RESEARCH HIGHLIGHTS

DEUTSCHE INSTITUTE FÜR TEXTIL- UND FASERFORSCHUNG DENKENDORF

DITF REPORT

June 2020 – Nr. 2

Production of protective masks

DITF produce nonwovens for certified FFP protective masks

In order to help ease the still critical supply situation with medical protective masks, the DITF have expanded their research facilities and started the production of protective masks at FFP2 level.
The nonwovens pilot plant is not actually designed for the production of nonwovens for FFP 2 masks. However, the team from the Nonwoven Technology Division managed to convert the existing plant in two weeks so that the material produced achieves a separation efficiency at FFP2 level. From this, the masks which are produced during the corona pandemic and should be worn by doctors and nurses, but also by fire and police emergency services. For the complete mask production – from the supply of the starting material polypropylene to the final inspection – the DITF organized a real joint effort in a very short time: the Borealis company donated the spunbonded fabric for the meltblown and the Junker company takes over the production of the masks. The masks are then tested and certified by DEKRA.

The masks are to be delivered to the Ministry of Social Affairs and Integration of Baden-Württemberg, which coordinates the supply of protective equipment. "As a research institute we cannot produce large quantities, but any quantity helps", emphasises Professor Michael R. Buchmeiser, Chairman of the Board of Directors of the DITF. This is why the DITF are not only entering into production, but has been advising companies and organisations in their search for suitable filter media for textile masks since February. The scientists provide information on the normative requirements that the materials must meet and where they can be tested and certified. In addition, the DITF were able to put the Baden-Württemberg Ministry of Social Affairs in touch with one of their network partners who will supply another four million mouth and nose protection masks (MNS).

Production of medical protective masks at FFP2 level

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CONTENT

Start of four DITF Competence Centers

The implementation of the 2021 strategy for the DITF Denkendorf culminated in the establishment of competence centers at the beginning of 2020. This was made up of several considerations and necessities. On the one hand, it had to be possible to finally clear up all the duplications that had been created over the years, some deliberately and some unintentionally. On the other hand, it was the declared goal to bundle forces and clearly present strengths, competencies and, above all, unique selling points to the outside world in the course of the structural and strategic realignment of the DITF.
In a first step, four competence centers were established: Biopolymer Materials, Chemical Fibers and Nonwovens, Polymers and Fiber Composites and Textile Chemistry – Environment – Energy. A detailed Report on page 3 introduces the competence centers and their main areas of activity.

Textile research under the influence of Corona

DITF scientists develop different production approaches for reusable protective masks

The usual protective masks are made of fleece and are thrown away after a single use. Due to the COVID-19 pandemic, protective equipment is still in short supply, so the textile industry is looking for alternatives. It is not only a matter of satisfying the demand, but also of the comfort of the equipment and environmental protection. The DITF are pursuing several research approaches to this end. In addition to self-sewn cotton masks, MNS masks according to EN 14683, also known as surgical masks, are particularly widespread in public areas.

Everyday masks – finished in one operation from the knitting machine

These are almost exclusively disposable masks made of very inexpensive nonwoven fabric. In the clinical area they primarily protect the patients from possible germs by the surgeon. The doctor is protected from splashing body fluid and direct airflow. For the most part the wearer does not breathe through the fleece, but unfiltered through the openings between the mask and face in the cheek and nose area. Medical face masks must be disinfected (low-germ) but not sterile. Due to the general obligation to wear masks when shopping and on public transport, masks are often used for several hours. They must therefore above all be comfortable to wear. They must fit well, the fabric must not irritate and they must be easy to put on and take off. To avoid waste, they should also be able to be used several times. In some cases, multiple use is also made necessary by existing supply bottlenecks.

Knitted everyday masks – ready-made in one process

The DITF have created concepts for ready-made masks in addition to fleece at FFP2 level. In the field of knitting technology, this is a knitted everyday mask which, according to initial internal tests, achieves a separation efficiency of up to 50 percent – a quality you wouldn't think knitted fabric could provide. One advantage of the mask is that it is quick and comes out of the knitting machine ready.

