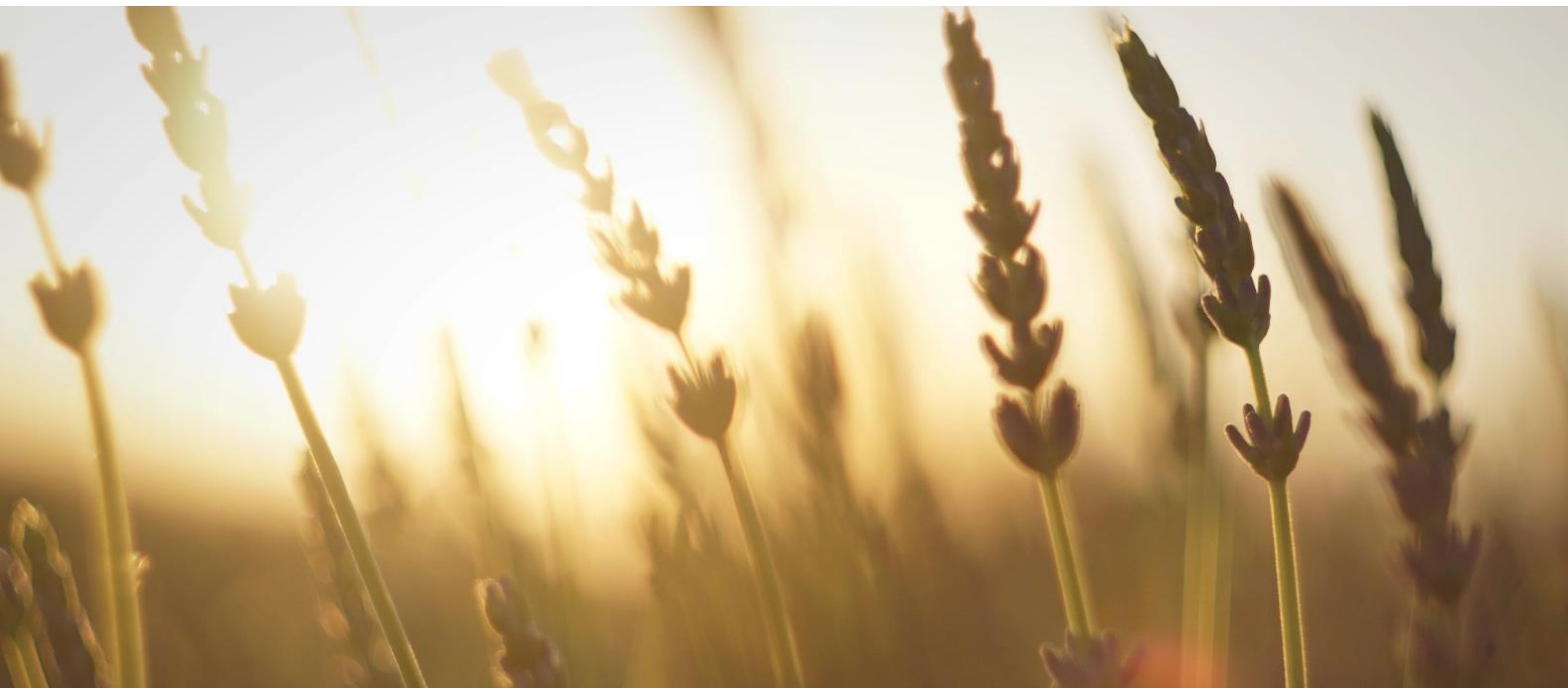


## News Review



**Issue Seventy-Six**

**July 2018**

Each month we review the latest news and select key announcements and commentary from across the biobased chemicals and materials sector.

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# Foreword

Welcome to July's Biobased Products News Review.

Where biobased products are concerned, the most-touted advantage is that they are renewable: being made from plant biomass that can be regrown. To a lesser degree, they also serve as a mitigator of carbon emissions, serving as a net carbon sink. However, biobased products can offer properties that their fossil-based counterparts cannot, and this is often not talked about as often as their environmental benefits. However, there is a report this month that explains just how significant these additional properties could be. Biomass is more chemically variable than fossil fuels, which duly presents a greater array of processing options for biobased chemicals. When these biobased monomers are polymerised, it results in a greater array of functional groups being spread along the polymer chain, which, according to this research, greatly increases the post-polymerisation modification prospects of biobased polymers. This potentially has a great impact on the diversity of properties achievable in biobased polymers, and can allow for greater fine-tuning of their functionality.

Another biobased product that has really impressed us here at NNFCC has been the recent developments in synthetic spider silk. This innovative material is showing great potential in a multitude of applications. One of the current hurdles to this product is the rate of production: it is timely and costly to produce, making it expensive for the end-user. This may, however, be about to change, as Kraig Biocraft Ltd, one of the leading spider silk producers in the world has announced that they have made a breakthrough in their production process, allowing for larger, more complex spider silk fibres to be produced faster. This will hopefully increase the array of available applications for the fibres, but also crucially reduce production costs, both in terms of time and money, making the end-products more affordable.

