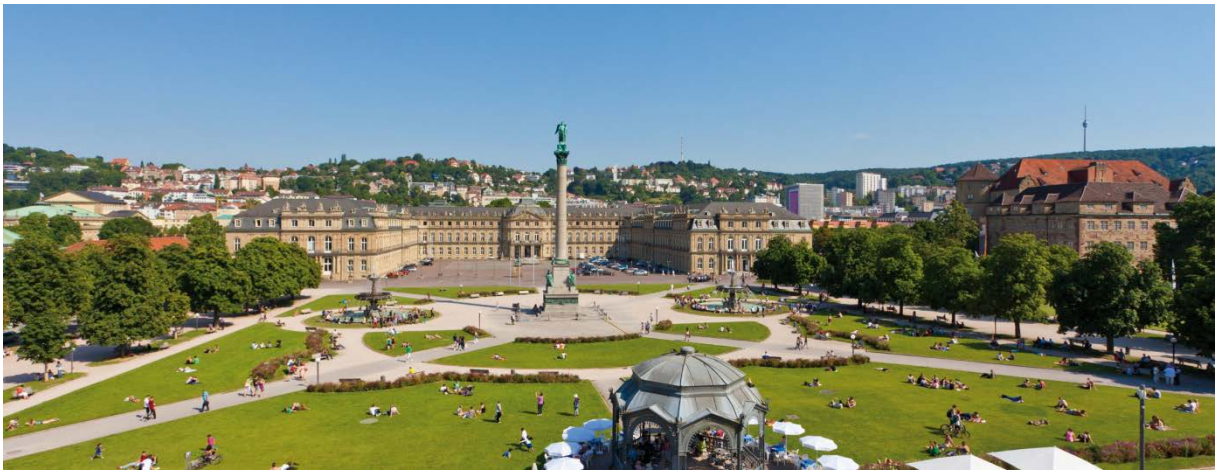
PRESS-INFORMATION

AACHEN DRESDEN DENKENDORF
INTERNATIONAL **TEXTILE** CONFERENCE

Liederhalle Stuttgart, November 30 - December 1, 2017
Partner Country: USA



for experts from the fields of

Materials, Chemistry, Finishing & Functionalization,
and Machines, Processes & Composites

with plenary sessions and special symposia in the areas of

- **Development and production of high performance fibers and yarns**
- **Development and production of 3D system-integrated fiber compounds for automotive, construction and architecture**
- **Medical textiles / Medical technologies**
- **Transfer Session „From Idea to Practice“**

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Aachen-Dresden-Denkendorf International Textile Conference premieres in Stuttgart

High-tech textiles – a cross-industry inspiration

Stuttgart – between November 30 and December 1, one of the most important conventions for the European technical textile industry took place in Stuttgart. The Aachen-Dresden-Denkendorf-International Textile Conference brought together professionals from 27 countries, across four continents from the textile, textile-machinery and various user-industries. Economy and research experts reported on research results and marketable textile innovations concerning high performance fibers, fiber composites and medical textiles. Baden-Württemberg's Minister of Economic Affairs Nicole Hoffmeister-Kraut welcomed the international audience in the Liederhalle conference center. "Our textile companies are no longer seen merely as consumer product manufacturers, but as suppliers of high-tech materials and products. In the automotive, engineering and medical technology industries, as well as in the construction industry, technical textiles are often the key to new concepts and products. That is why the innovative power of the textile industry is of extraordinary importance to our local economy", said the minister.

There's a future for textiles, especially in a traditional textile-producing region such as Baden-Württemberg. Many noteworthy companies such as Dornier, Kelheim Fibers, ETTLIN, and solidan have their headquarters in this area, alongside one of the most important European textile research institutions: the German Institute for Textile and Fiber Research Denkendorf (DITF). It therefore made sense to expand the Aachen-Dresden Textile Conference, which has been organized since 2007 by textile research institutes of the regions surrounding Aachen and Dresden, with a partner from Baden-Württemberg. For this reason, the DWI-Leibniz Institute for Interactive Materials (DWI) in Aachen, the Institute for Textile Machinery and Textile High-Performance Materials Technology of the TU Dresden (ITM) and the DITF have been jointly leading the International Textile Conference into the future since 2016.

Held annually at one of the three locations, the conference recently premiered in Stuttgart. Together with this year's partner country USA, this year's conference was characterized by trend-setting developments and upheavals in textile technology. The focus was on, among other things, additive manufacturing methods such as 3D textile printing, as well as smart textiles, which are currently being brought to the forefront by IT companies from the USA as 'intelligent problem solvers'. Entrepreneurs from the textile and textile-machinery industries presented current developments, products and processes, especially concerning the future fields of mobility and health. Various German textile research institutes presented their longstanding know-how on these and several other 'trend-fields' under the umbrella of the Forschungskuratorium Textil e.V.(registered association). Under the motto "From Idea to

Practice", a transfer session presented successful, publicly-funded collaborative programs, in which products and processes were jointly developed by scientists and industry representatives and successfully implemented into the industry.

The conference was also supplemented by an exhibition by companies and institutes as well as over 100 scientific posters. Three of the posters presented were awarded the Poster Award 2017.