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Woven masks – Precise Mask outline thanks to Jacquard weaving technique

But reusable medical face masks can also be produced ready-made on the loom. The DITF and several partners have applied for a corresponding project, where the overall concept not only includes production at low cost, but also ensures that the masks can be used multiple times. The advantage lies in the manufacturing concept of these masks. The air-jet weaving machine from Dornier with Jacquard weaving technology from Stäubli enables a very precise mask contour to be produced in large quantities. Furthermore, different mask shapes can be produced without the need for complex machine settings, and without having to be changed. The results are masks that are individually- adapted for different applications and offer significantly improved wearing comfort. First prototypes of a woven mask have already been designed. The weaving mill of Global Safety Textiles has production facilities for the manufacturing process, which have sufficient capacity.

Antimicrobial yarns such as those produced by TWD Fibers GmbH are suitable for these masks. With a new bicomponent plant so-called split fibers are produced, which are almost as fine as the meltblown nonwovens previously used for MNS masks. Partners in the project are also Hohenstein and Textilpflege Mayer. In this project, the Hohenstein Testing Institute is responsible for testing the masks in accordance with the specifications of EN 14683 and Textilpflege Mayer is responsible for the Cleaning and disinfection for the reuse of the Masks.

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Reuse of masks – test disinfection

The COVID-19 pandemic is causing a lot of waste in protective clothing, which is polluting the environment. Therefore the masks should be used several times. Some fibers are even suitable for machine washing, other materials must be disinfected or can be recycled.

The DITF are planning a research project in which different possibilities of disinfection tion can be tested. Here too, machines that are currently lying idle can be used. Used nonwoven masks can be decontaminated with ozone, for example. Ozonization plants are in the textile industry on a large scale ready. In normal operation they provide for the "used look" of jeans.

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Structural realignment of the DITF

DITF establish competence centers to focus their research on specific topics

With the aim of strengthening the existing unique selling propositions and improving the cooperation of the research departments along the entire production chain, the DITF have decided to restructure and create competence centers.

With the foundation of four competence centers, a stringent thematic focus within the centers was achieved and the merger of of competences from synthesis chemistry, polymer chemistry and physics as well as polymer and fiber technology with those from process engineering, mechanical engineering as well as textile and process engineering.

Thus, each competence center reflects the overriding unique selling proposition of the DITF in many areas: the possibility to research and develop along the entire textile chain. The process of structural consolidation of the DITF is to be completed by the end of 2020 with the establishment of further competence centers and the reorganization of the remaining research and development areas.

Competence Center Biopolymer Materials

The DITF are one of the world's leading research centers in the development and production of technical fibers and materials based on biopolymers such as cellulose, chitin, keratin, alginate or lignin. The Competence Center Biopolymer Materials combines these research activities and reacts by focusing on the increasing importance of biobased and biodegradable polymers. Their development makes a significant contribution to climate protection and a sustainable future.

With new dissolving processes, renewable biopolymers can be processed into high-strength, technical fibers which can be used, for example, as fully recyclable composite materials in lightweight construction. Current research projects deal with the production of cellulose and lignin-based carbon fibers, the further development of ionic liquids technology for the processing of bio-polymers and the processing of chitin for medical products.

Competence Center Polymers and Fiber Composites

The Competence Center Polymers and Fiber Composites deals with with the production and further development of polymers for fibers, textiles and matrix systems as well as the optimization of textile processes and fiber composite technologies. The DITF is the only textile research institute worldwide that can rely on a continuous process chain – from matrix production and fiber/matrix compatibility to preforming, manufacturing and component testing. The close integration of polymer technology and process engineering in the competence center enables the effective development of competitive fiber composite materials and processes from laboratory scale to industrial maturity.

Current research projects include energy-, material- and cost-efficient process engineering for fiber composites, component, process and service life optimization for hybrid, multifunctional composites and the development of individual polymers for melt spinning, extrusion and injection molding.

