunststoff (DE)
Bioplastics in the Context of a Circular Economy – Different Markets Need Different Solutions

Juul Cuijpers • Sappi Biotech (NL/ZA)
Sappi Symbio – A Natural Inspiration for Strength

14:30 – 15:50
Biodegradation, Custom-Made Biomaterials and Certification

Miriam Weber • HYDRA Marine Sciences (DE)
How Does Your Biodegradable Plastic Behave in the Environment?

Stefaan De Wildeman • B4Plastics (BE)
Polymer Architecture Enabling Custom-Made Biomaterials with Tailored End-of-Life

Enrico Miceli • DIN CERTCO (DE)
Marine Biodegradation and Sustainability Certifications – Recent Developments in Standards and Certification

9:10 – 10:30
New Technologies for Efficient Renewable Processes

Karin Öhgren Gredegård • Alfa Laval (SE)
Smart Water Management in Bio- and Recycled CO_2 Based Refineries

Ingo Gräf • Heraeus Deutschland (DE)
Black Powder for Green Chemicals: Precious Metal Catalysts for the Conversion of Sustainable Feedstocks

Tore Hartmann • GEA Westfalia Separator Group (DE)
GEA liquid / Solid Separation with Sedimentation Centrifuges for Purification Unit Operations in Biorefineries

13:50 – 14:30
Transition Pathways for the Chemical Industry

Workshop with
Algreit Dume & Maarit Nyman
DG Grow, European Commission (Brussels)

Workshops
Conference Room 2

11:00 – 12:30
Workshop

Fritz Wetzel
BlackIP (DE)
Basics and Importance of Intellectual Property Rights

Six Materials are Nominated for the Innovation Award “Renewable Material of the Year 2023”

These new materials that will enable sustainable product realisations in areas such as textiles, cosmetics, packaging, as well as elastic and biodegradable materials for a variety of applications. Participants at the “Renewable Materials Conference” will vote for the winners.

One way to overcome the chemical industry’s dependence on fossil fuels is to replace oil and gas with renewable carbon within the existing structures of the chemical industry. But it also requires innovation, the development of new processes, building blocks and materials. This requires a new way of thinking about chemistry and materials. Ready-to-use, fossil-free, sustainable material solutions with a low carbon footprint are in fast-growing demand. Innovative brand owners are on the lookout for such solutions, especially those that will soon become mainstream.

With the innovation award “Renewable Material of the Year 2023”, nova-Institute (organiser) and Covestro (sponsor) would like to recognise three particularly exciting and promising solutions that contribute to replacing fossil carbon from the ground. Our call for submissions was answered by 30 companies. The advisory board and the nova experts had a hard time choosing the six most exciting and nominating them for the award.

On the second day of the „Renewable Materials Conference“, 23-25 May in Siegburg/Cologne (Germany), the nominated companies will present their products and all 500+ conference participants will vote for the three winners on site and online. An exciting competition in which you can participate. All information about the nominated materials can be found on the next three pages.

All information and registration for the event is available at: renewable-materials.eu

See you in Siegburg
Kind regards

Michael Carus, CEO nova-Institute

Organiser

Award Sponsor

Conference Advisory Board

We would like to thank the experts of the conference advisory board for their great help in selecting the best papers submitted.

Lars Börger
Neste Germany (DE)

Ludo Diels
VITO (BE)

Jörg Müssig
Hochschule Bremen – University of Applied Sciences (DE)

Gudbrand Rødsrud
Borregaard AS (NO)

Christiaan Bolck
Long-time bioeconomy expert (NL)

Reinier Grimbergen
TNO Voltachem (NL)

Peter Orth
OPC – Orth Plastics Consulting (DE)

Alastair Sanderson
Unilever Research and Development (UK)

Michael Costello
Stahl Holding B.V. (NL)

Christian Lenges
IFF (US)

Jan Ravenstijn
Jan Ravenstijn Consulting (NL)

