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DNFI Award for Innovation in Natural Fibre Research 2023

Student at Hochschule Hof wins 2023 DNFI Award

Ms Amelie Pörschmann, a student at Hochschule Hof, University of Applied Sciences, Hof/Kronach/Münchberg/Selb, Germany has won the 2023 DNFI Innovation in Natural Fibres Research Award for the development of The Regrow.

Ms Pörschmann has developed a biodegradable, woven fabric pot in which plants can be started. Once seedlings reach a stage suitable for transfer to soil, they can be planted intact within their biodegradable pots and do not need to be removed from plastic planting trays, which are currently in common use.

The Regrow pot is made of bast fibers such as hemp, flax or nettle or can also be made from wool. The fibres have not been dyed or finished with synthetic materials, thus avoiding pollution in the composting process and allowing microorganisms in soil to convert the plant bag into important organic components. The process of biodegradation significantly improves the soil structure and nutrient availability. Due to the pliability of fabrics, the plant bag is foldable, easily stored and transported.

Ms Pörschmann is an upcoming textile designer and studies at the Engineering Department for Textile Design in Münchberg. Her design is a fusion of functionality and aesthetics. She has created a variety of Eco print designs, each produced with environmentally friendly dyes. The pattern pieces are customizable, so sizes can be made for specific requirements. The Regrow bag is a zero-waste product that aims to use natural plant and animal fibres from local cultivation.

The formal award ceremony to honor Ms Pörschmann will be held on Thursday 11 January 2024 during Heimtextil fair in Frankfurt, Germany, at the ECONOGY Talks area in hall 12.0 .

Natural Fibres Fabrics

Amelie Pörschmann, photos: Hochschule Hof

Previous Winners

The 2017 DNFI Annual Innovation in Natural Fibres Award was won by **Ms. Marie-Isabel Popzyk**, Scientific Assistant at RWTH Aachen University and **Dr. Roland Klein**, Group Manager at the Fraunhofer Institute LBF in Germany. Their submission, "Reduction of the moisture absorption of natural fibers and production of no-twist yarns for use in structural components," showed that up to 100% bio-based, natural fibre reinforced plastics (NFRP) with low moisture absorption can be developed for application in structural components.

The 2018 DNFI award was won by **Velener Textil**. The winning process, "WECYCLED® - Real added value for weaving mills and our partners in the textile chain," was submitted by Mr. Ernst Grimmelt, CEO and Sales Manager Yarns, under the category of Innovative processes/procedures. Under the WECYCLED® system Velener Textil collects spent cones from partner mills and separates the unused cotton yarn in special sheltered workshops that meet the highest standards of employee safety and environmental protection. Velener Textil has developed a sophisticated method to recycle the recovered cotton into new yarns that fulfill the requirements for color fastness, strength and other attributes in high-quality consumer products. Commercial applications include the production of bed linen and knitted clothing.

The 2019 DNFI award was won by **Dr. Debasish Das**, Professor, University of Calcutta, Department of Jute and Fibre Technology, and **Dr. Subhas Ghosh**, Professor, Eastern Michigan University, School of Visual Built Environments, College of Engineering and Technology. The two researchers collaborated on the development of a biodegradable cotton-jute fabric with a waterproof coating that can substitute for non-biodegradable PVC-coated polyester. The new cotton-jute fabric is suitable for use in outdoor fabrics such as tarps, awnings, canopies, or automobile hooding material. In addition to being biodegradable, the natural fibre material meets fire-retardancy standards and allows the transfer of moisture vapor to avoid the accumulation of humidity on the underside of fabrics, while remaining waterproof.

The 2020 DNFI Award was won by **Dr. Noureddine Abidi**, Professor and Director, Fiber and Biopolymer Research Institute (FBRI), Texas Tech University. He developed a process to produce a plastic substitute from cotton by dissolving the fibres to form a gel which can be transformed into bioproducts, including plastic films. Cotton fibres are approximately 99% cellulose, and cellulose-derived bioplastics are inherently biodegradable in landfills and composting facilities. Testing shows that when cotton cellulose bioplastic films are buried in soil, decomposition begins in about 3 weeks. However, when these bioplastic films are kept in normal household conditions, they remain stable with no sign of degradation. Therefore, products made from bioplastic film would have properties similar to those of plastics currently in common use.

The 2021 DNFI Award was won by **Dr. Maryam Naebe**, Senior Research Fellow, Deakin University, Institute for Frontier Materials (IFM), Victoria, Australia. Dr. Naebe and her team at IFM created a special light-weight nonwoven textile fabric that can be used as an insulator in automobiles. The fabric is made from a blend of virgin and waste wool fibres. Most insulation currently used in automotive applications is made from petroleum-based polyester, polyethylene, and polystyrene molecules. Wool insulation exhibits the same sound absorption, thermal resistance, and air permeability performance characteristics of materials currently in use. In addition, wool is naturally odour-resistant, flame retardant and antibacterial. Dr. Naebe noted that as a natural fibre, wool has a unique chemical and physical structure that gives it inherent thermal and acoustic insulation properties, making it a very promising candidate for sustainable insulation.

The wool insulator material qualifies for Reuse-Recycle and Reuse–Recover purposes at the end-of-life of vehicles.

The 2022 DNFI Award went to **Dr. Frank Hermanutz** and **Dr. Tanja Schneck**, German Institutes of Textile and Fiber Research Denkendorf, for their project called "PureCell – Natural fiber-reinforced composites based on pure cellulose." The researchers developed a patented technology to dissolve cellulose in an ionic liquid to facilitate the production of cellulosic matrix precursors, which are then used to manufacture composite materials. The core concept of PureCell is to use cellulosic fibers as reinforcement with a bio-based cellulose matrix, to create an economical, recyclable, and biodegradable substitute for petrochemical raw materials.

The DNFI Innovation in Natural Fibres Award

The DNFI Innovation in Natural Fibres Award aim to promote the development of new products/components and applications using natural fibres as well as new processes for manufacturing of environmentally friendly products. Universities, institutes, industry and individuals working in the area of scientific research are invited to participate. "Sustainability" should be just one important aspect of each submission considered by the judges. The DNFI Innovation in Natural Fibres Award aims to recognize the innovations as well as the people and institutions responsible for them with the goal of raising public awareness of the achievements of the natural fibre sector as a whole.

About DNFI

The Discover Natural Fibres Initiative (DNFI) is a platform for those who appreciate and acknowledge the importance of natural fibres and support their production and use.

DNFI facilitates the exchange of information and experiences and works to advance the common interests of all natural fibres in the face of competition with oil-based and wood-based manmade fibres. Representatives of natural fibre industries as diverse as abaca, alpaca, angora, cashmere, coir, natural fibres, flax, industrial hemp, jute, mohair, ramie, silk, sisal and wool participate in DNFI.

DNFI was created in January 2010 as an outgrowth of the International Year of Natural Fibres 2009, declared by the United Nations General Assembly. DNFI is entirely volunteer supported. There are no membership dues, the initiative has no budget or paid Secretariat and does not conduct projects. Instead, DNFI facilitates communication and collaboration through the exchange of information, including statistics on fibre production, value and employment, and updates on developments in fibre markets. DNFI raises awareness through reports, press releases and seminars, and encourages innovation through an annual award.

Membership in DNFI is open to anyone with an interest in the growth of natural fibre industries. To become a member, simply register on-line at www.DNFI.org.

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