

CAMPUS RESEARCH FOCUS

MATERIAL, MOLECULE AND ENERGY

Our Research

Scientists conduct basic research on the storage of chemical and electrochemical energy, explore substitution concepts for sustainable and resource-efficient materials and further develop semiconductors, other functional materials and microelectronic devices in order to operate future technologies, for instance in the field of photonics, optoelectronics and electronics. The Research Campus Focus also examines the macroscopic characteristics of modern materials relevant to technical applications, with an emphasis on mechanical, electronic and optical aspects.

Battery research: from the nanometre scale to the electric car

Battery research is one of the many joint projects at the Campus Research Focus. Work centres on research on materials and concepts for safe and powerful battery cells of the next generation, e.g. solid-state batteries, considered to be the successor to lithium ion batteries with research questions focusing on the synthesis of new materials, characterisation and modelling from the atomic to the macroscopic length scale, and the analysis of damage to battery packs installed in vehicles.

Our Key Questions

- What does the battery of the future look like?
- How can new materials make batteries safer and more powerful?
- Are batteries in electric cars dangerous?

FCMH Partners



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Current Research Projects

- Federal Ministry of Education and Research Competence Cluster FestBatt
- Participation in Excellency Cluster "Beyond Lithium" (Karlsruhe Institute of Technology, Ulm University)
- DFG CRC 1083 Structure and Dynamics of Internal Interfaces
- DFG RTG 1782 Functionalization of Semiconductors
- DFG RTG 2204 Substitute Materials for Sustainable Energy Technologies
- DFG SPP 1807 Control of London Dispersion Interactions in Molecular Chemistry
- DFG FOR 2824 Amorphous Molecular Materials with Extreme Non-Linear Optical Properties

Research Infrastructures

- Centre for Materials Research (LaMa), Justus Liebig University Giessen
- Materials Science Center (WZMW), Philipps-Universität Marburg
- Center of Competence for Automotive, Mobility and Materials Research (AutoM), Technische Hochschule Mittelhessen University of Applied Sciences

Research Environment and Cooperation Partners

- Campus Research Focus Space Applications
- Karlsruhe Institute of Technology (KIT), Batteries and Electrochemistry Laboratory (BELLA), Institute of Nanotechnology
- Max Planck Institute for Solid State Research, Stuttgart
- Forschungszentrum Jülich, Peter Grünberg Institute, PGI-9, Semiconductor Nanoelectronics
- Universitat Rovira i Virgili, Research Group Nanoelectronic and Photonic Systems, Spain

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More Information



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