Jan Schoeneboom
BASF (DE)

Doris de Guzman
Tecnon OrbiChem (US)

Christophe Luguel
IAR Association Industries (FR)

Sarah Refai
CLIB – Cluster Industrielle Biotechnologie (DE)

Haralabos Zorbas
IBB Netzwerk (DE)

1

Monolayer PEF Bottle: a High-Quality and Sustainable Packaging Material

Avantium Renewable Polymers (NL)

Avantium's PEF bottle offers a powerful combination of environmental features and superior functionality compared to conventional plastics. Due to its superior performance, PEF can also replace glass bottles, aluminium cans and multilayer bottles.

Avantium has developed a technology to convert plant-based sugars into FDCA, the building block of PEF: a plant-based, fully recyclable plastic with superior performance.
The improved barrier properties lead to a longer shelf life of packaged products.

An ISO-certified LCA indicates a significant improvement in carbon footprint compared to the incumbent fossil-based PET bottle. Avantium FDCA Flagship plant, the world's first commercial FDCA facility, will be operational in 2024 with 5kt/a production capacity for commercial applications of PEF.

More information: **www.avantium.com**

2

Carbon-Light Yeast Oil

COLIPI (DE)

COLIPI develops innovative bioprocesses for the transformation of CO_2 to sustainable carbon-light alternatives to plant oils like palm oil. The core innovation and enabler is a patented gas fermentation bioreactor that safely unlocks world's fastest CO_2 utilizing microorganisms which turn off-gasses containing CO_2 (directly), H_2 and O_2 to carbohydrate rich biomass.
These biomass and/or industrial organic side streams serve as feedstock for heterotrophic fermentations, e.g. yeast oil fermentation.

Certain yeast strains have the strength of feedstock agnosticism: a vast variety of different feedstocks can serve as carbon source, among others C5 sugars, C6 sugars, volatile fatty acids, and fat residues. Colipi is actively engaged in joint research and development with large corporations which provide potential feedstocks whereas Colipi tests them for purpose fit. The product consists of triacylglycerides, in composition equivalent to those of plants e.g oil palm, mainly consisting of C16:0, C18:0 and C18:1 fatty acids. Further valuable molecules like antioxidative vitamins namely astaxanthin, tocopherols, and other carotenoids are produced.

Life cycle assessments and techno economic analyses were conducted expressing both: unparalleled low CO_2 footprints of the products and economic viability. The fermentation with two separate process steps will in future be simplified to a one step process.

More information: **www.colipi.com**

3

CovationBio™ Sorona® for faux fur

CovationBio (US)

Sorona® for faux fur is one of the first commercially available faux furs using plant-based ingredients. Made with 70–100 % Sorona® polymer fibres, the partially bio-based faux fur was introduced in 2020 in a wide range of styles, lengths, and textures from classic mink to plush teddy-styles.

It provides limitless solutions for fashion apparel such as jacket lining, or the trim on a collar, as well as footwear and accessories including fur-lined shoes, earmuffs, and more.

Sorona® for faux fur is an exceptionally soft, natural feeling animal fur alternative providing warmth, design flexibility, dyeability, and uncompromising durability. Sorona® for faux fur pushes the boundaries of sustainability in fashion while providing consumers with an elegant, ethical option that is better for the planet.

More information: **www.covationbio.com**

4

KUORI – Bio-based and Biodegradable Elastic Materials

KUORI (CH)

We are developing and producing bio-based and biodegradable elastic materials based on food waste such as banana peels and nut shells. They are sustainable alternatives for conventional elastic materials in various applications.

Our first use case are shoe soles. We are working together with shoe producers who make soles from our materials. This avoids the accumulation of persistent microplastics and offers an ecologic end of life perspective for the product.

