



Coordinated Projects

Several successful coordinated research initiatives prove CINSaT's strategy to be successful, e.g:

- SFB1319 ELCH (Electron Dynamics of Chiral Systems)
- LOEWE SMolBits (Scalable Molecular Quantum Bits)
- VW joint project „Quantum coins and Nanosensors“



Exzellente Forschung für
Hessens Zukunft



VolkswagenStiftung

Teaching support

CINSaT serves to strengthen and consolidate promising research field of nanostructure sciences and nanotechnology in Hessen. Within the Faculty 10 - Mathematics and Natural Sciences, CINSaT offers an interdisciplinary Bachelor's degree in Nanostructure Sciences as well as an international Master's degree in Nanoscience at the University of Kassel. In addition, CINSaT is involved in the initiation of a graduate school and ERASMUS exchange programs with the Nanoscience Center in Jyväskylä (Finland). The center promotes young scientists by organizing seminars for school students to give them an insight into nanotechnology and scientific work.

More information about the center, the groups involved and the main topics, as well as the latest news can be found at: www.cinsat.de

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Scientific Center

CINSaT -
Center for
Interdisciplinary
Nanostructure Science
and Technology



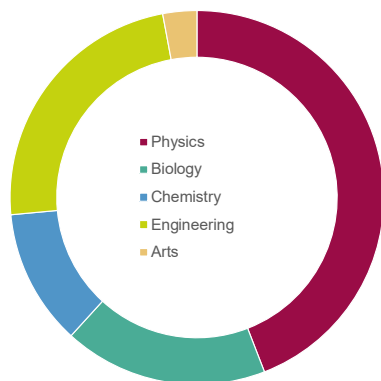
CINSaT

Center for
Interdisciplinary Nanostructure
Science and Technology

Organisation and teams

At the University of Kassel, more than 30 research teams are following their vision on the future of nanotechnology in the scientific center CINSaT. The communication and transfer of specific know ow to other researchers within CINSaT forms the foundation for the interdisciplinary nature of this network. Scientists from various disciplines conduct research together on nanotechnology projects, ranging from natural sciences (biology, chemistry, physics) to engineering (civil engineering, mechanical engineering, electrical engineering) and art.

Teams from the
respective disciplines
in CINSaT



CINSaT's concept based on focus areas allows to keep in pace with the rapid development of projects and research areas in the field of nanotechnology. The Research Coordination Round, in which the head of each research focus takes over the scientific coordination and communication within a research area, aids in communication between the research areas. The following six focus areas are currently represented in the CINSaT:

Focus areas

3-dimensional nanostructures

In this focus, structures with typical dimensions below one micrometer in all three spatial directions are investigated. The aim is the generation, characterization and application of three-dimensional magnetic and photonic structures or objects, e.g. for application in biosensors.

Head: Prof. Dr. Hartmut Hillmer
(hillmer@ina.uni-kassel.de)

Photonics

The focus is on activities in which either optical methods are used to investigate, manipulate or theoretically describe nano-objects or nanostructured materials, or in which special nanostructuring processes are used to develop optically active materials, components or systems or to simulate them with new models.

Head: Prof. Dr. Peter Lehmann (lehmann@uni-kassel.de)

Multiscale Biosensing

The new focus 'multiscale bioimaging' aims at combining the expertise of biologists and physicists to engage in the structural and functional analysis of biological systems. The objective within this focus will be to develop novel methods for imaging biological systems in a dynamic fashion over different time scales and up to nanoscale resolution in space.

Head: Prof. Dr. Arno Müller (h.a.mueller@uni-kassel.de)

Chiral Systems

Chirality („handedness“, mirror image and original cannot be matched) is decisive for chemical reactions (e.g. medical efficacy of biomolecules). The manipulation and investigation of chiral systems with newly developed, sensitive measurement methods is a central component of this focus.

Head: Prof. Dr. Thomas Baumert
(baumert@physik.uni-kassel.de)

Quantum Technology

The new focus area quantum technology deals with the application of quantum effects for the realization of technological objectives, which are unattainable with classical methods. An important objective of this research area is the establishment of a scalable quantum information platform, which is mainly used in the LOEWE project SMOlBits.

Head: Prof. Dr. Kilian Singer (ks@uni-kassel.de)

Nanostructures in natural sciences, engineering sciences and the arts

In this research focus all topics are summarized, which cannot be assigned to one of the other areas. The aim is to use the scientific exchange with the focus topics 1-5 to develop new activities and, if necessary, identify new research areas.

Heads: Prof. Dr. Bernhard Middendorf
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