

FRAUNHOFER IKTS IN PROFILE

PORTRAIT

The Fraunhofer Institute for Ceramic Technologies and Systems IKTS covers the field of advanced ceramics from basic preliminary research through to the entire range of applications. The institute boasts labs and technical centers with outstanding equipment and a total floor space of more than 30,000 square meters at its sites in Dresden (Saxony), Hermsdorf (Thuringia) and several other sites. Based on extensive scientific know-how on high-performance ceramic materials, the development work covers the complete value chain, through to prototype production and systems integration.

Furthermore, Fraunhofer IKTS has decades of experience in the non-destructive testing of components and systems. Using novel measuring technologies, approaches to automation and to interpreting complex data sets, we offer solutions for quality control and condition monitoring – from sensors to complete systems adapted specifically for the user.

Fraunhofer IKTS masters a triad of competencies – materials, technologies and systems – completed by comprehensive material diagnostics at the highest level, far beyond ceramic materials themselves. Chemists, materials scientists, engineers and software experts work together in cross-disciplinary teams at IKTS, supported in their work by experienced technicians.

The researchers showcase the potential of new technologies and components in various market-oriented divisions: Mechanical and automotive engineering, electronics and microsystems, energy, water, environmental and process engineering, bio- and medical technology, as well as non-destructive testing and monitoring. In the cross sectional fields of materials and processes, as well as materials and process analytics, we continuously refine technologies, both established and emerging, as accelerators for all other fields, while keeping an eye on the

challenges faced by society as a whole with regard to new forms of mobility, innovative concepts for the circular economy and efficient digital production.

We offer the following unique competencies:

End-to-end production lines: from starting material to prototypes

For any class of ceramic materials, Fraunhofer IKTS has access to all the standard processes of raw materials preparation, shaping, heat treatment and finish processing. Regarding functional ceramics, our special core competence is in paste and tape technology. By combining different technology platforms in a targeted way, such as functional and structural ceramics, we are able to create multifunctional components and systems which make clever use of the different properties of ceramic materials. In particular with regard to complex production processes, such as ceramic manufacturing, our deep knowledge of materials and ceramic manufacturing processes in conjunction with the design and integration of complex test systems allows us to offer unique solutions for the decisive materials-related questions in product development, production and quality assurance.

Multiscale development

Fraunhofer IKTS has the proper infrastructure and experience to transfer developments from the lab scale to the technical scale. Cutting-edge, industry-grade equipment and machinery is available for all relevant technology lines, with the ability to realize, for the benefit of partners and clients, the prototypes and pilot-production series required for market entry, to develop industrial production lines and implement quality processes. This helps to minimize time-to-market and risks significantly.



Non-destructive testing: from concept to certified system

Fraunhofer IKTS offers custom-made solutions for non-destructive materials testing – from the first concept through to the certified test system. The focus is on the handling of noisy signals. We supply specially developed sensors which are adapted to suit geometries, materials and optical, acoustic or electromagnetic parameters. Client-specific test systems are equipped with modular and very powerful electronics and versatile software. We accompany the process up to the CE-certified system and take on the validation of the test process for developments from the fields of ultrasound, eddy-current and acoustic emission testing.

Project management

Fraunhofer IKTS has proven competences in the planning and execution of research projects of various scopes – from short-term support to supernational large-scale projects. In the field of contract research with small and medium-sized companies, we provide flexible and timely support with customized services or development processes. In complex large-scale projects with several national and international consortium partners, we provide support from the application phase, through to project coordination, communication of project outcomes and the development of exploitation strategies.

Cross-site quality management

Quality, traceability, transparency and sustainability are some of the most important instruments for IKTS when it comes to providing partners and clients with valid, reproducible and resource-friendly research outcomes.

Therefore, IKTS has a unified management system in accordance with DIN EN ISO 9001, as well as an environmental management system in accordance with DIN EN ISO 14001. Beyond this, the institute and its various divisions are certified according to other guidelines, e.g. the German Law on Medical Products, and undergo various regular audits from the industry.

Creator of networks

IKTS has an active role in numerous regional, national and international alliances and networks. By building and actively working within various networks, IKTS is able to identify different complementary competences at an early stage, and promote and integrate them for future product development. Thus, we jointly find solutions for the benefit of our partners.