Press contact for the International Textile Conference 2017:

Deutsche Institute für Textil- und Faserforschung Denkendorf (DITF)
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C/C-SiC materials are ceramic composites with excellent mechanical properties. They consist of carbon fibers (CFs), which are embedded in polymer matrices (e. g. phenolic resins). The polymer matrix transforms into porous material under high temperature in inert atmosphere. After the transformation, the porous polymer matrix contains pores and cracks. This crack pattern will be infiltrated with liquid silicon in the last step of the manufacturing process. In order to obtain the desired properties of the C/C-SiC materials, the embedded CFs must not react with the liquid silicon. For this reason a high adhesion between fiber and polymer matrix is aimed for. For commercial standard CFs, a high fiber-matrix-bonding (FMB) is achieved and no damage is made to the CFs in the C/C-SiC composites. Until now, the use of high performance CFs only results in a low FMB. We carried out a chemical pretreatments of the high performance CFs to receive the desired crack pattern with a high FMB. The amount of chemical groups on the fiber surface will be increased by these pretreatments. Thus, the modified fiber surface perfectly interacts with the polymer matrix and consequently a high FMB in the composite will be achieved.

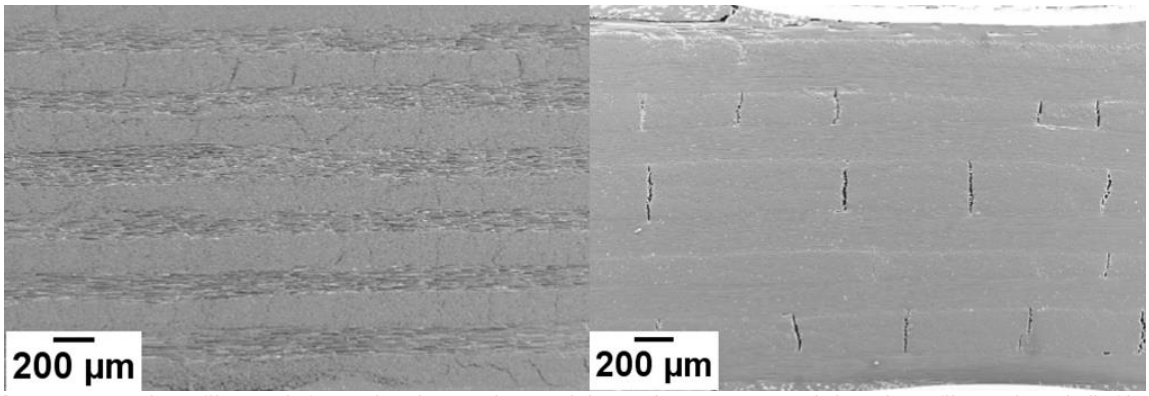

Figure 1: *Carbon fiber-reinforced polymer (CFRP) based on commercial carbon fibers (CFs) (left) or based on CFs treated and re-sized at the DITF (right) (source: German Aerospace Center (DLR)).*

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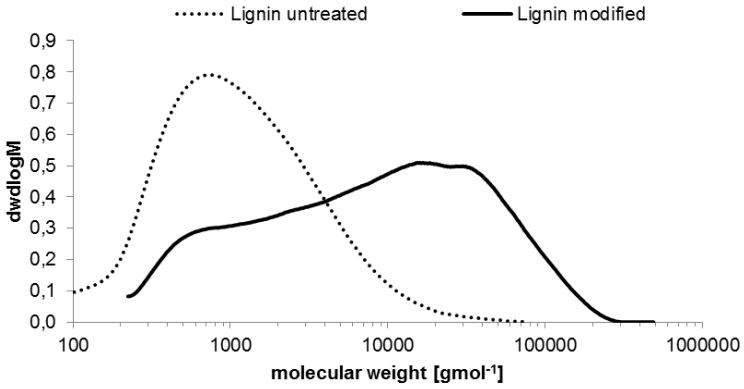
Further information:
Supported by the German Research Foundation (DFG), Project no: BU 2174/21-1, HO 955/10-1, KO 1635/13-1

Poster: Tailor-Made Fiber-Matrix Interface via Modification of the Fiber Surface for C/C-SiC Composites, poster no: 18

Lignin is the second-most abundant biopolymer on earth. It is obtained in large amounts as a byproduct of the paper and bio refinery industry. Due to its high availability and aromatic structure, carbon fibers (CF) from lignin have been object of extensive research for many years. The use of lignin could lower the costs for carbon fibers and lightweight construction parts e.g. in automotive significantly. As a consequence of its extraction process from wood, lignin is a highly polydisperse, highly branched and inhomogeneous material with low average molecular weight. For the use as carbon fiber precursor, a polymeric and linear structure is desired. Hence, we developed a new concept for the controlled and linear chain-extension of lignin. Thereby, we achieved a 200-fold increase of the weight average molecular weight. Detailed structural analysis of the product provided evidence for an extended and linearized polymeric structure. The new material could be successfully spun into fine endless precursor fibers. Moreover, carbon yields of the precursor material significantly increased from 35 to 46 wt.-percent, which is known to directly contribute to lower porosity, higher density and better mechanical properties of the final carbon fiber.