Competence Center Chemical Fibers and Nonwovens

The development of man-made fibers and nonwovens for technical applications as well as the technologies for their production is the main focus of the Competence Center Chemical Fibers and Nonwovens. The center covers the entire range from melt spinning of fibers to the production of nonwovens in direct nonwoven processes and carding technologies. Special expertise in polymer chemistry and physics as well as in mechanical engineering forms the basis for fiber-based solutions in a wide range of applications, for example in lightweight construction, in environmental and energy technology, for smart textiles or especially in medicine.

The competence center is embedded in the DITF-wide certification for the development and production of polymers and textile implants according to ISO 13485:2016 with fiber and nonwovens production, partly in clean rooms. Current research projects deal with the development of new fiber functionalities, sustainable fiber alternatives and with thermoplastic and material recycling processes.

Competence Center Textile Chemistry, Environment, Energy

The Competence Center Textile Chemistry, Environment, Energy combines the existing expertise in the fields of chemistry and process engineering for textile finishing of yarns and textile surfaces. In addition to the development of coated textiles, central topics include textiles as carriers for microorganisms, textiles for energy generation and for filter applications. The aim is to improve textile materials and processes in terms of functionality, energy-efficiency and ecology. Special know-how is available in the functionalization of textile surfaces, whether by finishing, modification, printing, coating or laminating.

The research focus currently includes the development of sustainable textile auxiliaries, environmentally-friendly textile-finishing processes, the use of digital process technologies for surface functionalization and the development of polymer layers on textiles as well as textile materials for renewable energies, for energy storage and transformation of energy flows.

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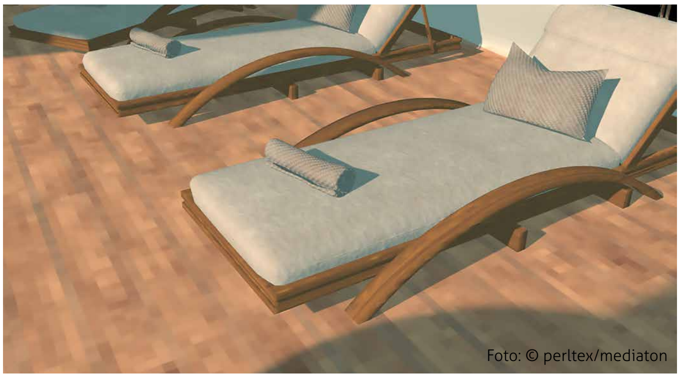
Solar thermal active seat cushion for maritime applications

Integrated, textile latent heat accumulator provides heat storage

With a new solar-thermally active seat cushion for maritime applications, Wolfgang Bauer of BAUER Yachting, together with the DITF, has developed a new lifestyle application, which shows great market potential.
The development based on the latest textile technology and solar thermal energy integrates a high degree of innovation in technical, economic and sustainable terms. The new upholstery has the task of storing the incident sunlight during the day and keeping the warmth in the cool evening hours when sitting or lying down. For this purpose, the management to the surrounding seawater and the possible intrusion due to condensation was also reconsidered and implemented rethought and implemented. With these technologies, a previously unattained level of comfort is achieved.

For the solar thermal functions, the capture and storage of solar energy was realised by a textile multi-layer structure. The new seat upholstery consists of a weatherproof fabric as upholstery material. For the upholstery and thermal insulation, spacer fabrics are inserted. An integrated, textile latent heat accumulator stores the heat. During the day, in the loading phase under sunlight, the seat cushion is pleasantly warm, but not hot and the integrated latent heat accumulator made of a phase-change material (PCM) is simultaneously charged. In the evening, during the discharge phase, the accumulator releases its heat, warms up the pillow and leads to a high degree of pleasant comfort when sitting or lying down. The high air permeability of the textile layers enables a rapid exchange



Solar thermally active seat cushion: pleasantly warm during the day, but not hot; warming in the evening

of heat between the fabrics. The heat release is promoted by the pressure created when sitting or lying down. The necessary, thermally-active amount of energy of the PCM was determined from the specific heat capacity and the desired discharge phase (reheating time) of the seat cushion is calculated.
Air can circulate in the seat upholstery with 3D textiles. There is only a low moisture absorption, so that mould and bacteria infestation cannot arise.
In addition to the maritime sector, other new market fields are emerging in the camping and leisure market, where the listed new functions also lead to an increase in comfort.