Lastly, here at NNFCC we are advocates that one of the best ways to increase the profile of the bioeconomy is through exposing the general public to its benefits. There is a story this month that runs precisely to that tune: that the UK is about to see the introduction of biobased plastic mailing bags. The bags are made from Braskem's biobased polyethylene, and many UK delivery services are starting to switch to them. This may seem like a small change, but when items that are used by the public every day become biobased, it can only be a good way to raise awareness of the benefits of the bioeconomy.

Read on for the latest news.

# Policy

## New EU directive to curb marine plastic waste



NOAA

The European Commission presented an ambitious new Directive to tackle marine litter by introducing a number of measures including reduction and restriction of selected single-use plastic products, such as disposable balloon sticks, straws, cutlery, plates, cups and food containers.

According to the European Bioplastics Association, the potential positive impacts of the already introduced measures in the revised EU waste legislation need to be assessed first. Additional actions as presented in the proposal should be based on these efforts and efficiently tie in with such developments in the sense of better regulation. The proposal specifically foresees the substitution of currently used single-use products by 'readily available, more sustainable materials'.

The proposed market restrictions on certain single-use catering items, such as plates and cutlery, do not seem to sufficiently consider the reality of food consumption today, and the proposal falls short on clearly defining the intended action. In a considerable number of

contexts, single-use catering items are relevant and necessary, for example in closed systems with integrated waste management schemes, such as airplanes, sport arenas, or open-air events. Safety and hygiene requirements need to be considered here, next to several other factors.

EUBP is looking forward to closely working together with the EU institutions and all relevant stakeholders in the upcoming discussions on the proposal in order to ensure that bio-based plastics that are mechanically or organically recyclable are recognised as sustainable and available alternatives.

Click [here](#) for more information.

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## Developing an Industrial Biotechnology strategy for the UK

A National Industrial Biotechnology Strategy is required to ensure that the UK harnesses the potential of its excellent IB research base and maintains its competitive edge when other countries are realising and exploiting the disruptive potential of IB. The recent Developing a Strategy for Industrial Biotechnology and Bioenergy in the UK report concluded that the UK IB sector has some strong assets but is in danger of falling behind the best in the world. The National Industrial Biotechnology Strategy will ensure continuity of research priorities, funding and investment, informed by the needs of industry and playing to the natural strengths of the UK to realise increased productivity. Uptake of industrial biotechnology technologies and processes will have far-reaching positive impact on the UK economy and society, realised through the creation of jobs in high technology industries delivering better, safer and cleaner products across a range of sectors.

Click [here](#) for more information.

## Report into single-use plastic sustainability

This report sets out the latest thinking on how we can more sustainably manage and curb single-use plastic pollution. It looks at what governments, businesses and individuals have achieved and what are the best actions to implement. The report also analyses the impact of bans and levies on single-use plastics introduced around the world and draws lessons for policymakers who consider regulating the production and use of single-use plastics.

Click [here](#) for more information.

# Markets

## Increased demand prompts Lenzing to up capacity



*Lenzing*

The Lenzing Group is setting another milestone as a specialist for extremely high-quality products made of the renewable raw material wood. Capacities will be significantly expanded due to strong demand for Lenzing's TENCEL™ Luxe filament yarn which was first launched on the market just a few months ago. Lenzing will invest up to EUR30m in a further pilot line at the Lenzing site. Basic engineering for construction of the new facility has already been initiated.

The new capacities will enable Lenzing to more effectively fulfil the needs of customers for TENCEL™ Luxe filament yarn than in the past. At

the same time, Lenzing will press ahead with technical planning for a large-scale commercial line at the Lenzing site.

This strong level of demand is further evidence of the Lenzing Group's innovative strength. The yarn is opening up new markets for the company in the eco-couture segment, thus contributing to the successful implementation of the sCore TEN strategy.

Click [here](#) for more information.

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## Amyris expands partnership with ADL

Amyris, Inc., a leader in the development and production of sustainable, fermentation-derived ingredients for Health & Wellness, Clean Beauty and Flavors & Fragrances markets, has announced that it has expanded its existing production contract with Antibióticos de León.

Amyris is disrupting markets by using the most advanced science and technology, including machine-learning and robotics to program yeast to create targeted molecules, at a lower cost and with sustainable supplies, resulting in sustainable methods of materials production. Amyris is the only company in the sector that has production capability at industrial scale, is evidenced by its clean manufacturing and commercialization of 15 products and its established supply agreements with market leaders across a range of business segments.

Amyris is now expanding its production contract with ADL in order to provide additional, cost-effective manufacturing capability to meet the higher than expected demands from its partners. ADL Biopharma is one of the first CMOs that Amyris has used to successfully produce farnesene.

Click [here](#) for more information.

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## Leaf Resources chosen for scale-up by Unreasonable Impact



*Leaf Resources*

Leaf Resources Limited has announced it has been selected by Unreasonable Impact, a global partnership between Barclays and Unreasonable Group focused on scaling up ventures that have the potential to solve major environmental and societal problems while creating the jobs of tomorrow. Leaf is the only Australian company – as well as the only bioeconomy company – chosen for the current programme, focused on the Asia-Pacific region.

Unreasonable Impact has forged partnerships with some of the world's largest institutions and brands, and its programmes are focused on solving the United Nation's 17 Sustainable Development Goals (SDGs).