Figures: *Lignin-based multifilament precursor fibers (left) and molecular weight distributions of untreated and modified lignin (right).*

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Further information:
The work is supported by the EU H2020-project LIBRE
Poster: “Turning Low Molecular Weight Lignin into a tailor-made Precursor for Carbon Fibers”
Lecture: “New processes for low-cost carbon fibers from lignin and polyethylene”

The reasons for the IGF / AiF project were methodological potentials for SMEs in the interpretation of wicking in textile structures. The knowledge and predictability of the capillary rise kinetics have a growing economic importance for the development and improvement of textile manufacturing processes and textile products, in particular with regard to capillary kinetic effects in textile production as well as wicking functionality in the textile's use phase. In addition, from the observation of capillary flows, conclusions can be drawn on the porosity, the capillary-active fiber surface and the contact angle of the liquid to the fiber surface.
The DITF therefore developed a simple method for identifying the capillary kinetics of specific products. In order to be able to tailor the product design to the customer requirements, forecasting options and an optimization approach for the capillary kinetics are important for SMEs. For this purpose, the DITF have developed a self-learning method for the calculation and design of the wicking in textile structures. In particular, the DITF expect new insights into the following products: wipes and absorbers, wicks, braids, woven tapes, towels, preparations and liners, wool and needle felts, casting resins, rovings and their finishing agents.
The DITF estimate the direct number of SME users to be at least 440 companies and expect cumulative savings potential of approx. 4.5% as well as medium-term potential for sales increases of approx. 8-10% through optimized product designs and novel products. A FFG project and a ZIM project have emerged from the project, with two more ZIM projects in the pipeline. Based on the project results, Lenzing Instruments GmbH & Co. KG has decided to offer a characterization device for wicking in textile structures. Together with Lenzing Instruments GmbH & Co. KG, the DITF seek to bring the project results into standardization.

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Further information:

Funding reference:
The IGF project (18514 N) of Forschungsvereinigung «Forschungskuratorium Textil» got funded via AiF as part of the programme to support "Industrial Community Research and Development" (IGF), with funds from the Federal Ministry of Economics and Energy by decision of the German Bundestag.
The applied research project was kindly supported by 20 companies and 3 industrial associations.

Gefördert durch:
Bundesministerium für Wirtschaft und Energie
aufgrund eines Beschlusses des Deutschen Bundestages

Poster: P22: T. Maschler, H. Finckh, Th. Stegmaier, M. Tilebein & G.T. Gresser: Characterisation and prognosis of the capillary rise of fluids in textile structures – wicking of oil into cotton nonwovens.

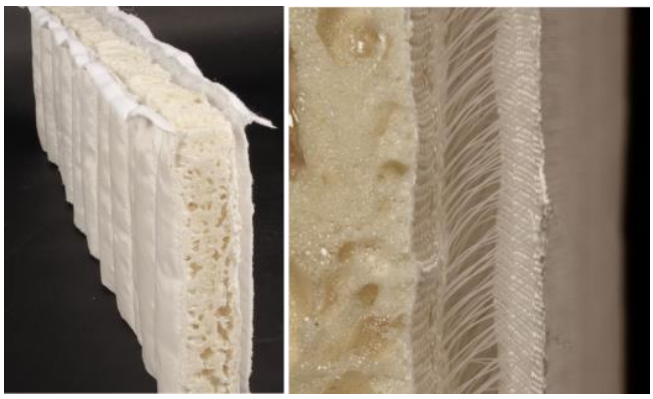
Lecture: Markus Mayr, Ulrika Tropper, Josef Innerlohinger, Tobias Maschler, Meike Tilebein: Wicking and liquid absorption optimisation in nonwovens for hygienic applications. Die Optimierung des Kapillareffekts und der Flüssigkeitsaufnahme in Vliesstoffen für Hygieneanwendungen.

Textile lightweight construction „3dTEX“ – Combining architectural design and structural functionality

Deutsche Institute für Textil- und Faserforschung (DITF)

DEUTSCHE INSTITUTE FÜR TEXTIL+FASERFORSCHUNG

In the 3dTEX research project, new approaches for foamed textile constructions emerge - . all-rounders in the outer shell of a building and wall elements. The possibilities of arranging fibers in a wide variety of materials in space and surface, and foaming them out with related materials, seem almost unlimited.
The project, which was funded by the ZukunftBAU research initiative, was aimed at developing alternatives to common single-wall lightweight wall elements such as sandwich panels and additional multi-shell wooden stand constructions. Through the production of the textile structure and filling it with foam, the elements should demonstrate the maximum possible mechanical and physical functionalities in an integrated industrial operation.
Based on spacer fabrics, the German Institute for Textile and Fiber Research (DITF), jointly with the Frankfurt Research Institute at the Frankfurt University of Applied Sciences (FFin), developed design concepts for multi-layer textile building shells. Three-layered spacer fabrics have been developed as samples, in which the foamed lower spacing layer fulfills the support and insulation functions, while the second non-foamed layer stretches over as a textile rear ventilation plane, thus protecting the foamed areas from moisture and UV radiation.
The prototypes displayed constitute an ideal combination of lightness and stability. In this way, the architectural design combines with coordinated construction functionality.



Abstandsgewebe, manuell mit PU-Schaum ausgeschäumt, und Schnitt durch die Dämm- und Hinterlüftungsebene (Fotos: FRA-UAS)

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Frankfurt University of Applied Sciences,
Frankfurt

Lecture:
Claudia Lüling, Hans-Jürgen Bauder:
Architecture fully fashioned – Explorations of foamed spacer fabrics for textile based building skins
Thursday, 30.11.2017, 5:20 pm, Hegel-Saal

DITF and NEOS decorated with the EUREKA Innovation Award – small textile - huge effect

Deutsche Institute für Textil- und Faserforschung (DITF)