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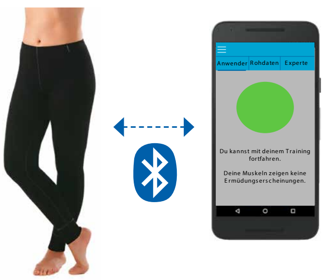
MoMuMy – smart sports pants for efficient training

Real-time monitoring of muscle functions using electromyography

The measurement of muscle action potentials with the help of electromyography (EMG) is a method of neurological diagnostics that has been established for decades. It allows the activity of a muscle to be recorded quantitatively. In the research project "Mobile system for real-time monitoring of muscle functions with the aid of electromyography – MoMuMy" in cooperation with the underwear manufacturer Comazo and the Hannover Medical School, a pair of sports pants is being developed to measure muscle activity.
Textile electrodes are used to measure the desired muscle action potentials in real time and, with the aid of mathematical algorithms, the desired muscle action potentials are measured using an app of the ATS Elektronik GmbH determines the muscle fatigue. With this biofeedback movement sequences can be optimized.
The fields of application range from weight training and endurance sports to back training.



Sports pants with real-time monitoring of muscle functions using electromyography

For example, a marathon runner can recognize fatigue before the body registers it and thus adjust its running speed early on. Another economically-interesting field of application is the area of occupational safety and health protection. In many areas, accidents, illnesses, etc., which are due to physical overloading or incorrect strain, could be avoided. In contrast to conventional textile dry electrodes, the electrodes integrated into the sports pants and developed at the DITF can be worn without skin irritation.

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Intelligent wound dressings for chronic wounds

Measure and continuously record the healing process

Chronic wounds mean a severely restricted quality of life for affected patients and high treatment costs for the healthcare system, which in the case of ulcus cruris, for example, amount to 10,000 euro per patient per year. In Germany about 890,000 people suffer from chronic wounds, worldwide about 4 million.

In the Ulimpia research project, the DITF, in cooperation with numerous German and European partners from industry and research, are developing innovative materials and microelectronics for medical wound dressings that objectively measure and continuously record the pathology and healing process of chronic wounds. The figure shows a functional model installed in the laboratory. A wound dressing made of nonwoven and superabsorbent material contains a knitted fabric with sensor yarns that change their electrical resistance depending on temperature and their capacity depending on moisture.

In the further course of the project, pH sensors will be integrated into the wound dressing and possible applications of ultrasound technologies in the treatment of chronic wounds will be investigated. The aim of all technical developments is to develop intelligent wound dressings that detect complications early, reduce dressing changes, inpatient hospital stays and treatment costs and improve the quality of life of patients with chronic wounds.


Determination of the moisture on the laboratory sample wound covering with sensor yarns

The Ulimpia project is part of the European PENTA cluster for research and development in the field of microelectronics in the forward-looking thematic areas of Industry 4.0, autonomous driving and intelligent medical technology.

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European research project "Fashion Big Data Business Model"

New business models in the digital age

In many cases, new business models promise more success in the development and introduction of new technologies, as in the context of Industry 4.0, than the mere innovation of products or processes. The potentials range from customer-specific solutions to supporting or substituting services to the reorientation and redesign of the entire value chain.

In the European research project "Fashion Big Data Business Model", new data-driven business models and IT solutions are developed and tested with 12 partners from research and industry. The focus is on the development and production of small, individualized batch sizes for clothing that meet both fashion and technical requirements and use the data required for this purpose to optimize the supply chain. Design and production can access huge amounts of data in an unprecedented way, use these and thus offer the market what it wants.

Example Digital Textile Microfactory

For a promising implementation of this data-driven approach, DITF-MR develops possible design and production scenarios, specifies them in archetypes and develops the necessary business models in business cases together with the participating companies. One example of an archetype is the Digital Textile Microfactory, which with its digital consistency and production of small batch sizes enables new business models in the areas of individualization, sample production, reordering and eventdriven production.


