

FOREWORD



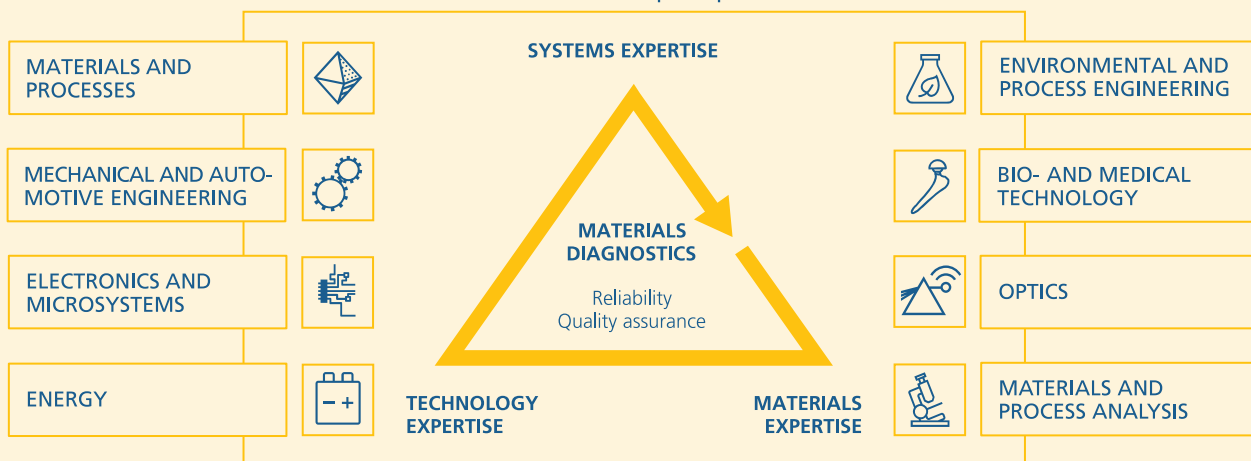
ANNUAL REPORT 2016/17

Dear partners and friends of IKTS,

The year 2016 was another very successful and eventful year. With an order volume amounting to 19 million euros from projects with industry partners, all sites saw a significant increase in income from industry. At the Dresden-Gruna site, we were able to reach the 11 million euros mark for the first time ever. An impressive volume of 18.6 million euros was also generated from publicly funded projects completed in cooperation with industry partners. We have thereby once again demonstrated our relevance as a research partner for industry and will continue to pursue our mission as a Fraunhofer Institute with clear focus on applied research. With a total budget of approx. 54 million euros, we were also able to invest in initial research and equipment (approx. 3 million euros). The support of the Länder of Saxony and Thuringia and the federal government is especially appreciated. We are now optimally equipped to maintain our role as a competent partner for future collaborative efforts with industry.

The development of the non-destructive testing and materials diagnostics site at Dresden-Klotzsche was particularly pleasing. We were able to reach the break-even point in the reporting period and finished the year in the black. The topic of test technologies extending over the entire product life cycle of ceramics and other materials and systems holds an abundance of possibilities for process and product innovation. We will work on extending this topic and integrating it into our core area of structural and functional ceramics with the aim of creating synergetic effects. We will remain true to our strategy of covering all aspects of advanced ceramics as well as the value chain and are always open to suggestions for new topics and other input.

Fraunhofer IKTS – "one stop shop" for ceramics



We are well prepared for the coming year and will continue to evolve the eight business divisions described in this report. The field of energy and environmental technology will continue to be a core focal point, with main emphasis being placed on storage technology for mobile and stationary applications. Our work on mobile applications will concentrate on Li-ion batteries and will revolve around solid-state batteries as a main topic. The topic of "range extenders" is another target for expansion and will involve fuel cells as well as internal combustion engines. Na/NiCl₂ battery research will be the primary focus in the area of stationary storage systems. In this field, we were able to acquire a new project through the Fraunhofer Future Foundation, enabling us to advance to the system development stage. With regard to batteries, we will focus on materials development and preparation as well as on new process technologies and will employ such strategies as additive manufacturing, which we also hope to further in other areas as new shaping method.

Another goal is the expansion of the topic of ceramics for water and hydrogen technologies. Both our ceramic membranes and our fuel cell systems operated in "reverse mode" as solid oxide electrolysis cells (SOECs) will be used. The combination of these technologies in conjunction with our environmental process technologies allows us to close recycling loops (energy, water, and recovery of valuables). This can also be beneficially applied to agriculture. We are currently planning on launching a research cluster with partner institutes of the Fraunhofer-Gesellschaft.

Additional highlights and trends from our business divisions can be found in this report. I hope you find them interesting and inspirational. As always, I invite you to take advantage of our comprehensive well-equipped facilities base and the outstanding IKTS team. We look forward to working with you.

Sincerely,

Alexander Michaelis

April 2017