



International Conference on  
**CELLULOSE FIBRES**  
2–3 February **2022**

# CONFERENCE

# JOURNAL

International Conference on Cellulose Fibres, the fastest growing fibre group in textiles, the largest investment sector in the bio-based economy and the solution to avoid microplastics

#### Award Sponsor



[gigkarasek.at](http://gigkarasek.at)

#### Gold Sponsors



**Birla Cellulose**  
Fibres from nature

[birlacellulose.com](http://birlacellulose.com)



[kelheim-fibres.com](http://kelheim-fibres.com)



[lenzing.com](http://lenzing.com)

#### Silver Sponsor



[fibre-solutions.levaco.com](http://fibre-solutions.levaco.com)

#### Organiser



[nova-institute.eu](http://nova-institute.eu)

#### Contact

**Dominik Vogt**

[dominik.vogt@nova-institut.de](mailto:dominik.vogt@nova-institut.de)

Tel.: +49 (0)2233 4814-49



[cellulose-fibres.eu](http://cellulose-fibres.eu)



## Table of Contents

Advisory Board, Conference Team .....	2
Introduction .....	3
Exhibition .....	4
Registration, Venue & Corona Information .....	5
nova-Institute .....	6
Conference Background .....	8
Program of the 1 <sup>st</sup> Day, 2 February 2022 .....	12
Program of the 2 <sup>nd</sup> Day, 3 February 2022 .....	18
Nominees of the Innovation Award .....	22
14 Valuable Quotes: Conference on Cellulose Fibres .....	26
Partners & Media Partners .....	29



### Free WIFI

**Network ID** nova-Conference  
**Password** Cellulose22



**Twitter**  
 #2022CCF



### RealTime Comments

**Join at slid.do**  
 #2022CCF

## Conference Advisory Board

We would like to thank the cellulose experts of the conference advisory board for their great help in selecting the best papers submitted and nominating the six best innovations for the award.



**Marina Crnoja-Cosic**  
 Kelheim Fibres (DE)



**Antje Potthast**  
 University of Natural Resources and Life Sciences (AT)



**Andreas Engelhardt**  
 The Fiber Year (CH)



**Sascha Schriever**  
 ITA - RWTH Aachen (DE)



**Ali Harlin**  
 VTT (FI)



**Roland Seidl**  
 Textilplus (CH)



**Jo-Ann Innerlohinger**  
 Lenzing (AT)



**Michael Trinkaus**  
 Mondi Consumer Packaging International (DE)



**Ralf Nyhofen**  
 Levaco Chemicals (DE)

## Your Conference Team



**Michael Carus**  
**CEO**  
 michael.carus@nova-institut.de



**Vanessa Kleinpeter**  
**Contact & Registration**  
 +49 (0)2233 4814-40  
 vanessa.kleinpeter@nova-institut.de



**Jutta Millich**  
**Media & Partnerships**  
 +49 (0)561 50358044  
 jutta.millich@nova-institut.de



**Guido Müller**  
**Sponsoring & Alliances**  
 +49 (0)2233 4814-44  
 guido.mueller@nova-institut.de



**Dr. Asta Partanen**  
**Program & Award**  
 +49 (0)2233 4814-59  
 asta.partanen@nova-institut.de



**Dominik Vogt**  
**Conference Manager**  
 +49 (0)2233 4814-49  
 dominik.vogt@nova-institut.de



### Dear Participants,

after the great success of the last years online-conference, we are happy to welcome you back to Cologne for the conference, exhibition, dinner buffet and local beer (“Kölsch”). Those, who cannot join us in Cologne, follow and comment online the comprehensive program on site.

Discussion panels are planned after each lecture and session, and Asta Partanen and I will accompany you from our conference site Maternushaus in Cologne throughout the day.

Cellulose fibres are virtually miracle materials. They have a wide range of applications that are increasingly expanding. The markets are driven by technological developments and political framework conditions, especially bans and restrictions on plastics and increasing sustainability requirements. The presentations will provide you with the rich information on opportunities for cellulose fibres through policy overview, special session for sustainability and recycling and alternative feedstocks as well as latest development in pulp, cellulose fibres and textiles. A look beyond the horizon is given with some examples from non-wovens and packaging and composites.

A special highlight will be the presentation of the “Cellulose Fibre Innovation of the Year 2022” award: a jury consisting of the advisory board, the conference sponsors and representatives of the nova-Institute nominated the outstanding “Top 6” applicants in the run-up to the conference.

Cellulose fibre solutions are expanding from hygiene and textiles up to alternatives for carbon fibres for light-weight applications, the nominated “Top 6” applications can help build a sustainable circular economy. The choice is yours: the participants will vote for the three winners of the award in the afternoon of the first conference day.

We wish you a good time, many insights and new ideas through the exchange with other experts.