Leaf Resources was chosen thanks to its innovative Glycell™ process and biodegradable recyclable packaging product LeafCOAT. When implemented, these processes and products can significantly contribute to several of the United Nations Sustainable Development Goals (see diagram below). Leaf is well-positioned to support SDG 9 (industry, innovation and infrastructure), SDG 12 (responsible consumption and production) and SDG 13 (climate action).

Another key Unreasonable Impact objective is job growth. Leaf's technology is particularly advantageous as it will help create jobs in rural areas, where it is traditionally harder to do so.

Unreasonable Impact aims to rapidly scale up entrepreneurial companies which address key

environmental issues while possessing highly profitable business models and an ability to create thousands of new jobs. The initiative is a first-of-its-kind, international accelerator network and the programme is launching in the UK, the USA and Asia. The second Asia-Pacific programme will run this June as an intensive ten-day accelerator designed to support growth stage ventures across China, Hong Kong, India, Japan and Singapore. Unreasonable Impact will assist selected ventures with valuable resources, mentorship, funding opportunities and a global support network.

Click [here](#) for more information.

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## Research & Development

### Cellulose nanofibre materials could outperform metal alloys in physical properties

Nanoscale building blocks of many materials exhibit extraordinary mechanical properties due to their defect-free molecular structure. Translation of these high mechanical properties to macroscopic materials represents a difficult materials engineering challenge due to the necessity to organize these building blocks into multiscale patterns and mitigate defects emerging at larger scales. Cellulose nanofibrils (CNFs), the most abundant structural element in living systems, has impressively high strength and stiffness, but natural or artificial cellulose composites are 3–15 times weaker than the CNFs. Here, researchers report the flow-assisted organization of CNFs into macroscale fibres with nearly perfect unidirectional alignment. Efficient stress transfer from macroscale to individual CNF due to cross-linking and high degree of order

enables their Young's modulus to reach up to 86 GPa and a tensile strength of 1.57 GPa, exceeding the mechanical properties of known natural or synthetic biopolymeric materials. The specific strength of their CNF fibres engineered at multiscale also exceeds that of metals, alloys, and glass fibres, enhancing the potential of sustainable lightweight high-performance materials with multiscale self-organization.

Click [here](#) for more information.

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### **Biobased polymers allow for more varied post-polymerisation modification**

The renaissance of the bio-based chemical industry over the last 20 years has seen an ever-growing interest in the synthesis of new bio-based polymers. The building blocks of these new polymers, so called platform molecules, contain significantly more chemical functionality than their petrochemical counterparts (such as ethene, propene and para-xylene). As a result, bio-based polymers often contain greater residual chemical functionality in their chains, with groups such as alkenes and hydroxyls commonly observed. These functional groups can act as sites for post-polymerization modification (PPM), thus further extending the range of applications for bio-based polymers by tailoring the polymers' final properties. This mini-review highlights some of the most recent and compelling examples of how to make use of bio-based polymers with residual functional groups for PPM. It also looks at how the emerging interdisciplinary field of enzymatic polymer synthesis allows for increased functionality in polymers by avoiding side-reactions as a result of milder reaction conditions, and additionally offers an alternative means of polymer surface modification.

Click [here](#) for more information.

### **Kraig improves spider silk products**



*Pixabay*

Kraig Biocraft Laboratories, Inc., the leading developer of spider silk based fibers, has announced that it has completed more than 2,500 microinjections using the recently announced new spider silk DNA synthesis methodology. This new method allows for faster creation of larger and more complex spider silk proteins. Larger and more complex proteins are believed to produce improved silk strength, toughness, and elasticity. These improved recombinant spider silk fibres will allow the Company to target an expanded set of end market applications.

To support this expanded research and development capability, the Company added two laboratory staff for increased testing throughput. The additional lab staff members have been trained and have conducted the majority of the microinjection effort.

By implementing this new validated protocol and completing these initial microinjections, the Company is looking forward to creating new transgenics, at Kraig Labs' U.S. R&D headquarters, with an abridged development cycle and enhanced materials performance. The transgenics created using the new protocols are expected to be transitioned into Prodigy Textiles', the Company's recently announced Vietnamese subsidiary, commercial production process.

Click [here](#) for more information.

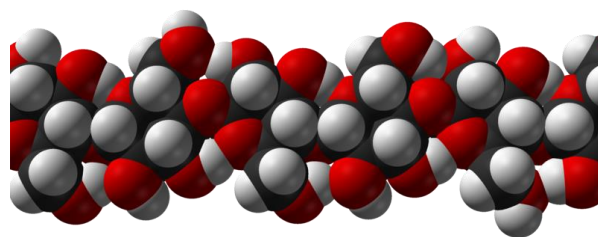
## Paper discusses biorefinery LCA methods