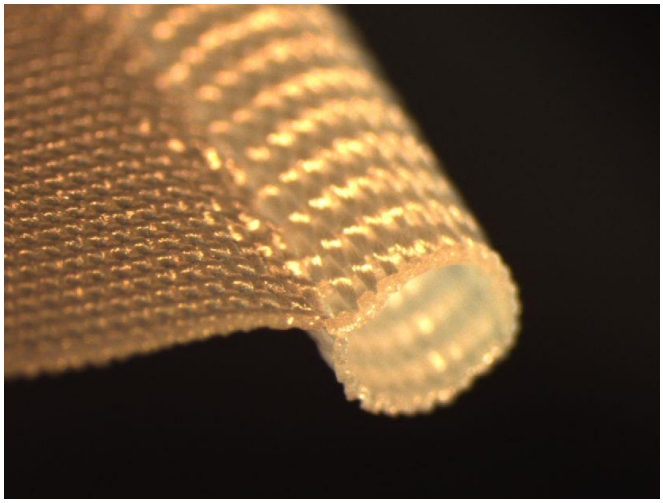
DEUTSCHE INSTITUTE FÜR TEXTIL+FASERFORSCHUNG

Herniated vertebral discs are usually very painful and difficult to cure. A new implant, drafted by the Spanish company NEOS Surgery and developed together with DITF Denkendorf, follows a new concept to close the fracture in the disc from inside with an 'umbrella'. For this novel medical device NEOS and DITF received on June 30th, 2017 the EUREKA Innovation Award in the category "Innovators of Tomorrow"

In Germany alone it hits 120,000 patients every year: a fracture in the outer shell of the vertebral disc results in an herniation. Up to now the vertebral disc cannot be repaired and the fracture also doesn't heal itself. Often the disc will no longer be preserved and the neighboring vertebrae are allowed to fuse which causes an even higher reduction in mobility and additional stress for the neighboring discs.

The company NEOS Surgery S.L. in Barcelona (Spain) had drafted the interesting idea to close the fracture from inside. In a mutual European project DITF provided a flexible textile closure device, which can be opened inside the nucleus of the disc.

NEOS is planning a first clinical trial in 2018 and the commercial launch for 2019. Because DITF – unique for a research institute – hold their own approved medical device company, prototypes for this study can be produced there.



Woven closure device for herniated discs with mounting element (photo: DITF)

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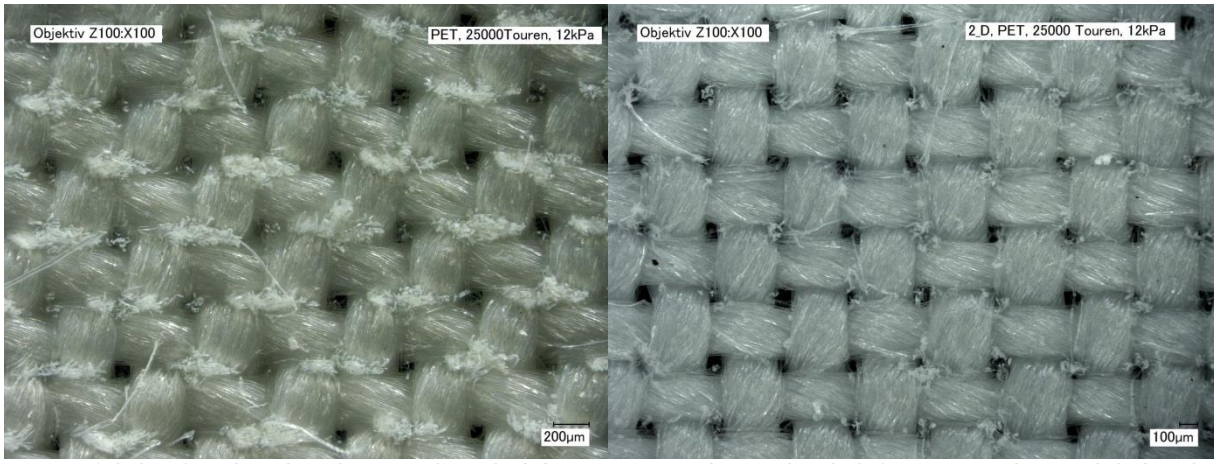
www.neosurgery.com/
www.eurekanetwork.org/eureka-innovation-award-2017

For many applications textiles have to withstand strong abrasive forces. This is especially true for workwear, apparel, home textiles and upholstery fabrics. As the life span of such products is directly related to the wear-resistance of the fabrics used, it is important to maintain their appearance and to prevent loss of material by abrasion as well as fraying. Our research project is aimed at the development of novel finishing agents based on inorganic-organic hybrid polymers by using sol-gel technology to improve the resistance against scouring and abrasion. The use of hybrid polymers allows the straightforward customization of various parameters, e.g. (surface) hardness, frictional resistance, and flexibility, by varying the fraction and nature of inorganic and organic domains that are forming the sol-gel networks. In addition, our research is not only focused on quality improvement but also on a better understanding of the parameters influencing the wear-resistance of textile materials.



PET fabric after the abrasion test (Martindale, 25,000 cycles, 12kPa), left: untreated material showing strong abrasion, right: sol-gel-finished sample with less destruction.

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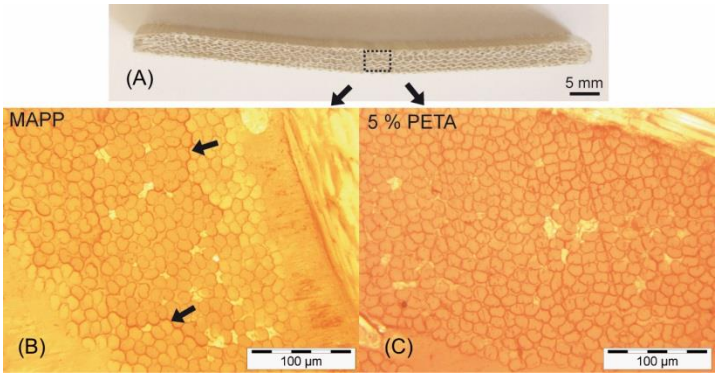
Funding:
The research project IGF-Nr. 18742 N of Forschungskuratorium Textil e.V. was funded by the Bundesministerium für Wirtschaft und Energie (BMWi) in the framework of the program Industrielle Gemeinschaftsforschung (IGF) on the basis of a decision by Deutscher Bundestag.