Yours Michael Carus (CEO) and his team



**Michael Carus**  
CEO

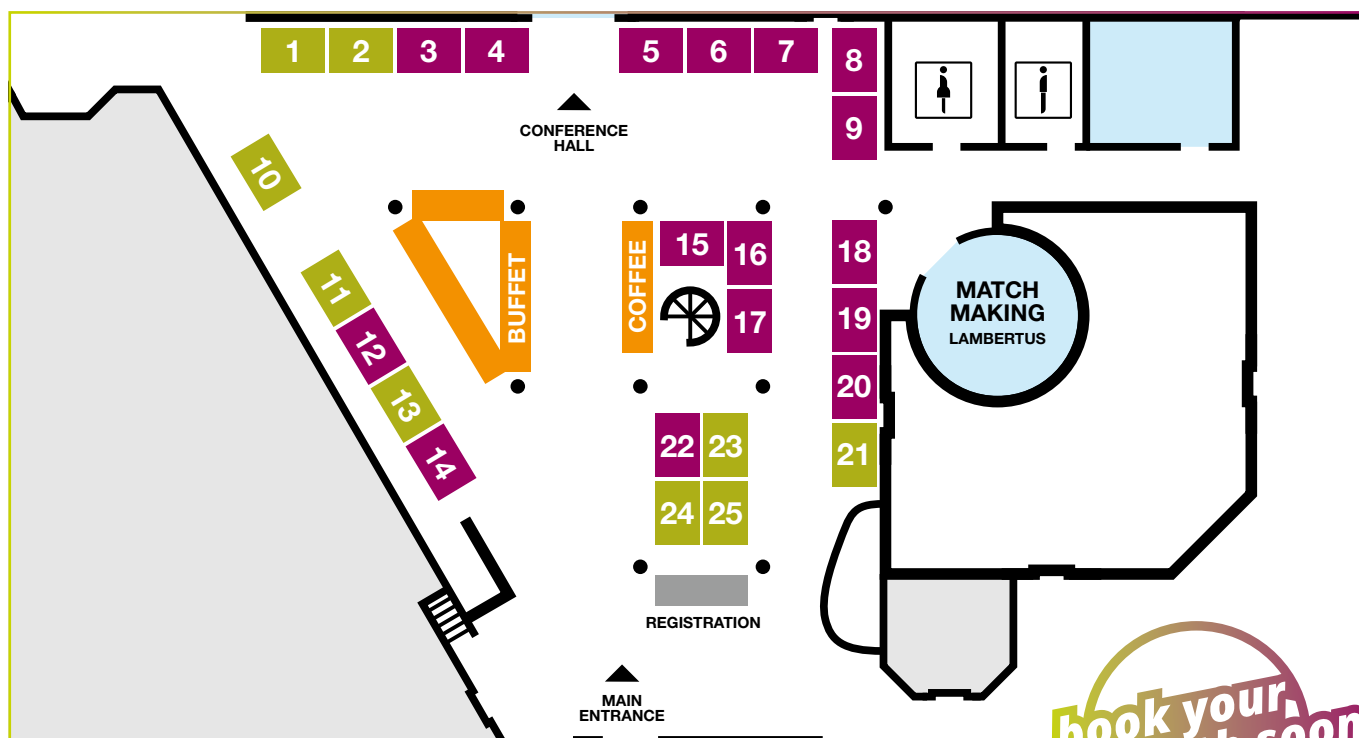




# Exhibition

[www.cellulose-fibres.eu/exhibitors](http://www.cellulose-fibres.eu/exhibitors)

■ Free ■ Reserved for sponsors (Become a sponsor) ■ Booked



## List of Exhibitors

- Booth 03 | **GIG Karasek (AT)**
- Booth 04 | **Lenzing (AT)**
- Booth 05 | **Kelheim Fibres (DE)**
- Booth 06 | **nova-Institute (DE)**
- Booth 08 | **Media Table**
- Booth 09 | **Fibenol (EE)**
- Booth 12 | **ITA-RWTH Aachen University (DE)**
- Booth 14 | **LIST Technology (CH)**

- Booth 15 | **LEVACO Chemicals (DE)**
- Booth 16 | **Poster Exhibition**
- Booth 17 | **Poster Exhibition**
- Booth 18 | **Match Making**
- Booth 19 | **Innovation Award "Cellulose Fibre Innovation of the Year 2022"**

- Booth 20 | **Dienes Apparatebau (DE)**
  - Booth 22 | **Sappi Biochemtech (NL)**
- Status: 1 February 2022 – more exhibitors expected.  
[www.cellulose-fibres.eu/exhibition-booking](http://www.cellulose-fibres.eu/exhibition-booking)

The poster session will take place during the lunch break of the second day. All accepted posters will be displayed at booths 16 and 17 in the conference exhibition area.

**Kaunas University of Technology (LT)** The dynamic behavior of a fibre in a bundle in the presence of dry friction forces | **LEVACO Chemicals (DE)** LEVACO Chemicals – Auxiliaries for viscose production | **Niederrhein University of Applied Sciences, Research Institute for Textile and Clothing (FTB) (DE)** Reduction of radiation transmission through functionalization of textiles from man-made cellulosic fibres | **OÜ Fibenol (EE)** Production of hydrolysis lignin, cellulosic sugars and micro crystalline cellulose. All-in-one go and in 20 seconds! |

**Surface Measurement Systems (UK)** Surface Characterization of Natural Fibers and Determination of Fragrance Adsorption Isotherms by inverse Gas Chromatography (iGC) | **Thüringisches Institut für Textil- und Kunststoff-Forschung Rudolstadt (DE)** Mechano-enzymatic treatment of recycled cotton pulp at high solids content | **University of Helsinki, Chemistry Department (FI)** Phase-separation of Cellulose from Ionic Liquid upon Cooling: Preparation of Microsized Particles | **University of Maribor, Faculty of Mechanical Engineering (SI)** Screen-printing of micro/nano-fibrillated cellulose for an improved moisture management and abrasion resistant properties of flame-resistant fabric



## Entrance Fee

The conference will take place in the Maternussaal of the Maternushaus.

### 2 Days (2–3 February 2022)

“Live” in-person event incl. dinner buffet & “Virtual” online component **945 €**

### “Virtual” Online Conference (2–3 February 2022)

**450 €**

### 1 Day (1<sup>st</sup> Day, 2 February 2022)

“Live” in-person event incl. dinner buffet & “Virtual” online component **640 €**

### 1 Day (2<sup>nd</sup> Day, 3 February 2022)

“Live” in-person event & “Virtual” online component **580 €**

### 2 Days – Students (2–3 February 2022)

“Live” in-person event incl. dinner buffet & “Virtual” online component **350 €**

## Venue

### Maternushaus

Kardinal-Frings-Str. 1–3  
50668 Köln (Cologne)  
Germany

Phone: +49 (0)221 1631-0

Keyword: nova

frontoffice@maternushaus.de

[www.maternushaus.de](http://www.maternushaus.de)

## Registration



[www.cellulose-fibres.eu/registration](http://www.cellulose-fibres.eu/registration)



## Corona Information

The conference will be hosted hybrid with a focus on physical attendance – of course under strict 2G+ Corona regulations: Admission only for vaccinated and recovered persons (certificate with QR code) and additionally with a current test certificate (max. 24 hours old). On-site, distance rules and masks are compulsory except at the place of sitting or during meals.

### Nearby Test Centres



[corona19-test.de](http://corona19-test.de)

Marzellenstr. 3-5,  
50667 Köln (Cologne)

Opening Hours: 8:00 - 20:00 (CET)



[amd.com.buerger-schnelltest.de](http://amd.com.buerger-schnelltest.de)

Marzellenstr. 10  
50667 Köln (Cologne)

Opening Hours: 9:00 - 20:00 (CET)



[buergertest-koeln.de](http://buergertest-koeln.de)

Komödienstr. 2,  
50667 Köln (Cologne)

Opening Hours: 9:00 - 18:00 (CET)

Information on entering Germany: <https://www.auswaertiges-amt.de/en/coronavirus/2317268>  
or <https://www.bundesgesundheitsministerium.de/en/coronavirus/infos-reisende/faq-tests-einreisende.html>

Re-open EU <https://reopen.europa.eu> provides information on the various measures in place, including on quarantine and testing requirements for travellers, the EU Digital COVID certificate to help you exercise your right to free movement, and mobile coronavirus contact tracing and warning apps.