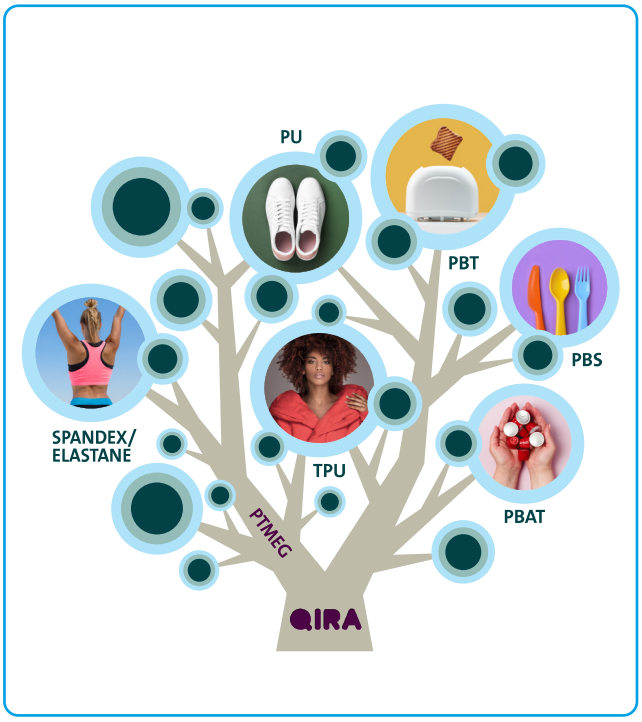
Our materials can be fully reintegrated into the biological cycle by industrial composting. Hence, our materials enable a circular business model for shoe producers and other manufacturers of goods.

More information: **www.kuori-materials.com**

5

QIRA – the Next Generation of Bio-Based 1,4-butanediol (BDO)

Qore (US)



QIRA is the next generation of 1,4-butanediol (BDO) – an easy-to-implement, bio-based BDO made from annually renewable feedstocks that can reduce CO_2 emissions compared to materials using fossil-fuel based BDO. QIRA uses field corn which is grown and harvested in close proximity to its manufacturing site which broke ground in 2021 and is scheduled to start production 2024 in Eddyville, Iowa (USA).

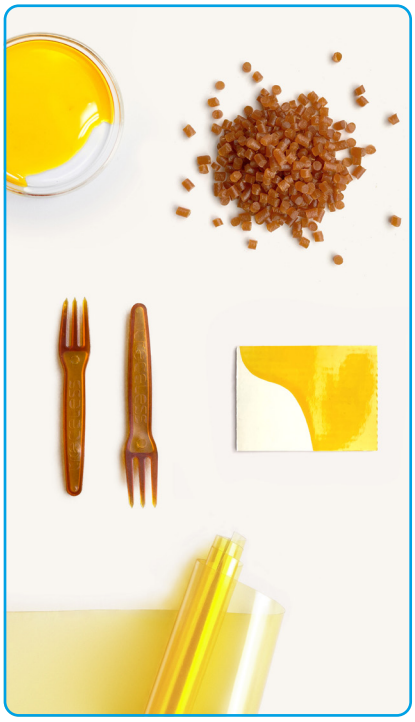
As a key platform chemical, QIRA can be used as a drop-in solution in a wide variety of applications, including spandex fibers, bio-based plastics and polyurethanes and serves a multitude of industries such as fashion, automotive, packaging and electronics. QIRA can be used the same way as its fossil-based chemical counterpart but with better sustainability performance and without altering existing downstream manufacturing processes.

More information: **www.myqira.com**

6

traceless® – Plastic-Free Natural Polymer

traceless materials (DE)



traceless® is part of a new generation of plastic-free natural polymer materials that go beyond bio-based or biodegradable plastics. The material is based on plant residues of the agricultural industry and contains 100 % bio-based carbon content – hereby supporting the transition from fossils to renewables, while additionally avoiding direct food conflict. Furthermore traceless® is a toxic-free and climate friendly solution, as the production and disposal emit up to 95 % less CO_2 compared to conventional plastics. The patent-pending production technology is scalable and efficient, saving by average 83 % of fossil energy demand during production. And even though traceless® looks and feels like plastic, the material is certified plastic- and microplastic-free and fully bio-circular – designed to leave no trace.