New integrated biorefinery (IBR) concepts are being investigated to co-produce hydrocarbon fuels and high-value bio-based chemicals to improve the economic viability of IBRs, to enhance biomass resource utilization efficiencies, and to maximize potential greenhouse gas (GHG) emission reductions. Unlike fuel-only biorefineries, IBRs may co-produce a significant amount of bio-based chemicals, whose emission implications for specific biorefinery products and the biorefinery as a whole need to be evaluated. This paper discusses this in principle and applies three sets of co-product handling methods to conduct life-cycle analysis (LCA) of modelled IBRs with co-production of two bioproduct examples – succinic acid and adipic acid – alongside a renewable diesel blendstock fuel product. The LCA results for the specific co-product handling methods that were examined shed light on potential artefacts of product-specific LCA with selected co-product methods. The authors discuss the advantages and limitations of each method and conclude that a system-level or 'black-box' LCA allocation method is too simplistic to reflect appropriately the GHG burdens of distinctly different processing trains for fuels and chemicals in the IBR context, and the displacement method is the only co-product handling method that accounts fully for the emission effects of both the fuel product and the non-fuel bio-based co-products in the IBRs within the context of the existing fuel-focused GHG regulatory framework. Alternatively, biorefinery system-level LCA combines benefits of individual products to offer a complete picture. This system-level LCA approach offers a holistic LCA without somewhat arbitrary decisions either on an allocation basis or by the selection of an evaluation metric based on specific products.

Click [here](#) for more information.

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## Finnish lab develops new cellulose fibre process



*Wikimedia Commons*

Ioncell, a fibre woven from cellulose, is a strong contender as a sustainable alternative to cotton and polyester. For Finland, it could mean billions of euros of potential business.

Consumption of textile fibres is increasing worldwide by over 3 percent a year, while at the same time cotton farming is shrinking and knowledge of the environmental damage caused by artificial fibres is increasing. It is no wonder that textile sector giants around the world are feverishly looking for alternatives.

Indeed, demand for cellulose fibre is increasing 6 percent per year, but the viscose and Tencel products already on the market are not enough to meet the demand.

The manufacturer of viscose requires poisonous carbon disulphide, and Tencel production is all controlled by one company. It is estimated that by 2030 there will be an annual market shortfall of between 10 and 20 million tonnes of cellulose fibre. A research group in Finland is developing the Ioncell method, which can be used to produce top grade textile fibre from cellulose. The manufacturing process uses an ionic solvent developed by Helsinki University Professor Ilkka Kilpeläinen, and suitable raw materials for the process include both dissolving pulp and also recycled paper, cardboard or waste textiles.

The fabric produced has a pleasant feel and a beautiful shine. In terms of strength, it compares



very well with cotton, linen and other man-made cellulose fibres.

Up to this point, the fibre has only been produced in small quantities in laboratory conditions, but the goal is to construct a pilot factory in the next few years. The raw material is abundantly available from Finnish forests, where around one fifth of annual growth is currently left unused. This amount of unexploited forest would produce around 6 million tonnes of cellulose, which if processed to produce a textile fibre of a similar value to cotton would be worth around €7 billion.

Click [here](#) for more information.

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## Partnership pursues plastic-free food packaging

Fazer and Sulapac have begun collaborating, with the aim of researching, developing and testing plastic-free, biodegradable packaging solutions for foodstuffs. The cooperation supports Fazer's strategy and objective of becoming a responsible, modern food company that seeks to reduce the use of plastic with the help of new technologies. Fazer will start by launching a confectionery gift box for Christmas 2018 that uses a Sulapac solution.

Fazer is constantly studying new packaging options and working to reduce the amount of packaging materials – and especially plastic – used in its product packaging. It is impossible to eliminate packaging altogether in the food industry. Packaging, for the time being including plastic packaging, is needed to protect the products, to ensure the safety of foodstuffs, to increase the shelf life and ultimately help to reduce food waste, and to provide product information to consumers.

Sulapac Oy is a young Finnish growth company that develops fully biodegradable packaging materials and solutions that contain no

microplastics. Sulapac® is an award-winning packaging innovation made from wood chips and natural, biodegradable binders. The wood chips come from forests under sustainable management. Fazer wants to help to develop the Sulapac® packaging material to the next level, also for food packaging, and to be the first food company using this unique innovation in its packages.

Fazer wants to reform the food sector and to promote more extensive and transparent cooperation with universities, companies in different areas, and new startups. An ecosystem that produces innovations promotes renewal of the food sector and provides new entrepreneurs with opportunities for growth, collaboration and networking.

Click [here](#) for more information.



*Pixabay*

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# Polymers

## Neste to produce biobased plastics for IKEA

The logo for Neste, consisting of the word "NESTE" in a bold, blue, sans-serif font.

*Neste*

IKEA and Neste are now able to utilize renewable residue and waste raw materials, such as used cooking oil, as well as sustainably-produced vegetable oils in the production of plastic products. The pilot at commercial scale starts during fall 2018. It will be the first large-scale production of renewable, bio-based polypropylene plastic globally.

IKEA wants to have a positive impact on people and the planet while growing the business, which includes using more renewable and recycled materials and explore new materials for IKEA products. As part of this journey, IKEA is working to change all of the plastic used in IKEA products to plastic based on recycled and/or renewable materials by 2030.

Plastic is traditionally made from virgin fossil materials, which contribute to climate change and is a finite resource. By changing to plastic based on renewable material, IKEA can secure the production for the future, and eliminate the need for extraction of fossil fuel for the purpose of making plastic.

One of the ongoing projects towards eliminating virgin fossil-based raw materials in plastic products is a collaboration between IKEA and Neste, which was initiated in 2016. Thanks to this collaboration, IKEA and Neste are now able to turn waste and residue raw materials, such as used cooking oil, as well as sustainable vegetable oils

into polypropylene (PP) and polyethylene (PE) plastic. PP and PE plastic are some of the most commonly used plastic.