Poster:
Thomas Mayer-Gall, Leonie Derksen, Torsten Textor, Jochen S. Gutmann
Improving and understanding abrasion resistance of textile materials

The mechanical properties of fiber-reinforced composites are governed by fiber-matrix adhesion, but also by the relation of elastic moduli and tenacity of fiber and matrix. An abrupt change in mechanical properties at the fiber-matrix interface will often result in reduced tenacity and insufficient damping of the composite.
Many composite plant structures exhibit graded transitions of mechanical properties at the interfaces of fibers and fibrils and matrix. A well-known example is Bamboo. Its favorable damping properties are optimized by modulus gradients in various structural levels ranging from cell walls to arrangement of reinforcing elements.
With these natural structures in mind, the biomimetic concept behind the presented study was to deposit organic thin-layers on reinforcement fibers by photo-polymerization in order to create modulus gradients. The focus was put on trend-setting composites made of regenerated cellulose fabrics embedded in polyolefins.



Experimental composite material after impact test (A); microscopic cross-sections indicate micro-fissures in the conventional composite (B) and the unaffected photo-chemically modified material (C).

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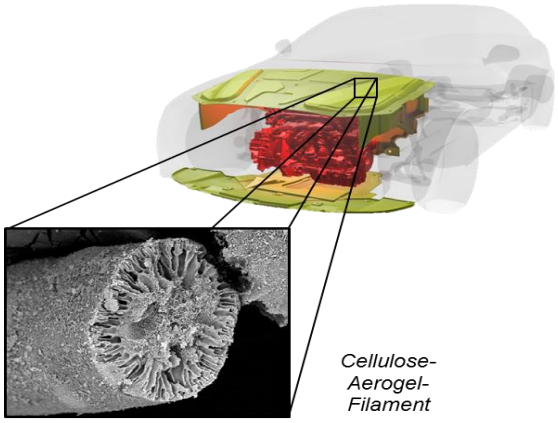
Funding:
The research project IGF-Nr. 18059 N of Forschungskuratorium Textil e.V. was funded by the Bundesministerium für Wirtschaft und Energie (BMWi) in the framework of the program Industrielle Gemeinschaftsforschung (IGF) on the basis of a decision by Deutscher Bundestag.

Lecture:
Friday, 01.12.2017, 12:00 (Session Fiber Composites)
Thomas Bahners, Milan Kelch, Jörg Müssig, Jochen S. Gutmann
Improvement of fiber-matrix adhesion and damping in cellulose/polyolefin composite materials by means of photochemical fiber surface modification

Sustainable energy usage is a central topic of modern times. Aerogels have the opportunity to play a crucial part in its accomplishment. Aerogels are sponge-like materials, consisting of pores with a size in the range of a few nanometers. Therefore, they make up to 99 % of an Aerogel‘s material. Their extraordinary structure accounts for the material’s exceptional properties, such as outstanding insulation properties, which grants them the name “superinsulators“. The large amounts of small sized pores enable Aerogels to absorb large amounts of liquid while preserving a very lightweight. Up to present day Aerogels have been used as heat protection for aerospace applications, where they have been deployed in the form of brittle blocks. In contrast to brittle Aerogel blocks, fiber-based Aerogels exhibit improved flexibility properties, allowing their usage in everyday applications. They can be transformed into thin, lightweight layers with outstanding insulation properties. The „Institut für Textiltechnik der RWTH Aachen University“(ITA) currently researches how to utilize those fibers as insulation for Hybrid-Diesel engines. An insulation of engines can lead to a decrease in fuel consumption. Conventional materials are either too heavy, require too much space or have too high thermal conductivities. Aerogel fibers have been successfully produced at ITA. Current research is focused on the development of an Aerogel fiber for industrial production.



Aerogel Fibers as insulation for hybrid diesel engines

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In addition to the treatment of water, the filtration of exhaust air in sewage treatment plants and pumping stations is of great importance. The treated wastewater exhales hydrogen sulphide gas, which not only smells bad of rotten eggs, but is harmful to health at high concentrations. To solve this problem currently bark mulch filter are used, which are about as large as a small ship's container. These filters often settle and can only be handled with cranes. The Institut für Textiltechnik der RWTH University, together with the company UNITECHNICS KG, Schwerin, develops a highly effective and easy-to-handle filter system. The goal is achieved by the use of a textile filter medium (nonwoven), which is particularly well suited due to its large surface. The nonwoven is doped with iron oxide, whereby the hydrogen sulphide can be chemically neutralized. A filter that is one-tenth the size of a conventional filter can be implemented. The development within the project "Reaktivfilter" includes not only the filter medium itself, but also a test bench on a laboratory scale, a sensor for performance monitoring and a box for use under real conditions. In laboratory tests, 100 % hydrogen sulphide could be filtered using a small amount of filtration material. In the first field trials over 50 % of the harmful gas could be removed from the air. A promising solution is in sight.

