



# BIO- AND MEDICAL TECHNOLOGY

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Through its “Bio- and Medical Technology” business division, Fraunhofer IKTS offers ceramic materials, components, and systems for dental technology and endoprosthetics, as well as biomedical diagnostics and therapeutics.

The vast wealth of experience with ceramic materials forms the cornerstone by which Fraunhofer IKTS is able to support industrial and research partners with product development, from raw materials to complete medical devices and equipment. Quality assurance, cost control and enforcement of regulatory requirements: these three pillars are a central part of the medical technology efforts at Fraunhofer IKTS and are guaranteed by its superior technical infrastructure, including certified laboratories. There are longstanding collaborative relationships for the processing of customer-specific tasks as well as in the framework of validation and certification processes.

Fraunhofer IKTS is certified under the German Medical Devices Act for its research and development efforts in the field of bioceramic materials and components, and the production of semi-finished products for use in medical technology. These materials are mainly used in dental technology and endoprosthetics, specifically as bone replacement materials, and in the design of bioceramic surfaces and ceramic bodies. With commercially available materials as a basis, IKTS scientists develop new ceramic materials and components with improved and modified properties. In doing so, the scientists use the latest foaming, molding, and slip casting technologies, apply plasma coating and sol-gel processes, as well as innovative approaches such as additive manufacturing.

Processes used in cell and tissue diagnostics – which provide insights into the behavior of cells within the body and against foreign substances – represent another focus, and thus contribute to the diagnosis and the treatment of serious diseases. The institute’s extensive portfolio of physical characterization processes form the basis of these efforts. They are enhanced by its vast expertise in imaging methods, as well as the processing of large volumes of data. The focus here is on the processes, systems and instruments integral to stimulation and monitoring of cells and tissues, and for separating, detecting, and suppressing microbial organisms and toxins. These optical, acoustic and bioelectrical processes are also qualified for use in clinical laboratory diagnostics, point-of-care diagnostics, and home-care applications. The spectrum of services covers everything from design, process, and software development, to construction and assembly of prototypes, to assistance with transferring these to the production phase.

In addition to biophysical, biochemical and biomechanical test laboratories, Fraunhofer IKTS also possesses certified laboratories for cell and immune biology as well as for the analysis of environmental and health risks by nanoparticles.