The pilot at commercial scale of PP and PE plastic, chosen to contain 20 percent renewable content, will start during fall 2018. The production of bio-based plastics will be based on Neste's 100 percent renewable hydrocarbons. IKEA will use the new plastic in products that are part of the current product range, such as plastic storage boxes, starting with a limited number of products. As capacities improve, more products will follow.

Click [here](#) for more information.

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## Kraig begins spider silk production for US army

Kraig Biocraft Laboratories, Inc., the leading developer of spider silk based fibres, has announced that it has just finished the production of its first roll of pure Dragon Silk fabric, marking the first time that the Company's proprietary recombinant spider silk fibres were used to create a 100% pure woven silk fabric.

The Company is now preparing to assemble the Dragon Silk material into finalized ballistic shoot packs, per the U.S. Army specifications. This material is destined for ballistic performance testing, under the Company's contract with the U.S. Army, to evaluate its potential for protective apparel applications.

The Company previously developed sample products, in pure and blended knit configurations using its Monster Silk materials, including shirts and gloves. This announcement marks the first time the Company's newer and stronger Dragon Silk will be transitioned into an end product.

Click [here](#) for more information.

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## Biobased resins to be used in food packaging

Sealed Air Corporation has entered into an agreement with Kuraray America, Inc., a Japanese chemical company, to offer food packaging materials derived from its Plantic™ bio-based resins.

Through this new cooperation with Kuraray, Sealed Air will offer Plantic materials to package perishable foods such as poultry, beef and seafood in the U.S., Canada and Mexico. The materials provide a highly effective oxygen barrier that is also cost competitive with traditional rollstock barrier films.

Click [here](#) for more information.

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## New standard and certification for biodegradable mulch films

At the same time with the release of the standard EN 17033:2018 "Plastics - Biodegradable mulch films for use in agriculture and horticulture - Requirements and test methods", DIN CERTCO offers the certification system "DIN-Geprüft Biodegradable in Soil" for mulching films, intermediates and materials. With this certification system manufacturers and distributors can verify the biodegradability of these items.

Biodegradable mulch films have been used for more than 15 years as alternatives in agriculture and horticulture with high acceptance upon European farmers. In October 2017, a majority in the European Parliament voted to support biodegradable mulch films in the revision of the EU Fertilizer Regulation. In particular, the possibility of ploughing the film directly onto the field and leaving it to rot after use is appreciated. The reduction of microplastics in fields plays a major role in this context.

Click [here](#) for more information.

## New Vibers bioplastic from potato waste and miscanthus

Bioplastics Magazine reports that a start-up company is now making bioplastic called Vibers from miscanthus and potato processing waste.

NNRGY developed the biodegradable, compostable bioplastic from elephant grass and residual product from the potato processing industry produced by Dutch bioplastics producer Rodenburg, from which a range of kitchenware products, are produced.

In 2017, a new film was successfully developed for the packaging industry, and the three subsidiaries NNRGY Biopolymers, Vibers Consumer Goods and Vibers Packaging were established. The new film is thermoformable on existing machinery and at low temperatures, which saves energy. It can be processed as biodegradable waste. The seedling logo for certified compostable material has been applied for, however, the testing process is still ongoing.

Click [here](#) for more information.

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## Biobased multilayer transparent films

Flexible multilayer plastic packaging design remains a major challenge, as most conventional multilayer films are neither recyclable nor compostable. As of today, there is a lack of recyclability for this kind of packaging that still makes up over 75 % of the food industry usage.

Understanding this gap in the market, four key players in the bioplastics industry have joined together to find a solution. Eurotech Extrusion Machinery, NatureWorks, Nippon Gohsei and Sukano have now successfully processed a multilayer transparent bio-based barrier film.

Ingeo resin processed into a film is already used in many types of flexible packaging. Using Ingeo

provides for a reduced carbon footprint, as well as compostability as an end of life option. For higher gas barrier requirements, a coating or a metallization surface treatment of the film is typically required. However, the need for this coating or metallization can be eliminated through the use of a barrier polymer to produce a coextruded structure. This provides an additional, new option for packing foods which require an extended shelf life, while still offering clarity and compostability.

The achievement of this multilayer transparent bio-based barrier film allows packaging manufacturers to count multilayer film structure as a potential replacement for conventional fossil fuel-based structures in dry food packaging such as lid films for coffee capsules or lidding films for cups and trays, flow packs, trays for snacks, and biscuits packages. And it may even extend to certain humid foods such as ham, fish, and meat when used with proper packaging design.

Click [here](#) for more information.



*Pixabay*

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## **KRAIBURG to produce custom biobased TPEs**

KRAIBURG TPE is starting an ambitious campaign to develop custom-engineered thermoplastic elastomers containing variable proportions of renewable raw materials.

By developing customer-specific and application-specific compounds using renewable raw materials, KRAIBURG TPE is aiming to meet the growing demand for environmentally friendly and sustainable thermoplastic elastomers and is playing a pioneering role in the innovative developments involved. In close contact with its customers and with a reliable network of raw materials suppliers, the company is benefiting from its core competence in custom-engineered TPEs based on both existing and new, innovative formulations.