Figure: Fibres of an iron iron oxide-doped nonwoven

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Phone: 0049 241/80-23475

Further information:
Funding reference: The project is supported by the Federal Ministry of Economics and Energy as a part of the central innovation program for medium-sized companies (ZIM).
Poster: Filtration of hydrogen sulfide from exhaust air by means of a reactive nonwoven
Lecture: Short presentation on the parallel session “High Performance Fibers”

Biomedical applications for functional Chitosan fibers

Institute of Textile Machinery and High Performance Material Technology (ITM), TU Dresden

An interdisciplinary team of scientists from ITM conducts research in close collaboration with technical departments and medical representatives along the value chain from biomaterials to the (pre-) clinical testing of fiber-based implants in order to develop new products and to establish them in the medical sector in the future. A promising biopolymer in this context is chitosan, which is obtained in a chemical process from the natural raw material chitin. Chitin resembles cellulose in its fibrous structure and occurs naturally in the exoskeleton of animals such as shrimp, crab, krill, cuttlefish and insects or in the cell walls of fungi, yeasts and other microorganisms. Chitosan is non-toxic, antibacterial, hemostatic, biodegradable and highly compatible for human cell colonization. In addition, chitosan has film- and fiber-forming properties, making it suitable for the production of textile medical products such as highly effective bandages highly functional hernia meshes or cell carriers (scaffolds) for regenerative medicine. Beside the tailor-made production of these fiber materials, the focus of current research is the development of procedures and methods for the production of individual, custom-designed, complex implants by means of various textile techniques such as weaving, braiding, knitting and electrostatic flocking.

Biodegradable and pressure-elastic scaffolds based on chitosan for the regeneration of articular cartilage (©: ITM/TU Dresden)

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Further information:
ITM - exhibition stand

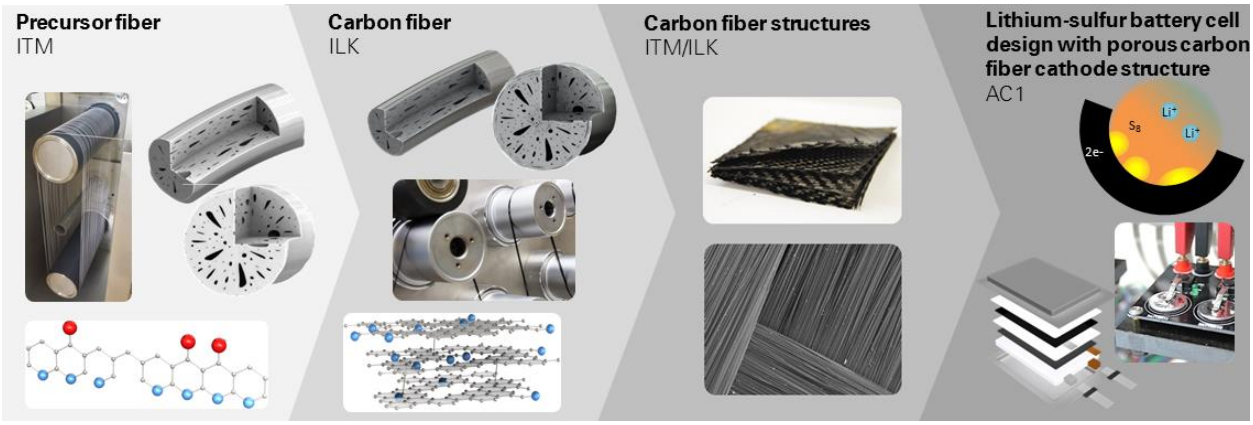
Poster: Moritz Eger et.al.
Novel hernia implants: partially resorbable Chitosan-PVDF meshes with graded pattern design

Lecture: Stephanie Lukoschek et.al.
Mono- and multifilaments for resorbable suture materials made from pure chitosan
Thursday, 30.11.2017, IGF-ZIM Transfer Event, 05:45 pm

„*e*-Carbon“ – Carbon fibers with interconnecting pore systems for energy storage

Institute of Textile Machinery and High Performance Material Technology (ITM), Technische Universität Dresden (TU Dresden)

In the context of global megatrends such as scarcity of natural resources with a simultaneously increasing global population and increasingly individualized lifestyles, lightweight construction concepts represent a potential solution for resource-efficient material usage. In particular, the interest in carbon reinforced composites has been driving the steady development of carbon fibers (CF) for decades.



Project outline „e-Carbon“ (© TU Dresden)

The motivation of the project „*e*-Carbon“ (ESF-SAB 100310387) lies in the innovative combination of high-technology fields of lightweight construction and energy storage. The aim of the research and development work is to establish CF with a tailor-made hierarchical interconnected pore system with high specific internal surface area for energy storage. The formation of open-pore systems during precursor fiber spinning and the thermo-mechanical conversion to CF, with defined pore sizes, -distributions and -volumes, ensures the accessibility from the outside while maintaining the structural mechanical properties at a sufficiently high level. Subsequent incorporation of high energy-density electrolytes based on lithium-sulfur (LiS) systems into the porous CF structures under defined transport and diffusion processes increases electrode capacity and generates more powerful batteries.
This complex topic is being investigated and explored by young scientists of an interdisciplinary research group at the TU Dresden from the Institute of Textile Machinery and High Performance Material Technology (ITM), the Institute of Lightweight Engineering and Polymer Technology (ILK) and the Chair Inorganic Chemistry I (AC1).

