An interdisciplinary network for the future

Strong partners are integrated within the KINSIS priority research area: the Helmholtz Centre Geesthacht for Materials and Coastal Research, the Fraunhofer Institute for Silicon Technology in Itzehoe, the Leibniz Institute for Science and Mathematics Education, the Deutsches Elektronen-Synchrotron (DESY) research centre in Hamburg, and the North German Initiative Nanotechnology Schleswig-Holstein e.V. (NINA SH) are examples of a continuously growing network which combines nano, surface, and interface science in Northern Germany. In cooperation with the Kiel Science Outreach Campus, part of the Leibniz Association, activities for communicating nano research to various target groups are designed and evaluated in a research-based manner.

Together, these institutes create ideal conditions for outstanding scientific findings and thus guarantee an excellent education for young researchers. KINSIS promotes careers at an early stage through research-based, international degree programmes, graduate schools, and awards for graduates. The Kiel priority research area honours leading scientists in their fields every year with the Diels-Planck-Lecture, which is given in memory of the Kiel-based Nobel prize winners, Max Planck and Otto Diels, as two of nanoscience’s pioneers.

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From the quantum world into society

Molecular machines, new and highly-sensitive sensors, bionic and nanomaterials: over 90 scientists and their research groups at Kiel University are working on tiny structures which are made up of atoms and molecules. What are their characteristics, how do they behave and how can we use our insights? These questions can only be answered in cooperation by experts from various disciplines such as physics, chemistry, engineering and life sciences.

The [Priority Research Area](#) Kiel Nano, Surface and Interface Science (KiNSIS) unites researchers from Kiel University and collaborating external research institutes in this field. It also aims at strengthening and connecting top-class early career scientists, enabling the transfer of technology, and promoting the dialogue with the general public and politics about these emerging research topics. School pupils and interested members of the public can experience ideas, methods, and applications of nanotechnology in the klick! labor of the Kiel Forschungswerkstatt or at events like Kieler Woche.

Scientists in the KiNSIS priority research area collaborate in interdisciplinary and excellent research projects, well beyond the boundaries of their respective disciplines, institutes and faculties. Concentrating and coordinating the existing expertise at Kiel University enables innovative, challenging, and complex research projects. In particular, KiNSIS supports the preparation and fundraising for large-scale projects, such as Collaborative Research Centres, research training groups, and DFG research units.

The current **KiNSIS research collaborations** include:

- Research Training Group GRK 2154 ‘Materials for Brain’ (2017-)
- Collaborative Research Centre CRC 1261 ‘Magnetoelectric Sensors: From Composite Materials to Biomagnetic Diagnostics’ (2016-)
- Research Unit FOR 2093 ‘Memristive devices for neural systems’ (2014-)
- Collaborative Research Centre CRC 677 ‘Function by Switching’ (2007-2019)

Cutting-edge research equipment and methods, developed by the research groups, form the backbone of KiNSIS’ scientific success. These for example allow to understand, how interfaces between different substances are composed at the molecular scale, how ultra-fast chemical and physical processes take place, and how materials that are sensitive to magnetic fields can be produced.

... to new materials and devices

The priority research area not only aims at new scientific discoveries but also at implementing them in an application-oriented manner. Current thin film technologies, for example, are not only available to individual working groups, but can be used by all KiNSIS members, external research institutes, as well as by the industry in the **Competence Center Nanosystem Technology**. The core of this, the Kiel Nanolaboratory, is a cleanroom with state-of-the-art equipment. Thin film stents with shape memory for use in neurology and new magnetic field sensors have already been successfully developed here.