In classical approaches, it is technically possible to produce bio-based materials with very high proportions of renewable raw materials. However, materials of this kind usually suffer from very high raw materials costs, while providing only very limited mechanical properties. But the modular system has now enabled KRAIBURG TPE to resolve this contradiction almost completely by following a new, innovative approach beside the classical one. The initial pilot projects based on the classical approach are showing a trend towards bio-based, certifiable proportions of 20% and more.

Their potential use extends to all TPE applications in the consumer, industry and automotive markets. Examples range from toothbrushes and hypoallergenic elastic watch straps to fender gaskets.

Click [here](#) for more information.

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## Lenzing to produce viscose fibres in China

The Lenzing Group marks a new milestone in its sustainability journey: It is introducing the eco-responsible process for the production of LENZING™ ECOVERO™ branded viscose fibres, which were first launched by Lenzing in autumn 2017, also at its Chinese location Lenzing Nanjing Fibres (LNF). As of now, the Lenzing Group is able to produce LENZING™ ECOVERO™ fibres not solely at the site in Lenzing (Austria) but also in China and, hence, even better meet the strong demand for eco-responsible products.

The environmental awareness of consumers has been growing steadily over the last decade, more recently in the fashion and textile industry. Textile consumption is expected to double by 2025, and the industry is anxiously looking for more sustainable solutions with low environmental impact. The Lenzing Group addresses this market need for more eco-responsible products by offering LENZING™ ECOVERO™ fibres that mark a new milestone in Lenzing's sustainable viscose production based on three pillars: LENZING™ ECOVERO™ viscose fibres are derived from sustainable wood and pulp, coming from certified and controlled sources (FSC® or PEFC™ certified) following the stringent guidelines of the Lenzing Wood and Pulp Policy. LENZING™ ECOVERO™ fibres have been certified with the EU Ecolabel, a label of environmental excellence. LENZING™ ECOVERO™ fibres can be robustly identified in the final product.

A special manufacturing system enables LENZING™ ECOVERO™ branded viscose fibres to be identified in the final product, even after long textile processing and conversion steps through the value chain. Thus, the retailers and brands are assured that they are incorporating LENZING™ ECOVERO™ eco-responsible viscose in their products.

Click [here](#) for more information.

# Consumer Products

## Hasbro toys to come in biobased packaging

Hasbro, Inc. announced that it will begin using plant-based bio-polyethylene terephthalate (PET) for blister packs and plastic windows in its product packaging starting in 2019.

Utilizing bioPET plastic is another important step in Hasbro's sustainable packaging journey. In 2010, the Company eliminated wire ties, and replaced polyvinyl chloride (PVC) with PET in 2013. In 2015, Hasbro achieved 90 percent recycled or sustainably-sourced paper for packaging and in-box content, and moved from PET to post-consumer recycled (rPET) in 2016.

Moving forward, Hasbro will use bioPET plastic made with 30 percent plant-based material derived from agricultural by-products. This shift in material builds upon Hasbro's efforts to continuously enhance the sustainability of its packaging and enables the Company to develop packaging that is less reliant on non-renewable resources.

Hasbro ranked No. 3 on Newsweek's 2017 Green Rankings, which assesses the 500 largest publicly-traded companies in the United States on overall environmental performance. The Company was ranked No. 1 on the 100 Best Corporate Citizens list for 2017 by CR Magazine, and was recognized as a 2018 World's Most Ethical Company® by Ethisphere Institute, a global leader in defining and advancing the standards of ethical business practices.

Click [here](#) for more information.

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## Biobased plastic mailing bags spread in the UK



*Sardar & Sons*

A new, 'greener' plastic mailing bag has launched in the UK which has the potential to save CO<sub>2</sub> emissions equivalent to a plane flying around the world over 10,000 times.

GreenPE, which is produced by Braskem under the trade name I'm Green™, is chemically identical to regular plastic and can be recycled in the exact same way, but is being hailed as a more 'sustainable alternative' due to it being produced from a renewable source, sugarcane.

The mailing bag, manufactured by Duo UK, is not only suggested to be a more sustainable alternative, but also helps to reduce greenhouse gas emissions and decrease the amount of packaging waste going to landfill due to its recyclable nature.

In 2018, 412,000,000 mailing bags are expected to be shipped in the UK. If these were made from GreenPE rather than virgin polythene 46,276 tonnes of CO<sub>2</sub> would be saved, the equivalent of a car driving over 392 million kilometres and a plane flying around the world 10,000 times.

Click [here](#) for more information.

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## Neutrox to use Braskem's biobased plastic for packaging

Neutrox, a brand specializing in hair moisturization, believes that good things in life, such as practicing outdoor sports or being in touch with nature, deserve to be valued more and more. Proof of this is the fact that the brand is one of the sponsors of women's surfing, which depends directly on nature, becoming increasingly aware and concerned about sustainability and preservation of the environment.

Therefore, the brand has decided to renew its packaging, beginning to produce them with Braskem's I'm GreenT Green Plastic, the first polyethylene from renewable origin to be produced on an industrial scale in the world.