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Further information:
ITM - exhibition stand
Lecture: Mirko Richter et al.:
„*e*-Carbon“ – Tailored-made carbon fibers with across-scale interconnected pore systems for energy storage
Friday 01.12.2017, High Performance Fibers, Schiller-Hall, 1:30 pm

UV-LED-curing: A next-generation technology for textile coating

Sächsisches Textilforschungsinstitut e.V., Chemnitz (Germany)

UV curing is a well-known and established technology in many industrial applications such as graphic, wood, paper or varnish sectors. The application of UV curable coatings on various materials like textile, plastics, paper, metal or ceramics is an eco-friendly and energy efficient alternative to traditional thermal drying and curing technologies. The main advantages are the application of water- and solvent-free 100 % formulations as well as the small space and energy consumption. Up to 75 % of energy can be saved in comparison to the classical thermal drying/crosslinking and the space requirement is just about 1 m compared to 50 m long stenter frames.

The poster is about the application of UV-curable systems for coating of technical textiles. Modern, eco-friendly and energy efficient UV-LED spotlights are used as source for the UV-light. This UV-source has many advantages like long operating life, no emission of toxic ozone and up heating material stressing IR-radiation in comparison to the classical mercury medium pressure lamps. The UV-curing systems were applied by direct and transfer coating at various textiles.

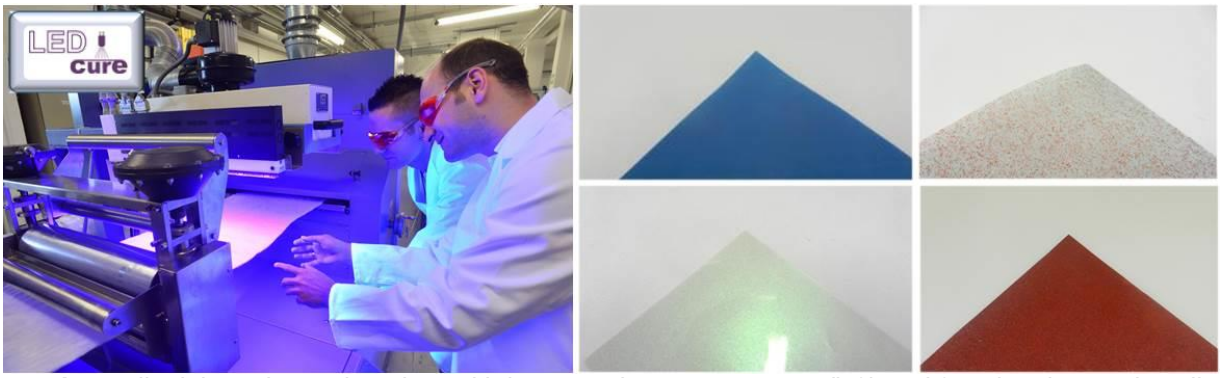

Fig.1: *pilot lab-scale coating plant with integrated UV-LED source (left) and functional coated textile samples (right).*

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Further information:

Angaben zum Forschungsvorhaben/Förderhinweis:

„Die IGF-Vorhaben 89 EBR und 193 EBR der Forschungsvereinigung Forschungskuratorium Textil e.V., Reinhardtstraße 12-14, 10117 Berlin wurde über die AiF im Rahmen des Programms zur Förderung der industriellen Gemeinschafts-forschung und –entwicklung (IGF) vom Bundesministerium für Wirtschaft und Technologie aufgrund eines Beschlusses des Deutschen Bundestages gefördert."

„Wir danken dem Bundesministerium für Wirtschaft und Energie für die Förderung der Forschungsvorhaben „UV-vernetzbare Silikonbeschichtungen für Textilien" und „UV-LED-vernetzbare flexible und dehnbare Beschichtungen für Technische Textilien" mit den Reg. Nr. VF150006 und VF160011 innerhalb des Förderprogramms „FuE-Förderung gemeinnütziger externer Industrieforschungseinrichtungen in Ostdeutschland – Innovations-kompetenz Ost (INNO-KOM-Ost) - Modul: Vorlaufforschung (VF)".

RecyCarb: process optimisation and on-line monitoring in the recycling of carbon fibre waste for the re-use in high-grade fibre-reinforced plastics

Sächsisches Textilforschungsinstitut e.V. STFI, Chemnitz (Germany)
Faserinstitut Bremen e.V. FIBRE, Bremen (Germany)

Within the frame of the research project RecyCarb a qualified value-added chain shall be initiated for recycled carbon fibres (rCF), enabling the high-quality and sustainable re-use in sophisticated fibre-reinforced plastics in the area of transportation, sports equipment or medical technology. The technological gap between the actual rCF available at the market and the functional re-use as reinforcing elements in high-quality parts has to be closed. This will be achieved by developments in all parts of the process chain, combined with the initiation of a reliable scheme of quality assurance. Based on this information, a monitoring system will be realised, comprising the whole process. Special focus of the project work is:

- Process scale-up for waste recovery and nonwoven production into industrial and economical relevant scale with respect to the quality requirement
- Set-up of a process-integrated monitoring of quality parameters, starting with waste recovery and reaching to the high-quality re-use of rCF in suitable parts
- Evaluation of the effects of different non-woven technologies, first-time application of a combined nonwoven process for generating quasi-isotropic nonwoven structures
- Specific application-oriented adaption of technology and products to the different requirements of the target applications and potential end-users

The results will contribute to the largely preservation of fibre properties and functionality. This enables the multiple use and avoids downcycling of the energy-intensive produced carbon fibres.