Here you can find the corona rules for travelers, also transit rules e.g. a trip from Belgium through Germany to Austria: <https://reopen.europa.eu/de/from-to/BEL/AUT/DEU>



# nova-Institute for Ecology and Innovation



## Technology & Markets

- Market Research
- Innovation & Technology Scouting
- Trend & Competitive Analysis
- Supply & Demand Analysis
- Feasibility & Potential Studies
- Customised Expert Workshops

## Communication

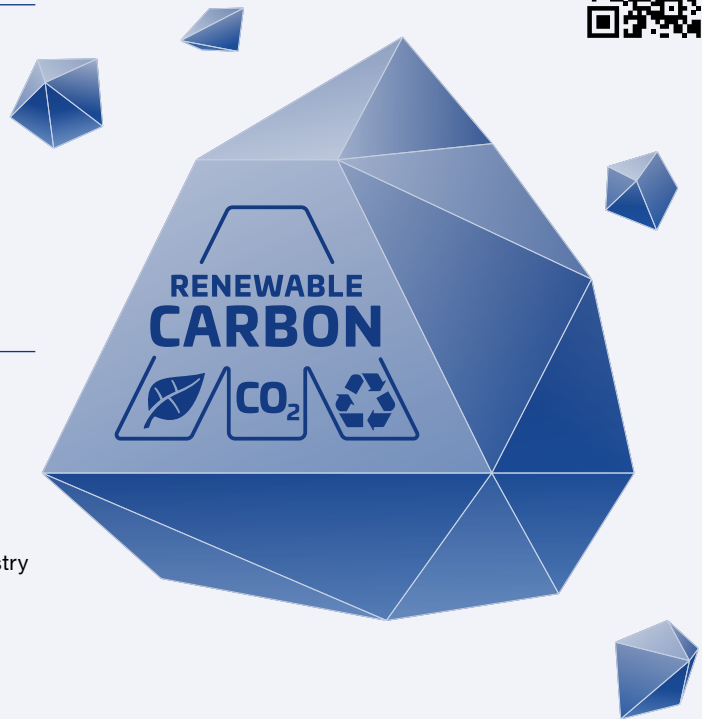
- Comprehensive Communication & Dissemination in Research Projects
- Communication & Marketing Support
- Network of 60,000 Contacts to Companies, Associations & Institutes
- Targeted Newsletters for 19 Specialty Areas of the Industry
- Conferences, Workshops & nova Sessions
- In-depth B2C Research

## Sustainability

- Tailor-made Life Cycle Assessments
- Customised Carbon Footprint Calculation Tools
- Social Impact Assessment & Social Acceptance
- Comprehensive Sustainability Assessments
- Sustainability Integrated Technology Development (SUITE D)
- Critical Reviews

## Economy & Policy

- Micro- and Macroeconomics
- Techno-Economic Evaluation (TEE) for Low & High TRL
- Target Price Analysis for Feedstock & Products
- Strategic Consulting for Industry, Policy & NGO's
- Political Framework, Measures & Instruments
- Standards, Certification & Labelling



nova-Institute is a private and independent research institute, founded in 1994; nova offers research and consultancy with a focus on the transition of the chemical and material industry to renewable carbon.

What are future challenges, environmental benefits and successful strategies to substitute fossil carbon with biomass, direct CO<sub>2</sub> utilisation and recycling?  
What are the most promising concepts and applications?  
We offer our unique understanding to support the transition of your business into a climate neutral future.

Our subjects include feedstock, technologies and markets, economy and policy, sustainability, communication and strategy development. nova-Institute has 40 employees.

### nova-Institute

Chemiepark Knapsack  
Industriestraße 300  
50354 Hürth, Germany  
[www.nova-institute.eu](http://www.nova-institute.eu)

T +49 (0)2233 4614-40  
F +49 (0)2233 4814-50  
[contact@nova-Institut.de](mailto:contact@nova-Institut.de)  
[www.renewable-carbon.eu](http://www.renewable-carbon.eu)

# THE RENEWABLE CARBON INITIATIVE

## Shape the Future of the Chemical and Material Industry

Renewable Carbon Initiative (RCI) was founded in September 2020. RCI members are committed to create a sustainable, fossil-free future for the chemical and material industry.



Bio-based CO<sub>2</sub>-based Recycling

## Circular Economy

### WHY JOIN RCI?

RCI is an organization for all companies working in and on sustainable chemicals and materials – renewable chemicals, plastics, composites, fibres and other products can be produced either from biomass, directly via CO<sub>2</sub> utilisation, or recycling.

RCI members profit from a unique network of pioneers in the sustainable chemical industry.

### RCI OFFERS ITS MEMBERS

- A common voice for the renewable carbon economy.
- Increased visibility of their individual renewable carbon solutions.
- Collective advocacy work to create a supportive regulatory and economic framework.
- Support in finding solutions for your specific problems on the way to your renewable carbon goals.

### MEMBERS



### PARTNERS



### JOIN NOW

Become a part of the Renewable Carbon Community (RCC) and shape the future of the chemical and material industry  
[www.renewable-carbon-initiative.com/membership/application](http://www.renewable-carbon-initiative.com/membership/application)

More members, partners and information  
[www.renewable-carbon-initiative.com](http://www.renewable-carbon-initiative.com)  
Contact: [dominik.vogt@nova-institut.de](mailto:dominik.vogt@nova-institut.de)  
[#renewablecarbon](https://twitter.com/renewablecarbon)



# International Conference on Cellulose Fibres 2022

The program reflects the current topics of industry and research

Cellulose fibres are a true material miracle as they offer a steadily expanding, broad range of applications. Meanwhile markets are driven by technological developments and policy frameworks, especially bans and restrictions on plastics, as well as an increasing number of sustainability requirements. The presentations will provide valuable information on the various use-opportunities for cellulosic fibres through a policy overview, a special session on sustainability, recycling and alternative feedstocks, as well as the latest developments in pulp, cellulosic fibres and yarns. In addition, examples of non-wovens, packaging and composites will offer a look beyond the horizon of conventional application fields.

The first conference-session “**Strategies and Market Trends**” provides an overview of the rapid development of cellulose fibres and their technological progress across the fibre market. An analysis of the key cost components of these fibres to benchmark against current cost levels will highlight future opportunities and challenges for novel textile fibres. The session will conclude with an overview of the industry’s recent strategies to defossiliate the fibre market.

The second session of the conference, “**New Opportunities for Cellulose Fibres in Replacing Plastics**”, will focus on questions such as: “What impact does the ban on plastics in single-use products have

on the industry?” and “What are the latest regulatory issues and policy opportunities for cellulose fibres?”. This section presents new opportunities for the replacement of fossil-based insulating materials with cellulose-based technologies suitable for use in a variety of applications, from aerospace to mobility and construction.

The third session of the conference, “**Sustainability and Circular Economy**”, highlights crucial issues with regard to the overall goal of keeping the environmental impact of cellulose fibres low. A core theme of the session is the responsible use of wood and forests. With this objective, the five speakers of the session discuss the importance of circular concepts for cellulose feedstocks. Exciting insights into the important “**Hot Button Report**” are offered by Canopy. The “**Hot Button Report**” enables the producers of cellulose fibres to better understand the impact their raw materials have on forests and the climate development worldwide.

For the second time, nova-Institute grants the “**Cellulose Fibre Innovation of the Year**”-Award, taking place during the first afternoon of the conference. The conference’s advisory board nominated six highly interesting products, ranging from cellulose made of orange- and wood pulp to a novel technology for cellulose fibre production. The presentations, election of the winner by the conference audience and the award ceremony will take place on the first evening of the conference. Cellulose fibre solutions





are expanding from application options such as hygiene or textiles to non-wovens and alternatives for carbon fibres for light-weight applications. The Cellulose Fibre Innovation of the Year 2022 Award will be voted for by conference delegates as well as online participants on the afternoon of 2 February at 18:10. Afterwards, the announcement of the winner will take place over a local beer. The evening gala dinner at the conference venue offers excellent networking opportunities.

