

The logo for DITF (Deutsche Institute für Textil- und Faserforschung) is displayed in a large, black, sans-serif font. The letters are widely spaced and have a clean, modern appearance.

DEUTSCHE INSTITUTE FÜR
TEXTIL+FASERFORSCHUNG

A large, diagonal bundle of fibers, possibly carbon or Kevlar, is shown in a light blue/teal color. The fibers are bundled together and have a slightly textured appearance. The bundle is positioned in the upper right quadrant of the page, extending from the top right towards the center.

NEW MATERIALS FOR INNOVATIVE APPLICATIONS

HIGH PERFORMANCE
FIBER CENTER (HPFC)

A horizontal bundle of fibers, similar to the one in the upper right, is shown in a light blue/teal color. It is positioned at the bottom of the page, extending from the left edge towards the right.

HIGH PERFORMANCE FIBER CENTER HPFC

Facilities of the High Performance Fiber Center (HPFC) reaching an approximate 1000 m² apply the latest equipment currently available world-wide for the development of high-performance fibers. With this new development center, the DITF strengthens their expertise and leading position in application-oriented research, the development of fibers with extraordinary properties and in sustainable production methods.



Technical facilities at the HPFC

HPFC's machinery includes five independent state-of-the-art production lines:

- > Melt-spinning plants applicative for biopolymers, reactive-extrusion and special carbon fiber precursors
- > Furnace, fed with inert gas for ceramic fibers (up to 1600°C)
- > Facility for electron beam hardening of melt spun fibers within the spinning process
- > Oxidation line for precursors up to 12K
- > Carbonization line up to 12K

HIGH PERFORMANCE FIBERS FOR THE FUTURE

High Performance Polymer Fibers

Polymer fibers are a key element in the area of high performance fibers, featuring extraordinary strength, stability and resistance. The research conducted at the DITF Denkendorf involves among other things the development of cost-efficient and sustainable production processes and innovative types of fibers.



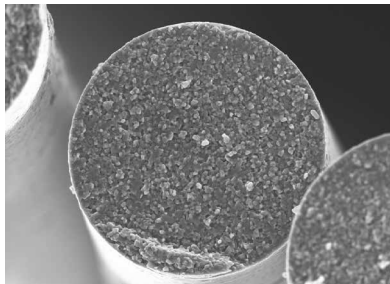
Carbon Fibers from Alternative Precursors

Carbon fibers offer the best material properties when used in high-strength fiber composite materials. Using alternative precursors from biogenic resources, they can be produced to improve cost and resource efficiency. Current research projects at the DITF intend to optimize these new precursors and develop carbon fibers that are ready for the market.



Ceramic Fibers

Ceramic fibers reinforce ceramic composite materials and significantly improve their behaviour at rupture. The new production facilities at the HPFC allow specific in-process controls for all steps in the production of ceramic fibers. This helps to optimize the properties of this fiber type that is so important for many industrial applications.



FIELDS OF APPLICATION

With their extraordinary properties, high-performance fibers offer new design and function-related solutions. They are the key components for forward-looking product innovations in many different areas:

Mobility

Fiber reinforced structures and products e.g. for the automotive industry, aerospace technology, architecture

Energy, environment and resource efficiency

Energy and environmental technology e.g. water treatment, aquatic and landscape conservation, recycling of high-performance fibers, smart energy management

Construction and architecture

Building materials with textile components, fiber-based materials

Health and Care

Textile implants and regenerative medicine, wound treatment products, diagnostic and monitoring systems, smart textiles, drug delivery and therapeutic systems

ANALYTICS

Research and development at the HPFC is supported by modern analytics. This allows the detection of physical and structural changes in the fiber material and to correlate these with process conditions. The DITF have the latest measurement technology available for this purpose:

- > X-ray scattering (WAXS, SAXS)
- > High-resolution Raman microscopy
- > Zeiss scanning electron microscope with FIB (Focused Ion Beam)
- > HT thermogravimetric analysis combined with FT-IR and MS
- > Thermoanalysis (DSC, TGA)
- > Density measurement
- > MALDI-TOF
- > Modelling and simulation of processes

NETWORKS

In addition to its close relations to the industry and the science sector, the DITF are fully involved in the activities of a large number of associations, organisations and specific networks that serve as research platforms across different systems and disciplines.



The HPFC was and is sponsored by the Ministry of Economic Affairs, Labour and Tourism and the Ministry of Science, Research and the Arts of the state of Baden-Württemberg, among others, with funding from the European Fund for Regional Development (EFRE).



EUROPEAN UNION
European Regional Development Fund



Baden-Württemberg

For more information see https://ec.europa.eu/info/index_en

PROJECT PARTNERS

The DITF cooperate with numerous companies in Germany and abroad that participate in publicly-funded research projects. The DITF also receive research projects directly from these companies.

The following partners currently support HPFC projects:



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