Fig.1: *Semi-industrial pilot line for rCF nonwovens at STFI*

Fig.2: *Project consortium*

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Further information:
Financial support by the German ministry of education and research (BMBF) within the framework Entrepreneurial Regions, project FutureTex, no. 03ZZ0608I is gratefully acknowledged.

The presentation relates to an on-going collaborative project which aims at the development of technical textiles for environmentally sustainable and base-load capable power generation from flowing waters. Hereby emphasis is placed on the following developments:

- Inflatable geo-textile groynes and river dams as a means of optimising energy production and flood prevention
- Adaptive textiles for the construction of waterwheel blades with active surface to ensure the operation of waterwheels under a large variety of streaming conditions
- A fish-friendly weir as a combination of fish ladder and hydro turbine which is in accord with the European Water Framework Directive and guarantees both compliance with legislation and short term amortisation due to the delivery of electric energy

The R&D activities are represented starting with the textile substrates and the coating media which must ensure high strength, abrasion and UV resistance, high hydrolytic stability and dynamic performance as well as good weldability when textile part have to be fitted. A second part of the presentation deals with the design and production of prototypes of adaptive and inflatable textiles for the above mentioned applications. First attempts were performed on model scale under laboratory conditions. Further on the assembly of whole devices and their performance under real working conditions are illustrated based on application examples. The presentation is closed outlining some economic aspects and giving an outlook on upcoming R&D work.

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Further information:

http://www.flussstrom.eu

The presented research and development projects are funded by the German Federal Ministry of Education and Research (BMBF) within the programme “Entrepreneurial Regions - Innovative Regional Growth Cores” (fund numbers 03WKCO1D, 03WKCO3C, and 03WKCO4D) and managed by the Project Management Jülich (PtJ).

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Smart Textiles put to the test
Textile Research Institute Thuringia-Vogtland (TITV Greiz)

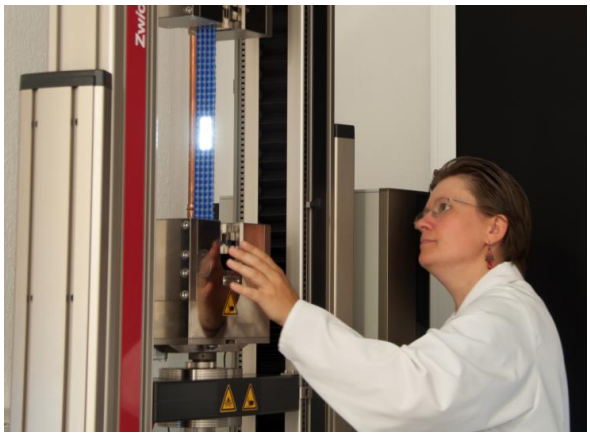
titv
Das Institut für Spezialtextilien und flexible Materialien

TITV Greiz is developing new methods for product safety

The combination of textile and electronics is becoming more and more fruitful: In 2017, more than 131 millions of clothes with smart functions are expected to be produced worldwide. But such “smart textiles“ are also increasingly used in automobiles, safety-related components and in medical engineering. These are reasons enough for the Textile Research Institute Thuringia-Vogtland (TITV Greiz) to set up an efficient laboratory for developing test methods for conductive textiles in the interest of product safety and user safety.
http://www.titv-greiz.de/index.php?id=smart-textiles-prueflabor
„For the reliable use of conductive fibres, textile-based sensors, contactings and supply lines for heating applications and luminous applications, the industry needs new appropriate test methods even before the market launch“, says head of laboratory Volkmar Reichmann. At the TITV Greiz, which – as one of the first research institutes at all – started developing conductive threads 20 years ago, complex material tests, durability tests and dynamic stress simulations for the various kinds of smart textiles are to be developed in the new test rooms. There are, for example, new, specifically developed test methods which combine mechanical stress tests with electrical function tests.

With regard to luminous or warning protective clothing, smart-textile therapy products and biomonitoring via sports clothing and leisure clothing, it is necessary to help preventing possible cases of damage caused by faulty conductive tracks or damaged contacting. There has been only one test standard for smart textiles in Europe so far, which is DIN EN 16812.

Researchers from Greiz, were actively involved in developing this standard and will support the work of the European Committee for Standardization (CEN) in Brussels and of the German Institute for Standardization (DIN) in Berlin in this testing field in the future.


Stresstesting for luminous tapes

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Futher informations:

SmartTexilesLabor Reg.-Nr.: 2015 WIN 0007

Organizers of the Aachen-Dresden-Denkendorf International Textile Conference

Deutsche Institute für Textil- und Faserforschung Denkendorf (DITF), Denkendorf

und

DWI-Leibnitz-Institut für Interaktive Materialien, Aachen

und

ITM, Institut für Textilmaschinen und Textile Hochleistungswerkstofftechnik der TU Dresden

in cooperation with:

- DTNW, Deutsches Textilforschungszentrum Nord - West e.V., Krefeld
- Fachbereich Textil - und Bekleidungstechnik der Hochschule Niederrhein, Mönchengladbach
- IfN, Institut für Nähtechnik e.V., Aachen
- IPF, Leibniz - Institut für Polymerforschung Dresden e.V.
- ITA, Institut für Textiltechnik der RWTH Aachen
- ITMC, Institut für Technische und Makromolekulare Chemie der RWTH Aachen
- STFI, Sächsisches Textilforschungsinstitut e.V., Chemnitz
- TFI, Deutsches Forschungsinstitut für Bodensysteme e.V., Aachen
- TITV, Textilforschungsinstitut Thüringen - Vogtland e.V., Greiz

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