The fourth session “**Recycling and other alternative raw materials**”, will cover topics ranging from textile recycling - both cotton and regenerated cellulose fibres - to the use of hemp shives as raw material. Self-initiated cooperation and waste management pave the way to a fully closed European material loop where textile waste is collected, recycled and reprocessed into new raw materials. The speakers will demonstrate the importance of cooperation in recycling fabrics already in circulation, perfectly following the topics and discussions of the previous conference day.

The extensive fifth session, “**New Technologies for Pulp, Fibres and Yarns**”, includes the participation of eight speakers and promises the reveal of various innovations and new approaches. These address the processing of pulp, fibres and yarn, with the aim of realizing most sustainable and efficient solutions. The broad spectrum of topics ranges from processing cellulose with ionic liquids,

material farming and chemical modification of pulp to functionalised fibres for feel-good textiles. Be curious and take a look at the abstracts to get an idea of the exciting content these four hours!

The last session of the conference “**New Technologies and Applications in Non-wovens and Composites**” introduces new approaches to sustainable non-wovens and composites made from regenerated cellulose fibres. Traditionally, cellulose-based fibres in non-wovens follow two forms of production processes: as fluff pulp for binder-bonded air laid non-wovens and as polyester-viscose fibre blends for wipe production. Find out more about suitable approaches to meet the new requirements for wipe materials under the EU directive on single-use plastics. The second presentation will focus on the developments in regenerated cellulose fibre-reinforced composites over the past few years. An overview of the current cellulose fibre use in applications and products will discuss the main motivations for their use and possible advantages, while also addressing disadvantages in comparison to natural and other man-made fibres. The last speaker of the conference will present additional alternatives for non-woven raw materials made from natural fibres such as hemp and linen. The presentations will be followed by a concluding-session, providing sufficient input for the final discussion of the conference.



# Our fibers come from nature. And they can be returned to nature too.

Our fibers come from wood, and like wood, they are biodegradable. This means that at the end of their life-cycle, they can re-enter the ecosystem, preparing the ground on which new plants can grow.

Find out more about how our brands turn wood into sustainable ingredients for clothing, everyday beauty, and household goods. Visit [www.lenzing.com](http://www.lenzing.com)

[purocel.com](http://purocel.com)

# Sustainability begins with responsible sourcing!

## Birla Purocel - Viscose fibres sourced exclusively from certified forests.

Our sustainable sourcing practices and commitment to conservation has earned us the top spot on Canopy's ranking of global viscose producers!

### Responsible Sourcing



Highest-ever 33 buttons rating in Canopy's Hot Button Report 2021

### Responsible Manufacturing



Best-in-class Higg (3.0) FEM 2019 score of 92%

### Responsible End of Life



Certified Biodegradable & Compostable by TUV AB

# Birla purocel™

because we care



To partner with us, write in to [purocel@adityabirla.com](mailto:purocel@adityabirla.com)

SCAN TO KNOW MORE





# DAY 1

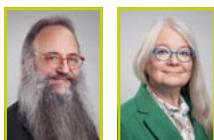
## Program of the Conference 2 February 2022 (9:30 – 18:30, CET)



9:30

**Michael Carus**  
nova-Institute (DE)  
*Conference Opening*

### STRATEGIES AND MARKET TRENDS



**Chairpersons**  
**Michael Carus and Asta Partanen**  
nova-Institute (DE)



9:40

**Andreas Engelhardt**  
The Fiber Year (CH)  
*Pandemic-induced Challenges and Changes for Fibre Industry*



10:00

**Ali Harlin**  
VTT Technical Research Center of Finland (FI)  
*Time to Demonstrate Future Proof Loop*



10:20

**Łucja Wanicka & João Cordeiro & Oskari Hellman**  
AFRY Management Consulting (FI)  
*Becoming Mainstream: Future Opportunities and Challenges for Novel Textile Fibres*



10:40

**Michael Carus**  
nova-Institute (DE)  
*What Renewable Carbon Means for the Cellulose Fibre Industry*

11:00

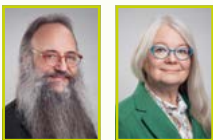
**Panel Discussion with all Speakers of the Session and  
Special Panelist: Marina Crnoja-Cosic, Kelheim Fibres (DE)**

11:15

**Coffee Break & Networking**



## NEW OPPORTUNITIES FOR CELLULOSE FIBRES IN REPLACING PLASTICS

**Chairpersons****Michael Carus and Asta Partanen**

nova-Institute (DE)

**11:45****Nicolas Hark**

nova-Institute (DE)

*Opportunities in Policy for Cellulose Fibres***12:05****Geoffrey Stijfs**

Sappi Europe (NL)

*Fibrillated Cellulose as a Natural Inspiration for Future Business***12:25****Stefanie Schlager**

Lenzing (AT)

*LENZING™ Fibres for Sustainable Single Use Products***12:55****Sascha Schriever**

Institut für Textiltechnik (ITA) of RWTH Aachen University (DE)

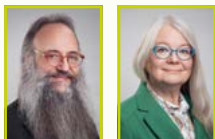
*Cellulose Aerogel Non-wovens – Sustainable Insulators of Tomorrow***13:15****Panel Discussion with all Speakers of the Session and****Special Panelists:** Michael Trinkaus, Mondi (AT);

Jo-Ann Innerlohinger, Lenzing (AT)

**13:30****Lunch & Networking**



## SUSTAINABILITY &amp; CIRCULAR ECONOMY

**Chairpersons****Michael Carus and Asta Partanen**

nova-Institute (DE)

**14:30****Nicole Rycroft & Peter Wood**

Canopy (CA)

*Fashion for Forests: CanopyStyle and the Hot Button Report***14:50****Maija Pohjakallio**

Metsä (FI)

*Cascading Use of Wood – in Time and in Value***15:10****Christian Schuster**

Lenzing (AT)

*Climate-neutral Wood-based Cellulose Fibres:**The Pathway of the Lenzing Group***15:30****Mukul K. Agrawal**

Birla Cellulose (IN)

*Eco-enhanced Sustainable MMCF for Fashion Industry***15:50****Nuno Azoia**

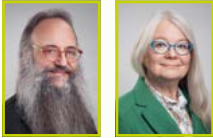
CeNTItvc - Centro de Nanotecnologia e Materiais Técnicos,

Funcionais e Inteligentes (PT)

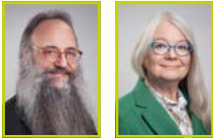
*Fiber4Fiber – A New Partnership Towards an Old, but Improved, Solution***16:10****Panel Discussion with all Speakers of the Session and****Special Panelist:** Sascha Schriever, ITA - RWTH Aachen (DE)**16:30****Coffee Break & Networking**



## INNOVATION AWARD “CELLULOSE FIBRE INNOVATION OF THE YEAR 2022”

**Chairpersons****Michael Carus and Asta Partanen**

nova-Institute (DE)

**17:00****Michael Carus and Asta Partanen**

nova-Institute (DE)

*Introduction for the Cellulose Fibre Innovation of the Year 2022***17:10****Wolfgang Aichhorn**