Workshop with industrial pilot partners on the FBD_BModel project in Prato, Italy

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Polarization Microscopy

State-of-the-art fiber and polymer analysis

For exactly 190 years polarization microscopes have been used to examine crystalline or partially crystalline substances and to draw conclusions about other physical parameters from their optical properties. As long as this technique has existed, the knowledge gained from it is still up to date. With the acquisition of a new polarization microscope, the DITF are now able to carry out the precise optical analysis of polymers and fibers using state-of-the-art technology.
In fiber and polymer analysis, polarization microscopy is used to determine orientation states in materials. For example, the long polymer chains in the fibers we know of orient themselves along the fiber axis during the spinning process. This usually results in both disordered (amorphous) and ordered (crystalline) regions. The birefringence allows a statement about the overall orientation of the polymer chains in amorphous and crystalline areas. The extent of this molecular orientation determines, for example, the optical properties of fibers and also has a practical effect on the shrinkage properties or the colouring behaviour of fibers.
In physical terms, birefringence describes the extent to which the propagation velocities of perpendicularly polarized light beams differ when passing through an optically anisotropic (birefringent) medium. An obvious effect of these different propagation speeds is the formation of birefringence in crystals. A well-known example of this is a pure, transparent calcite crystal. Objects appear double when viewed through it. In fibers, the measurable birefringence varies depending on the stretching during or after the spinning process. A highly stretched fiber has a high molecular orientation and thus a higher optical birefringence. This can be determined with high accuracy using a polarization microscope and so-called compensators.
At present, mainly cellulosic fibers are characterized by polarization microscopy in extensive series of measurements at the DITF. The fiber properties of the fibers spun from ionic liquids (IL) at the DITF allow a comparison with those of industrial fiber types. If necessary, changes can be made in the spinning and drawing process in order to adjust the structure of the fibers so that they fit optimally into the requirement spectrum.
A large part of the cellulose fibers spun in the IL process is further processed to carbon fibers at the DITF. Polarization microscopy ultimately helps to produce high-strength carbon fibers with a precisely defined spectrum of properties.


Polarization Microscope

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Dr. Manuel Clauss awarded

Research Prize 2020 of the DKG Carbon Working Group

Vehicle components, aircraft or textile concrete: Carbon fiber reinforced plastics and materials are light, tear-resistant and therefore in great demand. Their disadvantage is the energy- and cost-intensive production. A new manufacturing process will change this. The basis for this is provided by the doctoral thesis of Dr. Manuel Clauss entitled "Structural Investigations on lignin-based carbon fibers" at the Chair of Macromolecular Fabrics and Fiber Chemistry by Prof. Dr. Michael Buchmeiser at the University of Stuttgart in cooperation with the DITF. For his work, Dr. Manuel Clauss has now been awarded the 2020 Research Prize of Carbon Task Force (AKK) of the German Ceramic Society (DKG). The AKK is a scientific-technical platform and an interest group within the European Carbon Association and the German Ceramic Society.

Clauss produces carbon fibers from wood waste

In search of alternative raw materials for the production of carbon fibers Manuel Clauss uses lignin, a waste product of pulp production of wood. Although it was already described as a process in the 1960s, its technological implementation has so far failed. Manuel Clauss has now succeeded in producing carbon fibers with competitive properties from the brown powder lignin. About his work says Manuel Clauss: "The special challenge of lignin as a typical representative of a biopolymer is its complex and irregular molecular structure, which can replace any conventional processing, analysis and chemical drastic modification complicated. "Due to a special procedure of the controlled and quasi-linear chain extension of lignin, it can now be handled like a technical polymer." Prof. Michael Buchmeiser stresses furthermore, the ecological component: "We use a renewable raw material and generate a enormously high added value." The interest of the industry is there, after all Buchmeiser expects a fiber that is about 50 percent cheaper.


Prize winner Dr. Manuel Clauss

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Contactless proximity sensors in textile surfaces

Printed sensor technology stands for reliability in application

Quickly wipe over your smartphone or confirm the booking at the ticket machine with the touch of a finger: sensor technology is taking up an ever greater place in our everyday lives. In addition to a large number of measurement parameters (temperature, humidity, brightness, etc.), proximity and motion sensors are the ones we are most likely to perceive in everyday life, as they require the user's immediate action.

