



Cellulose Fibre Innovation of the Year 2022: Cellulose Fibre Solutions are expanding from hygiene and textiles as well as nonwovens up to alternatives for carbon fibres for light-weight applications.

Great submissions made the nomination for the Innovation Award difficult. All of them present promising sustainable solutions in the field of cellulose fibres value chain. Six of them now get the chance to demonstrate their potential to a wide audience in Cologne (Germany), and online.



**Nominees of the Innovation Award**  
Cellulose Fibre Innovation of the Year 2022

cellulose-fibres.eu

- 1 Carbon Fibres from Wood**  
German Institutes of Textile and Fiber Research Denkendorf (DE)
- 2 Fibers365, Truly Carbon-Negative Virgin Fibres from Straw**  
Fibers365 (DE)
- 3 Irony® Hemp and Flax Cellulose**  
RBX Créations (FR)
- 4 SPINNOVA, Sustainable Textile Fibre without Harmful Chemicals**  
Spinnova (FI)
- 5 Sustainable Menstruation Panties: Application-driven Fibre Functionalisation**  
Kelheim Fibres (DE)
- 6 TENCEL™ branded Lyocell Fibre made of Orange and Wood Pulp**  
Orange Fiber (IT)

Organiser

For the second time, nova-Institute grants the “Cellulose Fibre Innovation of the Year” within the framework of the “International Conference on Cellulose Fibres 2022” (2-3 February 2022). The advisory board of the conference nominated six 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 day of the conference.

Cellulose fibres show an increasingly expanding wide range of applications, while at the same time markets are driven by technological developments and political framework conditions, especially bans and restrictions on plastics and increasing sustainability requirements. The conference provides rich information on opportunities for cellulose fibres through policy assessment, a session on sustainability, recycling and alternative feedstocks as well as latest development in pulp, cellulose fibres and yarns. This includes application such as nonwovens, packaging and composites.

Here are the nominees:

### Carbon Fibres from Wood – German Institutes of Textile and Fiber Research Denkendorf (Germany)



© DITF

The HighPerCellCarbon® 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.

### Fibers365, Truly Carbon-Negative Virgin Fibres from Straw – Fibers365 (Germany)

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, bi-polymer 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.



© Fibers365

### SPINNOVA, Sustainable Textile Fibre without Harmful Chemicals – Spinnova (Finland)



© Spinnova

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 re-generation 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.

### Iroony® Hemp and Flax Cellulose – RBX Créations (France)



© RBX Créations

Iroony® is a branded cellulose made by RBX Créations from hemp. This resistant hemp plant grows quickly within 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.

### Sustainable Menstruation Panties:

#### Application-driven Fibre Functionalisation – Kelheim Fibres (Germany)

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 infibre 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.



© Kelheim Fibres

### TENCEL™ branded Lyocell Fibre made of Orange and Wood Pulp – Orange Fiber (Italy)

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-



© Orange Fiber



TEX Standard 100 certificate and is undergoing a diverse set of other sustainability assessments.

*Source: nova-Institut GmbH*