GIG Karasek (AT)

*Sponsor Award for the Cellulose Fibre Innovation of the Year 2022***17:20****Marc Philip Vocht**

DITF (DE)

*Carbon Fibres from Wood***17:30****Hermann Dauser**

Fibers365 (DE)

*Fibers365, Truly Carbon-Negative Virgin Fibres from Straw***17:40****Natalie Wunder**

Kelheim Fibres (DE)

*Sustainable Menstruation Panties: Application-driven Fibre Functionalisation***17:50****Enrica Arena**

Orange Fibre (IT)

*Tencel™ branded Lyocell Fibre Made of Orange and Wood Pulp***18:00****Anne Reboux**

RBX Créations (FR)

*Iroony® Hemp and Flax Cellulose***18:10****Janne Poranen**

SPINNOVA (FI)

*SPINNOVA, Sustainable Textile without Harmful Chemicals***18:20****Online Voting and Announcement of the Winners****18:30 –  
19:00****Networking with Local Beer****20:00****Gala Dinner**



# Conference on CO<sub>2</sub>-based Fuels & Chemicals 2022

23 – 24 March • Hybrid Event



## Leading Event on Carbon Capture & Utilisation

- Strategy & Policy
- Green Hydrogen Production
- Carbon Capture Technologies
- Carbon Utilisation (Power-to-X): Fuels for Transport and Aviation, Building Blocks, Bulk and Fine Chemicals, Advanced Technologies / Artificial Photosynthesis
- Innovation Award “Best CO<sub>2</sub> Utilisation 2022”



Innovation Award  
Sponsor



Innovation Award  
Co-Organiser



Sponsors



**Call for Innovation**  
Submit your application  
for the “Best CO<sub>2</sub>  
Utilisation 2022”

Organiser



Contact

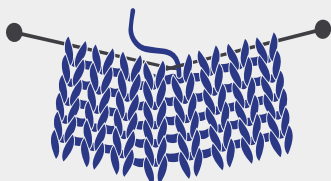
**Dominik Vogt**  
dominik.vogt@nova-institut.de  
Tel.: +49 2233/ 48 14 49

[co2-chemistry.eu](http://co2-chemistry.eu)

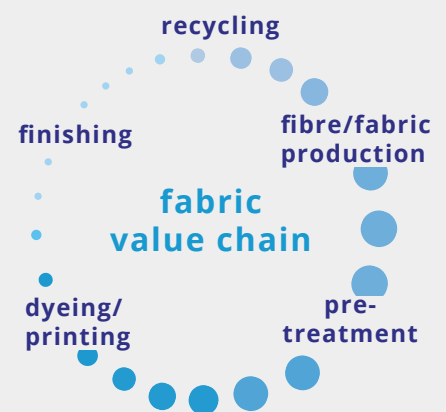


An idea how enzymes could help make your **textile process** more sustainable?

Do you have a **biotech** idea to improve **textiles and fibres**?



We knit you together!



**CLIB**

Cluster Industrielle Biotechnologie  
Völklinger Str. 4  
40219 Düsseldorf

[www.clib-cluster.de](http://www.clib-cluster.de)

Contact:  
Dr. Tatjana Schwabe-Marković  
[schwabe@clib-cluster.de](mailto:schwabe@clib-cluster.de)



KELHEIM FIBRES – THE SOLUTION FOR WELL-BEING TEXTILES


## Our core ingredients: Nature and Performance

Boost well-being with our plant-based speciality viscose fibres. Designed for body and soul.

PLANT-BASED



THERMO & MOISTURE MANAGEMENT



DURABLE COLOURS




WEARER COMFORT




BIO-DEGRADABLE




**Fibre Science:**  
Functionalize your fabrics to maximize performance



CROSS-SECTION FUNCTIONALIZATION



INTRINSIC FUNCTIONALIZATION



0.5 – 3.3 dtex

DIMENSIONS FUNCTIONALIZATION

**Coming soon:**  
Cellulosic fibres from recycled raw materials – a solution for Europe

Made with





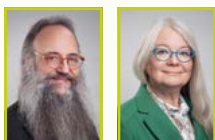
# DAY 2

## Program of the Conference 3 February 2022 (9:00 – 17:30, CET)



**9:00** **Michael Carus**  
nova-Institute (DE)  
*Conference Opening*

### RECYCLING AND OTHER ALTERNATIVE FEEDSTOCKS



**Chairpersons**  
**Michael Carus and Asta Partanen**  
nova-Institute (DE)



**9:10** **Heikki Hassi**  
SciTech-Service (FI)  
*Textile Recycling and MMCFs; Systemic Challenges, Market Opportunities and Advancing Technologies*



**9:30** **Valerie Langer**  
Canopy (CA)  
*The Perfect Storm – A Five Year Feedstock Shift Forecast*



**9:50** **Helena Claesson & Christian Weilach**  
Södra (SE) & Lenzing (AT)  
*Two is Better than One – Lenzing and Södra Together Face the Challenge of Recycling of Textiles*



**10:10** **Marina Crnoja-Cosic & Harald Cavalli-Björkman**  
Kelheim Fibres (DE) & re:newcell (SE)  
*Sustainable Cellulosic Fibres from Recycled Raw Materials – A Solution for Europe*



**10:30** **Frank Meister**  
Thüringisches Institut für Textil- und Kunststoff-Forschung (DE)  
*Lyohemp Fibres Made of Dissolving Pulp Based on Hemp Shives*



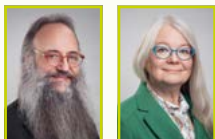
**10:50** **Miguel Sanchis-Sebastiá**  
ShareTex (SE)  
*Expanding Textile Recycling Beyond Cotton: Innovations to Recycle Regenerated Cellulose Fibres*

**11:10** **Panel Discussion with all Speakers of the Session and Special Panelists:**  
Sascha Schriever, ITA - RWTH Aachen (DE); Michael Trinkaus, Mondi (AT)

**11:25** **Coffee Break & Networking**



## NEW TECHNOLOGIES FOR PULPS, FIBRES AND YARN

**Chairpersons****Michael Carus and Asta Partanen**

nova-Institute (DE)

**11:45****Antje Ota**

Deutsche Institute für Textil- und Faserforschung (DITF) (DE)

*The Versatility of the HighPerCell® Technology for Cellulose Filament***12:05****Carlo Centonze**

HEIQ (CH)

*HeiQ AeonIQ – Cellulose Yarn Focused on Climate and Circularity***12:25****Manuel Steiner**

LIST Technology AG (CH)

*Cellulose Dissolving Technology Platform***12:45****Dominik Mayer**

Kelheim Fibres (DE)

*Functionalized Viscose Fibres for Wellbeing Textiles: How Infrared Celliant® Viscose supports a Healthy and Sustainable Lifestyle***13:05****Panel Discussion with all Speakers of the Session and Special Panelist:**

Marina Crnoja-Cosic, Kelheim Fibres (DE)

**13:25****Lunch & Networking****14:45****Michael Sturm**

TITK (DE)