The increasing digitalization of everyday life places high technical demands on the actually rather simple measuring technology of proximity sensors and electrical switches. For example, the integration of sensor technology into textile fabrics is not an easy task to solve, especially if the sensor technology is to function reliably over a long period of use, even with heavily used textiles.

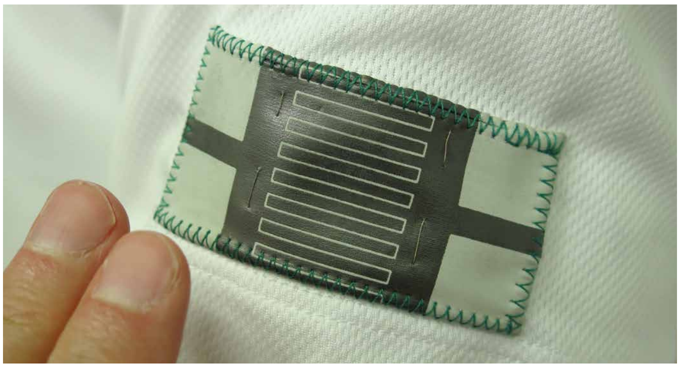
Several approaches have already been implemented for this purpose: On the one hand, conductive fibers or yarns are incorporated into knitted or spacer fabrics. They make contact on touch with the hand. On the other hand, sensory fibers or yarns can be integrated into textiles that react resistively or piezoelectrically to stretching or pressure. The technical production of these two types of textile-integrated sensor technology is complex and has the disadvantage that contact must always be made by touching the textile surface.

Another approach is being pursued at the DITF: Using digital printing technology, conductive electrodes can be applied to the surface of textile surfaces. They serve as a basis for capacitively operating sensors. An electrical voltage between the electrodes creates an electric field whose strength is determined by the dielectric between the electrodes, among other things. Each material has its own dielectric constant. When approaching the electric field with the finger, the dielectric is also changed, which results in a measurable change of the electric field.

The special thing: The system is so sensitive that the textile surface does not need to be touched. The approach with the hand is sufficient. This measuring principle is therefore significantly different from the established methods described above. Because non-contact also means more wear-free and hygienic. This creates a competitive advantage, which shows its advantages in the application of textile-based sensor technology of heavily used textiles and fabrics, which are used e.g. in the medical or care sector.

Within the framework of a research project, the DITF is creating the basis for the production of thin, printed capacitive sensors. The aim is to match printing technology and conductive printing pastes in such a way that a mechanically resistant, but nevertheless as thin a layer as possible on the textile guarantees permanently reliable conductivity. The handle of the fabric should not be affected by the integrated sensor technology. The textile must remain soft and flexible, because a negative influence on the haptics will meet with less acceptance by the user. Currently realized sensor layer thicknesses of only 10 µm already deliver convincing results in this area. However, taking into account their freedom from wear and tear over long periods of application, they can certainly be improved.

Proximity sensor on outer clothing with controlled LED lighting


Proximity sensor

The research results will contribute to further advancing the digitalization of textiles. After all, more and more technical functions are already pushing into the market for everyday textiles. And technical and medical textiles also demand better, reliable and easy-to-use additional digital possibilities.

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NOTED BRIEFLY

ESMA Inkjet Academy: Digital printing on textiles
Hands-on training and basic know-how at the DITF

From 6-9 October, the DITF together with the ESMA Academy invite you to the workshop "Digital Printing on Textiles" in the Denkendorf Technika. In the workshop the participants will gain insight into the process of inkjet printing on textile materials and accompanying topics like textile chemistry and -pretreatment, ink formulation, curing techniques, colour management and characterization of textile materials and print quality. Beyond that, the workflow in digital printing is shown in a textile microfactory environment.

Prof. Dr. Dr. h.c. Franz Effenberger on his 90th birthday

A life for science and research

Prof. Dr. Dr. h.c. Franz Effenberger completed his 90th year of life on April 7, 2020. The DITF congratulate the former head of the ITCF Denkendorf and board member of the DITF on this special birthday.

