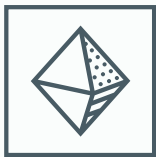


HIGHLIGHTS FROM OUR BUSINESS DIVISIONS

ANNUAL REPORT 2019/20



Materials and Processes



Energy

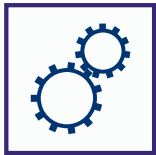


Water

Materials and Processes

page 24–28

The “Materials and Processes” business division provides a central point of contact for all matters related to development, manufacturing, and qualification of high-performance ceramics for a wide range of applications. A wealth of experience has been accumulated in all relevant materials and technologies, for which requirement-related functional solutions are developed. The scope of activities encompasses the entire process chain, making this division crucial to all other business divisions.



Mechanical and Automotive Engineering



Environmental and Process Engineering

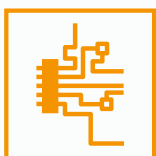


Materials and Process Analysis

Mechanical and Automotive Engineering

page 29–31

High-performance ceramics are key components in mechanical and automotive engineering. Due to their outstanding properties, they are often the only available options. The “Mechanical and Automotive Engineering” business division offers high-performance ceramic, hardmetal, and cermet wear parts and tools as well as parts for specific loading conditions. A new core area comprising test systems for monitoring components and production facilities based on optical, elastodynamic, and magnetic effects has also been established.



Electronics and Microsystems



Bio- and Medical Technology



Non-Destructive Testing and Monitoring

Electronics and Microsystems

page 32–34

The “Electronics and Microsystems” business division offers manufacturers and users unique access to materials, technologies, and know-how to help them develop robust, high-performance electronic components. Focus is on sensors and sensor systems as well as power electronic components and “smart” multifunctional systems. With the help of innovative test methods and systems, Fraunhofer IKTS provides support along the entire value-added chain – from materials to integration of complex electronic systems.

Energy

page 35–42

Ceramic materials and technologies form the basis for improved and fundamentally new applications in energy technology. To that end, Fraunhofer IKTS develops, builds, and tests innovative components, modules, and complete systems, focusing mainly on ceramic solid-state ionic conductors. Applications range from electrochemical energy storage systems and fuel cells, solar cells, energy harvesting modules, and thermal energy systems to solutions for biofuels and chemical fuels.

Water

page 51–55

The efficient use and purification of water is ecologically and economically of the highest priority. IKTS offers solutions for the chemistry- and biology-free treatment of waste waters – from multifunctional components to compact complete systems. Process combinations from filtration, adsorption or sono-electrochemical oxidation are far superior in contrast to established approaches. Furthermore, specific sensor systems are integrated in order to increase process efficiency and to reduce production costs.

Environmental and Process Engineering

page 43–46

Fraunhofer IKTS develops innovative materials, technologies, and systems for safe, efficient, environmentally, and climate-friendly conversion of energy and substances. Focus is on processes involving conventional and biological energy sources as well as strategies and processes for water and air purification and treatment, and for recovery of valuable raw materials from waste. New reactor designs for the chemical industry are made possible by ceramic membranes and catalysts.

Materials and Process Analysis

page 56–59

Fraunhofer IKTS offers a wide range of test, characterization, and analysis methods for materials properties and production processes. As a reliable, multiply accredited, and audited service provider, Fraunhofer IKTS assists in the investigation of fundamental aspects of materials science, application-specific issues, and measurement-related developments. Characteristic parameters are not only determined but also interpreted within the context of the respective application to uncover any potential for optimization.

Bio- and Medical Technology

page 47–50

Fraunhofer IKTS makes use of the outstanding properties of ceramic materials to develop dental and endoprosthetic implants and surgical instruments. In well-equipped, certified laboratories, the interactions between biological and synthetic materials are investigated and applied towards the development of improved materials, analytics, and diagnostics. In part unique optical, acoustic, and bioelectrical techniques are available for this purpose.

Non-Destructive Testing and Monitoring

page 60–62

Quality, costs and time are crucial factors in order to convince the market with own products and services. Non-destructive test methods help to continuously improve these. IKTS combines its decades of experience in the testing of components and plants with novel measuring technologies, automation concepts and approaches for the interpretation of complex data volumes. These competences exceed the portfolio of traditional NDT providers by far.