*Method for the Evaluation of the Dissolution Power and Dissolution Quality of Cellulosic Raw Materials Dissolved in New Ionic Liquids***15:05****Ofir-Aharon Kuperman**

Weizmann Institute of Science (IL)

*Material Farming and Biological Fabrication of Cellulose Fibres with Tailored Properties***15:25****Taina Kamppuri**

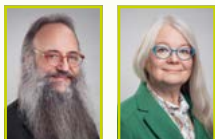
VTT Technical Research Center of Finland (FI)

*Chemically Modified Kraft Pulps to Improve the Sustainability of Regenerated Fibres***15:45****Panel Discussion with all Speakers of the Session and Special Panelist:**

Friedrich Weninger, MD Dornbirn GFC (AT)



## NEW TECHNOLOGIES AND APPLICATIONS IN NON-WOVENS AND COMPOSITES

**Chairpersons**

**Michael Carus and Asta Partanen**  
nova-Institute (DE)



16:00

**Thomas Weigert**

Trützschler Nonwovens & Man-Made Fibers (DE)  
*Cellulose Fibres – Two New Approaches to Sustainable Non-wovens*



16:20

**Nina Graupner**

HSB - City University of Applied Sciences (DE)  
*Composites Made from Regenerated Cellulose Fibres – from Durable Applications to Rapidly Degradable Materials*



16:40

**Jason Finnis**

Bast Fibre Technologies (CA)  
*Sustainable Innovation: Performance Enhanced Hemp and Linen Fibres for the Global Non-woven Industry*

17:00

**Panel Discussion with all Speakers of the Session**

17:20

**Closing Remarks**

**RENEWABLE  
MATERIALS**  
CONFERENCE 2022

10-12 May – Cologne, Germany



## The Answer to Your Hunt for Renewable Materials

The unique concept of presenting all renewable material solutions at one event hits the mark: bio-based, CO<sub>2</sub>-based and recycled are the only alternatives to fossil-based chemicals and materials.

**First day:**

- Chemical Industry: Challenges and Strategies
- Renewable Chemicals and Building Blocks
- Biorefineries
- Chemical Recycling

**Second day:**

- Renewable Polymers and Plastics
- Fine Chemicals
- Policy and Markets
- Innovation Award

**Third day:**

- Renewable Plastics and Composites
- Biodegradation
- The Brands View on Renewable Materials



**Call for Innovation**  
Submit your Application  
for the "Renewable  
Material of the Year  
2022"

Organiser



Premium Partner



Innovation Award Sponsor



Sponsors



renewable-materials.eu



Concentrating the Essentials

GIG Karasek offers thermal separation technologies for recovering valuable liquids (solvents) and/or concentration of organic solutions in various industries (e.g. dissolving fibre).

Our Portfolio includes individual and customized process technologies, from **pilot plants, skid units** up to **industrial plants**.

## Recoveries for Pulp & Fibre Industry

- ◆ **Solvent Recoveries**
- ◆ **Distillations**
- ◆ **Concentration of Liquids**

### Evaporation Technology

- ◆ Evaporator Types:
  - Plate Fallingfilm Evaporator
  - Tube Fallingfilm Evaporator
- ◆ Multistage Evaporation Plants
- ◆ MVR - Mechanical Vapor Recompression
- ◆ TVR - Thermal Vapor Recompression

### Rectification / Distillation

### Thinfilm-/Shortpath Technology

- ◆ Evaporator Types:
  - Plate Fallingfilm Evaporator
  - Tube Fallingfilm Evaporator
- ◆ Thin Film Dryer:
  - horizontal
  - vertical
- ◆ Miniplant

### Expertise on selected solvents

- ◆ DMAC / DMF
- ◆ Trichlorethylene
- ◆ and many more
- ◆ NMP
- ◆ Ionic Liquids

[www.gigkarasek.com](http://www.gigkarasek.com)





# Nominees of the Innovation Award

## Cellulose Fibre Innovation of the Year 2022

**1** CELLULOSE FIBRE INNOVATION OF THE YEAR 2022  
 SPONSORED BY GIG KARASEK  
 BY NOVA-INSTITUTE

**6**

**1**

**2**

**3**

**4**

**5**



Organiser



Sponsor Innovation Award

Innovation Award



# What you can expect – the “Top 6” candidates in detail

**1**

## Carbon Fibres from Wood

German Institutes of Textile and  
Fiber Research Denkendorf (DE)



The HighPerCell<sup>Carbon</sup>® technology is a sustainable and alternative process for the production of carbon fibres made from wood. The technology starts with wet spinning of cellulosic fibres using ionic liquids (IL) as direct solvent in an environmentally friendly, closed loop filament spinning process (HighPerCell® technology). These filaments are directly converted into carbon fibres by a low-pressure stabilisation process, followed by a suitable carbonisation process.

No exhaust fumes or toxic by-products are formed during the whole process. Furthermore, the approach allows a complete recycling of solvent and precursor fibres, creating a unique and environmentally friendly process. Carbon fibres are used in many lightweight applications and the fibres are a sustainable alternative to fossil-based ones.

More information: [www.ditf.de/en](http://www.ditf.de/en)

**2**

## Fibers365, Truly Carbon-Negative Virgin Fibres from Straw

Fibers365 (DE)



Fibers365 are the first carbon-negative virgin straw fibres on the market. The Fibers365 concept is based on a unique, state of the art process to provide functional, carbon negative, and competitive non-wood biomass products such as virgin fibres for paper, packaging and textile purposes as well as high value process energy, biopolymer and fertilizer side streams.

The products are extracted from the stems of annual food plants such as straw by a chemical-free, regional, farm level steam explosion pulping technology, allowing an easy separation of the fibres from sugars, lignin, organic acid and minerals. In the case of annual plants, CO<sub>2</sub> emissions are recaptured within 12 months from their production date, offering “instant”, yearly compensation of corresponding emissions.

More information: [www.fibers365.com](http://www.fibers365.com)



# What you can expect – the “Top 6” candidates in detail

3

**Iroony® Hemp and Flax Cellulose**  
**RBX Créations (FR)**



Iroony® is a branded cellulose made by RBX Créations from hemp. This resistant hemp plant grows quickly within in a few months, massively captures carbon and displays a high content of cellulose. The biomass is directly collected from French farmers who cultivate without chemicals or irrigation, in extended rotation cycles, contributing to soil regeneration and biodiversity. For a diversified supply, the hemp can be combined with organically-grown flax.

Through its patented process, RBX Créations extracts high-purity cellulose, perfectly suitable for spinning technologies such as HighPerCell® of DITF research centre. The resulting fibres display versatile properties of fineness, tenacity and stretch, for applications like clothing or technical textiles. Iroony® combines low impact, trackability and performance.

More information: [www.iroony.net](http://www.iroony.net)

4

**SPINNOVA, Sustainable Textile**  
**Fibre without Harmful Chemicals**  
**Spinnova (FI)**



Spinnova’s innovative technology enables production of sustainable textile fibres in a mechanical process, without dissolving or any harmful chemicals. The process involves use of paper-grade pulp and mechanical refining to turn pulp into microfibrillated cellulose (MFC). The fibre suspension consisting of MFC is extruded to form textile fibre, without regeneration processes.