This plastic is more sustainable and stands out for being made from a renewable source (sugarcane) and capturing 3.09 metric tons of CO<sub>2</sub> per metric ton of Green Plastic produced. In the process of producing Green Plastic, from the sugarcane to the resin, the absorption of carbon dioxide occurs. This gas is one of the main causes of the greenhouse effect, and since green plastic is not degradable, this CO<sub>2</sub> remains fixed in the package throughout the life cycle of the plastic.

With this initiative, one year of production of Neutrox products should prevent the emission of over 1,000 metric tons of CO<sub>2</sub>, the equivalent of a car giving more than 190 laps around the equator.

The powerful moisturizing formula that only Neutrox provides will remain the same. The only change will be the packaging plastic with Braskem's I'm GreenT seal, as well as the QR Code, which explains the entire production process of Green Plastic. This is only the first initiative of the brand in its quest to becoming increasingly sustainable.

Click [here](#) for more information.

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## Chocomel to have almost entirely biobased packaging

Sustainable production is high on the agenda at FrieslandCampina as sustainable leader in the dairy sector. For the long-keeping variety of our brand Chocomel, we are now the first food producer in the world to opt for a new, innovative cardboard liter pack. One that is for more than 80 percent made of raw materials that come from plants, with wood and sugar cane as parent materials. The new packaging will be available in stores in the Netherlands at the end of this week.

The new packaging of the sustainable varieties of Chocomel is from more than 80 percent made of plant-based materials. In addition to the cardboard, which is produced from wood that is 100 percent sourced from FSC-certified forests, the plastic cap and the outer plastic layer of the iconic yellow-coloured suit are now made from plants. It concerns the part of the plant that remains after the part that is suitable for food has been taken out. The processing of this material for the packaging of Chocomel is therefore not at the expense of food. On an annual basis, about 40 million packages are involved.

By crossing the 80 percent limit FrieslandCampina reaches the threshold for the highest possible, 4-star certificate, 'Ok Biobased'. This is issued by the worldwide accredited inspection and certification organisation Vinçotte. Compared with the previous packaging, the new Chocomel pack yields a CO2 saving of 17 percent, according to the independent Swedish environmental research institute IVL.

Click [here](#) for more information.

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## Events

### 1st PHA Platform World Congress Köln, 4th-5th September 2018

This PHA-platform is made up of a large variety of bioplastics raw materials made from many different renewable resources. Depending on the type of PHA, they can be used for applications in films and rigid packaging, biomedical applications, automotive, consumer electronics, appliances, toys, glues, adhesives, paints, coatings, fibers for woven and non-woven and inks. So PHAs cover a broad range of properties and applications.

This congress will address the progress, challenges and market opportunities for the formation of this new polymer platform in the world. Every step in the value chain will be addressed. Raw materials, polymer manufacturing, compounding, polymer processing, applications, opportunities and after-use or end-of-life options will be discussed by parties active in each of these areas. Progress in underlying technology challenges will also be addressed.

Click [here](#) for more information.

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## **Biomass for Industrial Applications Amsterdam, 26th-27th September 2018**

The VDI conference Biomass for Industrial Applications focuses on the industrial utilization of biomass. The presentations consider both the energy-related as well as the material usage of biomass. Discuss the newest technical, economic and political developments in the industry with leading experts and find out what's in store for the biomass market in the future. This knowledge will help you to make the right strategic decisions for your company and to clear the way of implementation barriers.

Click [here](#) for more information.

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## **International conference on bioinspired and biobased chemistry & materials Nice, 14th-17th October 2018**

The scientific and international N.I.C.E (Nature Inspires Chemistry Engineers) Conferences are organized with the objective to share new developments in the growing field of bioinspired chemistry and materials and to understand new challenges that are being faced in this field of research.

The NICE conference encompasses chemistry, biology and physics and gives a multi-disciplinary overview of biomimetic approaches to engineering new materials and systems.

Click [here](#) for more information.

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## **EFIB 2018 Toulouse, 16th-18th October 2018**

Join over 650 bio-based leaders in 2018 for the 11th edition of EFIB in Toulouse, France, on the 16th, 17th and 18th of October.

Click [here](#) for more information.

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## **International Conference on Green Chemistry and Technology Edinburgh, 12th-13th November 2018**

Green Chemistry and Technology 2018 is a global overview the Theme: "Endorsing the Importance of Sustainable World by Academic and Industrial Forum: Driving Waste towards Zero" is designed for professionals at all levels and career phases of the Chemical industry, Pharmaceutical industry and Petroleum industry, who want to improve their understanding of what will drive and shape the future of the market. This will include senior executives, sales and marketing personnel, strategic planners, who will benefit from a broad overview of the Chemical, Pharmaceutical and petroleum industry. The strength of the Conference is that the participants tend to include all phases of the value chain as well as individuals from a wide variety of sector and countries. This experience helps the conference to be an interactive forum and encourages a strong level of dialogue and discussion, thus maximising the benefits of attendance. This conference surely provides better information and insight into the development of the world Chemical industry, which in turn has enabled attendees to make better and more profitable decisions.

Click [here](#) for more information.