The start-up produces traceless® as a base material in granulate form. The plastics- and packaging industry can further process this granulate to rigid applications, flexible films, coatings or adhesives, using standard converting technologies. This way, traceless® can be used in a wide variety of end products – from single-use products over rigid and flexible packaging to products with high abrasion and coating & adhesive solutions.

More information: **www.traceless.eu**

Renewable Material of the Year 2023

Nominees of the Innovation Award

All information and registration at
renewable-materials.eu

Monolayer PEF Bottle: a High-Quality and Sustainable Packaging Material
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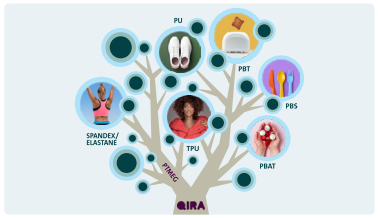
Carbon-Light Yeast Oil
COLIPI (DE)

CovationBio™ Sorona® for faux fur
CovationBio (US)

KUORI – Bio-based and Biodegradable Elastic Materials
KUORI (CH)



QIRA – the Next Generation of Bio-Based 1,4-butanediol (BDO)
Qore (US)

traceless® – Plastic-Free Natural Polymer
traceless materials (DE)

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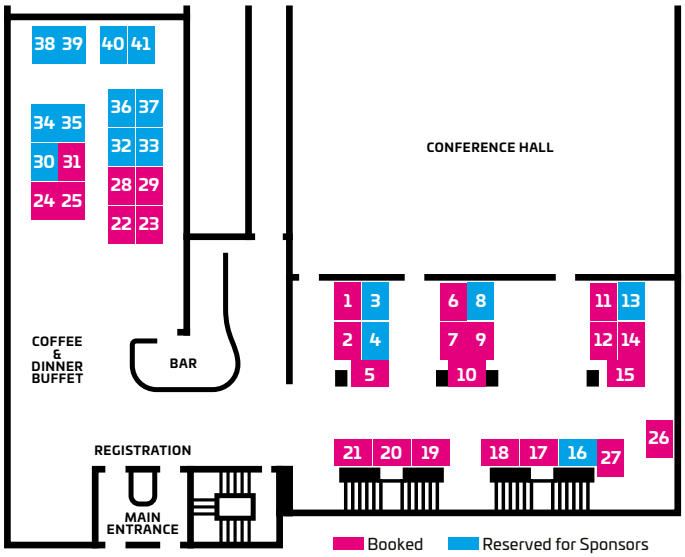

Exhibition

01 Sulzer
02 Borealis
05 nova-Institut
06 FKuR
07 BASF
09 NESTE
10 TÜV Austria Belgium
11 Fachagentur Nachwachsende Rohstoffe e.V.
12 BlackIP
14 ANiMOX
15 Media Table
17 Zhongke Guosheng Technology
18 Sappi
19 Alfa Laval
20 Sugar Energy
21 CovationBio
22 Heraeus Deutschland
23 Covestro
24 UPM
25 UPM
26 REDcert
27 European Bioplastics
28 IFF
29 DIN CERTCO
31 GEA

To book a booth contact Guido Müller:
guido.mueller@nova-institut.de / +49 151 – 41 42 30 19
Free stands are reserved for Bronze Sponsors

How to get to the Venue

By Train:
Direct high speed train connections from Brussels, Amsterdam, Cologne, Frankfurt, Berlin, Munich to Siegburg - without changing trains or with a maximum of one change at Cologne Central Station.

By Plane:
The easiest way is to fly to Frankfurt and take the ICE direct from Frankfurt Airport to Siegburg (no change).

All locations are within walking distance via the pedestrian zone.

Or take the bus from the Central Station to the Rhein Sieg Forum (3 minutes).

Register here:
renewable-materials.eu/registration

23-03-22