The Spinnova process does not generate any side waste, and the environmental footprint of SPINNOVA® including 65 % less CO<sub>2</sub> emissions and 99 % less water compared to cotton production. Spinnova’s solution is also scalable: Spinnova targets to reach 1 million tonnes annual production capacity in the next 10 to 12 years.

More information: [www.spinnova.com](http://www.spinnova.com)





## What you can expect – the “Top 6” candidates in detail

5

**Sustainable Menstruation Panties:  
Application-driven Fibre Functionalisation  
Kelheim Fibres (DE)**



Kelheim's plant-based and biodegradable fibres contribute significantly to a sustainable future in the field of reusable hygiene textiles. Through innovative functionalisation they are specifically adjusted to the requirements of the single layers and thereby reach a performance comparable to that of synthetic fibres.

A unique duality in fibre technology is created: sustainably manufactured cellulosic fibres that allow for high wearing comfort and reusability with extraordinary, durable performance. Fibre concepts comprise Celliant® Viscose, an in-fibre infrared solution and Danufil® Fibres in the top sheet, Galaxy, a trilobal fibre for the ADL, Bramante, a hollow viscose fibre, in the absorbing core and a water repellent woven fabric, a biodegradable PLA film or a sustainable coating as a back sheet.

More information: [www.kelheim-fibres.com](http://www.kelheim-fibres.com)

6

**TENCEL™ branded Lyocell Fibre  
made of Orange and Wood Pulp  
Orange Fiber (IT)**



Orange Fiber is the world's first company to produce a sustainable textile fibre from a patented process for the extraction of cellulose to be spun from citrus juice leftovers, which are more than 1 million tonnes a year just in Italy.

The result of our partnership with Lenzing Group, leading global producer of wood-based specialty fibres, is the first ever TENCEL™ branded lyocell fibre made of orange and wood pulp. A novel cellulosic fibre to further inspire sustainability across the value chain and push the boundaries of innovation.

This fibre, part of the TENCEL™ Limited Edition initiative, is characterized by soft appeal and high moisture absorbance and has already obtained the OEKO-TEX Standard 100 certificate and is undergoing a diverse set of other sustainability assessments.

More information: [www.orangefiber.it](http://www.orangefiber.it)



# Valuable Quotes

**Lucja Wanicka & Joao Cordeiro**

**AFRY Management Consulting (FI)**

*"In AFRY's presentation, parallels will be drawn to viscose and lyocell to anticipate the future opportunities and some challenges that novel textile fibre developers will face in order for them to become mainstream and commercially successful."*

**Valerie Langer**

**Canopy (CA)**

*"Canopy will speak about the factors that will accelerate the production and purchasing of Next Gen MMCF over the next five years and how this will change the industry's perception of itself as a forest products sector."*

**Nuno Azoia**

**CeNTItvc (PT)**

*"The Fiber4Fiber project, a consortium by Altri, a leading Portuguese eucalyptus pulp producer, CeNTI, a multi-sectoral R&D institution in the fields of smart and functional materials, and CITEVE, a Technological Institute in the area of textile & clothing, is working towards strengthen the knowledge on the production of dissolving wood pulp optimised for high quality man-made cellulosic fibres."*

**Carlo Centonze**

**HEIQ (CH)**

*"HeiQ AeoniQ, a climate positive continuous cellulose filament yarn, is a versatile high performance substitute to polyester and nylon fibres, with properties particularly well suited for next-to-skin sports, outdoor and activewear apparel, providing a path for apparel brands to directly act to reduce carbon dioxide and synthetic microfibre impact."*

**Nina Graupner**

**HSB (DE)**

*"Regenerated cellulose fibres as reinforcement for high-quality bio-based composites."*

**Dominik Mayer**

**Kelheim Fibres (DE)**

*"Celliant® Viscose consequently combines the use of sustainable raw material and infrared functionality to support the physical, mental and emotional wellbeing of the end-user by adding a little something extra to our customer's fabric or structure."*

**Stefanie Schlager**

**Lenzing (AT)**

*"In the controversial discussion between maintaining high hygiene standards on the one hand and declining single use products on the other hand, we present sustainable solutions to meet both sides."*

**Maija Pohjakallio**

**Metsä (FI)**

*"Circular and sustainable use of wood requires a systems perspective which cannot be achieved solely by following the cascading in time principle."*

**Helena Claesson**

**Södra Skogsägarna ekonomisk förening (SE)**

*"Two is better than one – Lenzing and Södra together face the challenge of recycling of textiles."*

**Miguel Sanchis-Sebastià**

**ShareTex (SE)**

*"ShareTex presents its innovative process to recycle waste textiles which can tolerate any type of cellulosic fibre regardless of its properties, opening the possibility to expand textile recycling to regenerated cellulose fibres."*



**Andreas Engelhardt**

**The Fiber Year (CH)**

*"Improvements in textile industry despite several constraints but pre-pandemic level still seems a way to go."*

**Michael Sturm**

**TITK (DE)**

*"TITK has established a small scale procedure of testing and comparing various Lyocell solvents and different cellulose pulps for estimation their ability in larger scales."*

**Taina Kamppuri**

**VTT (FI)**

*"In her presentation we will hear the opportunities offered by chemically modified kraft pulps in increasing sustainable after treatment options in cellulosic textile fibres."*

**Filipe Natalio**

**Weizmann Institute of Science (IL)**

*"Material Farming is an opportunity to implement sustainable alternative(s) for the production of functional cotton fibres to overcome chemical fibre post-processing."*



International Conference on  
**CELLULOSE FIBRES**  
**2023**

[cellulose-fibres.eu](http://cellulose-fibres.eu)

SAVE THE DATE

8 – 9  
MARCH  
2023

International Conference on Cellulose Fibres, the fastest growing fibre group in textiles, the largest investment sector in the bio-based economy and the solution to avoid microplastics

SILVER SPONSOR

# Fibre Solutions

with passion for your fibre

## Modifier:

LUCRASPIN® TM 15  
LUCRASPIN® VM 17  
LUCRASPIN® VM 503

## Activator:

LUCRASPIN® VA 347

## Spin bath:

LUCRASPIN® D 412  
LUCRASPIN® VD 307

# LUCRASPIN®

Auxiliaries for viscose  
fibre production

## Finishes nonwoven:

LUCRASPIN® VF 639  
LUCRASPIN® VF 411

## Filament yarn:

LUCRASPIN® AFS 788  
LUCRASPIN® IT 121

## Finishes staple fibre:

LUCRASPIN® H 145  
LUCRASPIN® ASA 65  
LUCRASPIN® V 455



**LEVACO Chemicals GmbH**  
[www.levaco.com](http://www.levaco.com)

Chempark Leverkusen  
Kaiser-Wilhelm-Allee  
D-51368 Leverkusen  
Phone: +49 (0)214 86927 121  
Email: [fibre@levaco.com](mailto:fibre@levaco.com)

