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## **European Bioplastics Conference Berlin, 4th-5th December 2018**

The European Bioplastics Conference is the leading business and discussion forum for the bioplastics sector in Europe and worldwide. As the major industry association in this field, the hosts at European Bioplastics are committed to representing the interests of stakeholders along the entire value chain. The diversity of the delegation – 330 strong in 2017 and expected to grow – reflects that, and the trend towards a pan-industry gathering is set to continue as the event embraces the inclusion of political and other non-private sector actors. With more and more brands and manufacturers waking up to the potential of bioplastics, and with policy makers increasingly streamlining their efforts to install frameworks that benefit the growth of sustainable bio-industries, this is the time to put bioplastics high up on the agenda of a bio-based circular economy in Europe and beyond.

Click [here](#) for more information.

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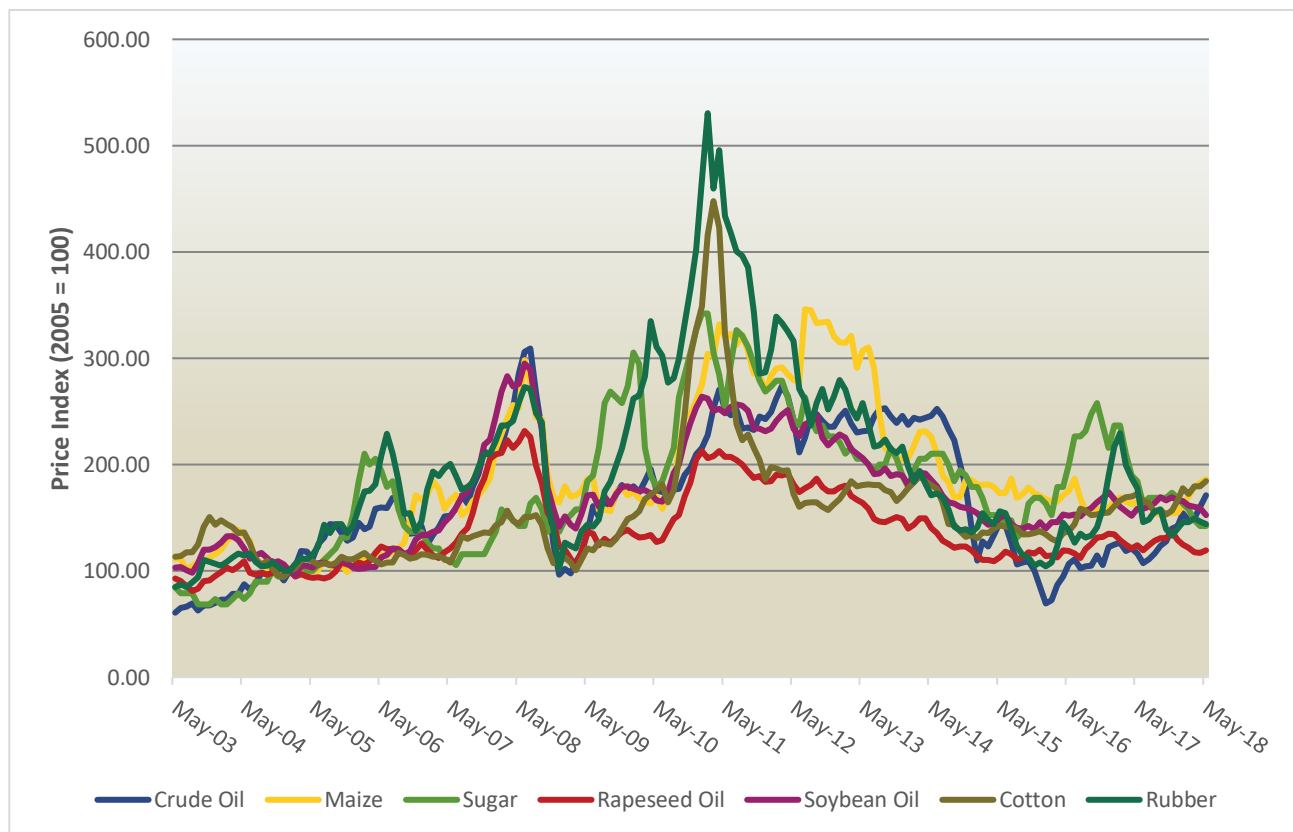
# Price Information

**Spot Prices of feedstocks as of today and five years ago, and percentile price change. Arrows indicate rise (↑), constant (–) or fall (↓) from previous month.**

Item	Price, US\$ (May 13)	Price, US\$ (Apr 18)	Price Change
Crude oil (petroleum, barrel)	99.74 (↑)	73.43 (↑)	-26%
Maize (corn, metric ton)	298.41 (↑)	179.09 (↑)	-40%
Sugar (kilogram)	0.38 (↓)	0.27(–)	-29%
Rapeseed oil (metric ton)	1,078.00 (↓)	812.00 (↑)	-25%
Soybean oil (metric ton)	1,041.00 (↓)	793.00 (↓)	-24%
Cotton (kilogram)	2.05 (↑)	2.08 (↑)	+1%
Rubber (kilogram)	2.81 (↓)	1.70 (↓)	-40%

*All prices from World Bank data.*

## Raw materials 15-year Price Indices



*All prices from World Bank data, for details on index methodology, please contact NNFFCC.*

# Credits and Disclaimer

NNFCC News Review is edited by Bob Horton for NNFCC subscribers. Feedback is welcome. The Review has been compiled in good faith and NNFCC does not accept responsibility for any inaccuracies or the products or services shown.



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