Franz Effenberger looks back on an eventful life as a researcher and an outstanding career as a scientist. He studied Textile Engineering in Krefeld, then Chemistry at the Technical University of Stuttgart, received his PhD from Hellmut Bredereck at the TH Stuttgart in 1958 with the topic "Investigations on condensed heterocyclic ring systems" and habilitated in Organic Chemistry in 1964. After a one-year research stay at the University of Michigan in the USA in 1965 and years as a Winnacker Fellow, he was appointed Professor of Organic Chemistry at the University of Stuttgart in 1971 and Director of the Institute of Organic Chemistry at the University of Stuttgart. He filled both positions with great passion and success until 2002.

At the University of Stuttgart, of which he was vice-rector (1980–1986) and rector (1986–1990), Franz Effenberger contributed to the reform of the study of Chemistry and was involved in establishing the major field of Bioprocess Engineering. In addition, he was active abroad: As a visiting professor he taught at Cornell University in Ithaca/USA in 1977 and at the École Supérieure de Physique et Chimie in Paris in 1989.

His most important fields of work include the chemistry of aromatics, heterocycles and amino acids, the chemical principles of molecular electronics, applications of enzymes in synthesis and the development of ultra-thin organic layers.

Franz Effenberger has published around 350 papers and 55 patents in cooperation with renowned companies – impressive proof of his scientific achievements and his professional life's work, which was entirely devoted to research.

In 2003, Franz Effenberger took over as head of the Institute of Textile Chemistry and Chemical Fibers (ITCF) of the DITF for six years, after having already been a member of the DITF board of trustees until 2003. With untiring commitment, outstanding expertise and an open ear for his employees, fellow campaigners and the concerns of the industry, Effenberger succeeded in further expanding the nationally and internationally outstanding reputation of the ITCF Denkendorf. As a scientist with strategic skills and a feeling for the right topics, he initiated numerous pioneering research projects, pushed ahead with targeted cooperation with industry and thus set the course for a successful future of research in Denkendorf. Together with the SGL Group, Franz Effenberger initiated the development of carbon fiber technology at the ITCF, thus setting a milestone on the way to independent European carbon fiber production technology, the mastery of which is of decisive importance for Germany as a high-tech location.

Franz Effenberger has received many awards. For his scientific work and his overall achievements, which have had a lasting impact on the field of chemistry through discoveries and new findings, he received, among others, the Humboldt Research Award (1991) and the Federal Cross of Merit 1st Class (1990). His achievements have also been honoured many times abroad.

Prof. Dr. Dr. h.c. Franz Effenberger

The Keiō University honored him with the Japan Society for the Promotion of Science-Fellowship Award (2004), the University of Strasbourg honored him with the Louis Pasteur Medal (2004), and in France he was made a Knight of the Legion of Honor (1997). The Universidade Federal de Santa Maria (Brazil) awarded Franz Effenberger an honorary doctorate.

Trade fairs & events

Due to the corona crisis and the associated cancellations and postponements of appointments, we at this point we have decided to refrain from the usual DITF overview of events. We provide up-to-date information on a daily basis about the events taking place on our website at www.ditf.de/termine and fairs.

ADD International Textile Conference 2020

The current measures to cope with the corona pandemic and the uncertainty as to how the pandemic will develop in the coming weeks and months have also prompted us, in coordination with ITM Dresden and DWI Aachen, to cancel the Aachen-Dresden-Denkendorf International Textile Conference 2020. The conference in Stuttgart planned for this year is postponed to **November 9-10, 2021**.

User Forum SMART TEXTILES

The last major event before the lockdown was the SMART TEXTILES user forum at the end of February, which the DITF together with the Textile Research Institute Thuringia-Vogtland e.V. (TITV), Greiz, and the Forschungskuratorium Textil e.V., Berlin organize annually. The 8th Forum, which was sold out with 150 participants, focused on the topic of aviation and led into the production of Airbus in Hamburg. For 2021 the planning is already in full swing. The 9th Forum will take place in March 2021 in Southern Germany. The industrial partner for the main topic and the venue are currently being selected.

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