**LEVACO Far East Limited**  
[www.levaco.hk](http://www.levaco.hk)

Room 10, 9 Floor, Sterling Centre  
No. 11 Cheung Yue Street  
Lai Chi Kok, Kowloon  
Hong Kong  
Phone: +852 2122 9025





## Partners

 bcnp.com	 bio.nrw.de	 canopyplanet.org	 carmen-ev.de
 clib-cluster.de	 fashionforgood.com	 ibbnetzwerk-gmbh.com	 ita.rwth-aachen.de
 kunststoffland-nrw.de	 renewable-carbon-initiative.com	 at-rus.com	 textileexchange.org
 thefiberyear.com	 wcbef.com		

## Media Partners

 biobasedpress.eu	 bioplasticsmagazine.com	 chemindigest.com	 euwid-paper.com
 greenchemicalsblog.com	 fiberjournal.com	 renewablematter.eu	 textilemedia.com/medical-textiles
 heise.de/tr	 textilemedia.com/mobiletex	 goingpublic.de/lifesciences	 renewable-carbon.eu/news
 rosflaxhemp.ru	 textilplus.com	 textiletechnology.net	 textination.de

# nova Market and Trend Reports on Renewable Carbon

## The Best Available on Bio- and CO<sub>2</sub>-based Polymers & Building Blocks and Chemical Recycling

**Bio-based Naphtha and Mass Balance Approach**  
Status & Outlook, Standards & Certification Schemes

**Principle of Mass Balance Approach**

Feedback: Use of secondary carbon (e.g. from biogas production)  
Process: Allocation of secondary carbon to the product  
Products: Allocation of the secondary carbon to the product

Authors: Michael Carus, Doris de Guzman and Harald Käß  
March 2021  
This and other reports on renewable carbon are available at [www.renewable-carbon.eu/publications](http://www.renewable-carbon.eu/publications)

**Bio-based Building Blocks and Polymers – Global Capacities, Production and Trends 2020–2025**

Authors: Pia Skoczinski, Michael Carus, Doris de Guzman, Harald Käß, Raj Chirrapati, Jan Ravenstijn, Wolfgang Balus and Achim Raschka  
January 2021  
This and other reports on renewable carbon are available at [www.renewable-carbon.eu/publications](http://www.renewable-carbon.eu/publications)

**Carbon Dioxide (CO<sub>2</sub>) as Chemical Feedstock for Polymers**  
Technologies, Polymers, Developers and Producers

Authors: Pauline Ruiz, Achim Raschka, Pia Skoczinski, Jan Ravenstijn and Michael Carus, nova-Institut GmbH, Germany  
January 2021  
This and other reports on renewable carbon are available at [www.renewable-carbon.eu/publications](http://www.renewable-carbon.eu/publications)

**Chemical recycling – Status, Trends and Challenges**  
Technologies, Sustainability, Policy and Key Players

**Plastic recycling and recovery routes**

Authors: Lars Krause, Florian Dostich, Pia Skoczinski, Michael Carus, Pauline Ruiz, Lara Damm, Achim Raschka  
November 2020  
This and other reports on the bio- and CO<sub>2</sub>-based economy are available at [www.renewable-carbon.eu/publications](http://www.renewable-carbon.eu/publications)

**Production of Cannabinoids via Extraction, Chemical Synthesis and Especially Biotechnology**  
Current Technologies, Potential & Drawbacks and Future Development

Authors: Pia Skoczinski, Frapj Osterhomen, Bernhard Beltsch, Michael Carus and Achim Raschka  
January 2021  
This and other reports on renewable carbon are available at [www.renewable-carbon.eu/publications](http://www.renewable-carbon.eu/publications)

**Commercialisation updates on bio-based building blocks**

**Bio-based building blocks**  
Evolution of worldwide production capacities from 2011 to 2024

Author: Doris de Guzman, Tonon OtsChem, United Kingdom  
Updated Executive Summary and Market Review May 2020 – Originally published February 2020  
This and other reports on the bio- and CO<sub>2</sub>-based economy are available at [www.bio-based.eu/reports](http://www.bio-based.eu/reports)

**Levulinic acid – A versatile platform chemical for a variety of market applications**  
Global market dynamics, demand/supply, trends and market potential

Authors: Achim Raschka, Pia Skoczinski, Raj Chirrapati, Angel Puente and Michael Carus, nova-Institut GmbH, Germany  
October 2019  
This and other reports on the bio-based economy are available at [www.bio-based.eu/reports](http://www.bio-based.eu/reports)

**Succinic acid – From a promising building block to a slow seller**  
What will a realistic future market look like?

Pharmaceutical/Cosmetic	Industrial
<ul style="list-style-type: none"><li>Active ingredient for derivate clean/footpaste</li><li>Active</li><li>Carbon-succinate in anticancerogenic</li><li>Essential additive</li><li>Intermediate for furans</li><li>Pharmaceutical intermediates, antibiotics, antiparasitic (mephaols, anthelmintic, disinfectant)</li><li>Preparative for vitamins</li><li>Remove fish odour</li><li>Used in the preparation of vitamin A</li></ul>	<ul style="list-style-type: none"><li>De-icer</li><li>Engineering plastics and epoxy resin</li><li>Agrochemicals</li><li>Chemical synthesis, regulation of growth</li><li>Intermediate for furans + photographic chemicals</li><li>Coating resin for epoxy-based paint</li><li>Polymers</li><li>Adhesives, Lubricants</li><li>Surface cleaning agent (acid, electroless, non-oxidative industry)</li></ul>
Food	Other
<ul style="list-style-type: none"><li>Bread softening agent</li><li>Flavour enhancer</li><li>Flavouring agent and acidic seasoning in range food</li><li>Microencapsulation of flavouring oils</li><li>Preventive (biocidal, anti-bio)</li><li>Protein gelatinisation and in dry gelatin</li><li>Microencapsulation, flavorings</li><li>Used in synthesis of modified starch</li></ul>	<ul style="list-style-type: none"><li>Alloying Aluminium</li><li>Chemical feed, printing, electroplating baths</li><li>Coatings, ink, synthetic ion-exchange resins</li><li>Coating resin for epoxy-based paint</li><li>Eye intermediate, plastic carrier, ink, toner</li><li>Electric insulator, epoxy resin for traces</li><li>Part of external treatment for turkey skins</li><li>Preparative for car brakes</li><li>Salt-chelating agent</li></ul>

Authors: Raj Chirrapati, Angel Puente, Pia Skoczinski, Achim Raschka, Michael Carus, nova-Institut GmbH, Germany  
October 2019  
This and other reports on the bio-based economy are available at [www.bio-based.eu/reports](http://www.bio-based.eu/reports)

**Standards and labels for bio-based products**

Authors: Lara Damm, Michael Carus and Dr. Asta Partanen  
nova-Institut GmbH, Germany  
May 2017  
This and other reports on the bio-based economy are available at [www.bio-based.eu/reports](http://www.bio-based.eu/reports)



[renewable-carbon.eu/publications](http://renewable-carbon.eu/publications)



A large rectangular area with a light yellow background and horizontal dotted lines, intended for taking notes.

