Helmholtz-Zentrum hereon GmbH
Institute of Active Polymers

Scientific Director Prof. Dr. Matthias Rehahn
Administrative Director Silke Simon
Head of Institute (act.) Dr. Manfred Gossen

Contact Kantstraße 55, 14513 Teltow
Website & Social media www.hereon.de/biomaterials

General Information

Helmholtz-Zentrum Hereon conducts international cutting-edge research for a changing world: approximately 1,100 employees generate knowledge and innovation to facilitate more resilience and sustainability. As part of an international network and as a member of the Helmholtz Association, Hereon supports political, economic and societal institutions in shaping the future through the transfer of its expertise.

The research focus of the Institute of Active Polymers in Teltow lies on data- and information-driven design of functions in polymer-based materials and their interface-mediated interactions with living systems. A mechanistic comprehension of these (bio)materials in their application-dependent environment is especially enabled by extensive acquisition of large datasets from multiscale, correlative analyses followed by computer-based modelling/simulation. When used for theoretical predictions, this approach could drastically reduce the number of costly and time-consuming experiments. The gained knowledge is implemented with focus on healthcare technologies and on the topic of sustainability.

In the context of translational research into products for health and medicine, fabrication processes are of crucial importance. Therefore, integrated synthesis and shaping processes, clean room technologies and sterilization techniques are explored and implemented. This research work also includes structural and purity analysis. On this basis, medical device candidates can be evaluated in (pre-)clinical studies using qualified test devices.

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Key facts

- Non-profit research centre with limited liability, based in Geesthacht, Germany
- Institute of Active Polymers, divided in 8 departments with about 70 employees, is located in Teltow and is one of the research center's 15 institutes
- Teltow research campus can look back on a history of 100 years. The scientific work done there has always focused on polymer research

CENTRAL RELATED INFRASTRUCTURE & RESOURCES

- Institute of Active Polymers is currently divided into eight departments: *Polymer Chemistry*, *Multidimensional Polymer Characterization*, *Polymers in Regeneration*, *Materials in Life Sciences*, *Digital Design and Manufacturing*, *Micro-/Nanotechnology*, *Stem Cell Modification and Biomaterials*, and *Medical Device Fabrication Schemes*
- Studies are addressed in an interdisciplinary approach that includes physics, chemistry, biology, materials sciences, engineering, computational engineering, as well as expertise in the field of medicine
- Material synthesis and analysis labs, clean rooms (GMP-conform with grade A to D), biological labs, sterilization technology and a technical center for device fabrication (extrusion, injection molding, 3D-printing).
- An innovative interdisciplinary and transdisciplinary graduate education program is provided by the Helmholtz graduate school Macromolecular Bioscience (Hereon, Freie Universität Berlin, University of Potsdam).