

MATERIALS SCIENCE AND ENGINEERING

Research in Germany

AN INITIATIVE OF THE



Federal Ministry
of Education
and Research

**Research in
Germany**

Land of Ideas

Research in Germany



Imprint

Published by: German Research Foundation (DFG), Bonn, Germany

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Sources: DFG, Fraunhofer Society, Helmholtz Association, Leibniz Association,
Max Planck Society, Federal Ministry of Education and Research

Graphic Design: KLINKEBIEL GmbH Kommunikationsdesign, www.klinkebiel.com

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This publication was funded by the German Federal Ministry of Education and
Research.

MATERIALS SCIENCE
AND ENGINEERING

PREFACE

This brochure provides a first insight into research in Germany in the field of materials science and engineering and is especially recommended to early career researchers from abroad.

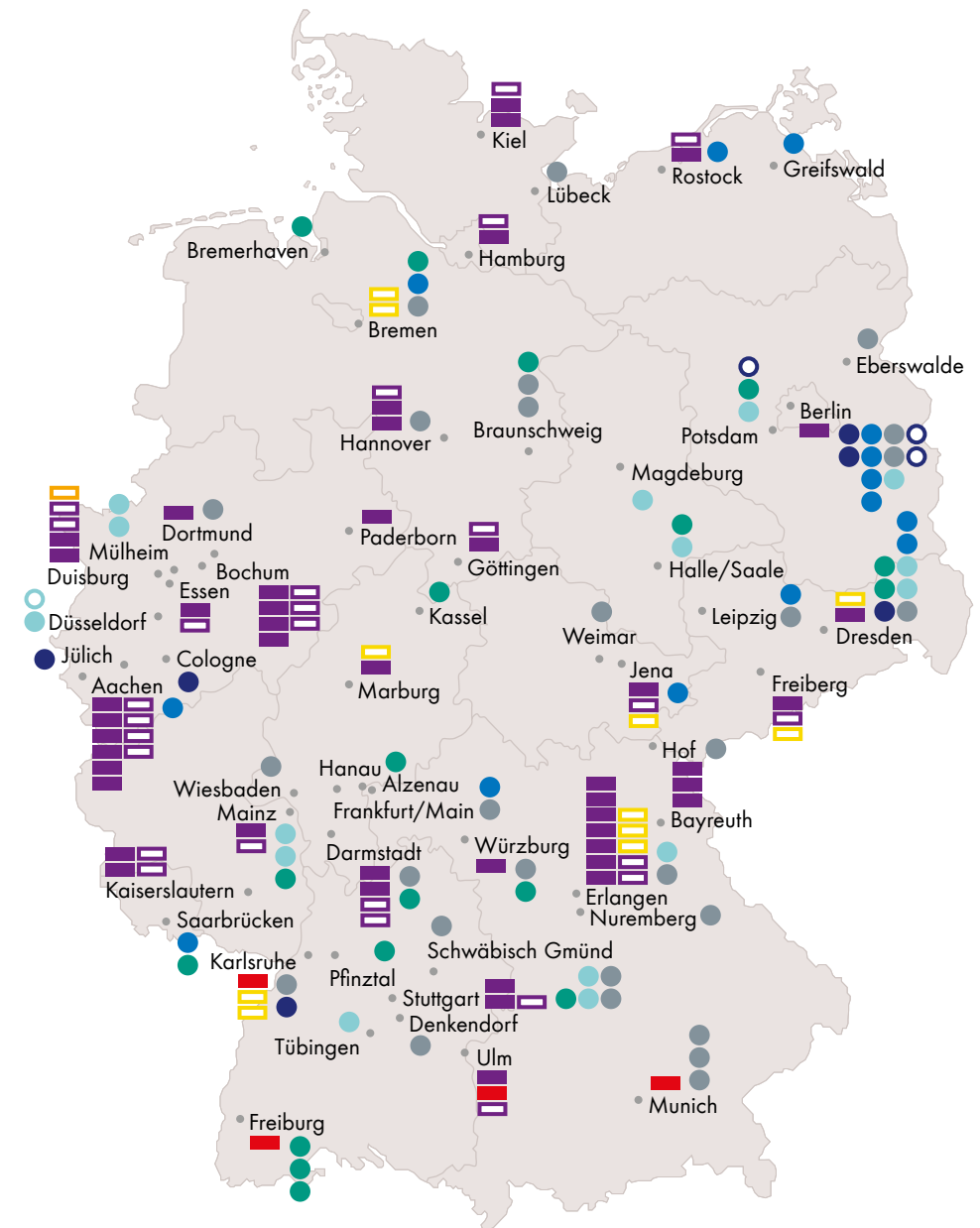
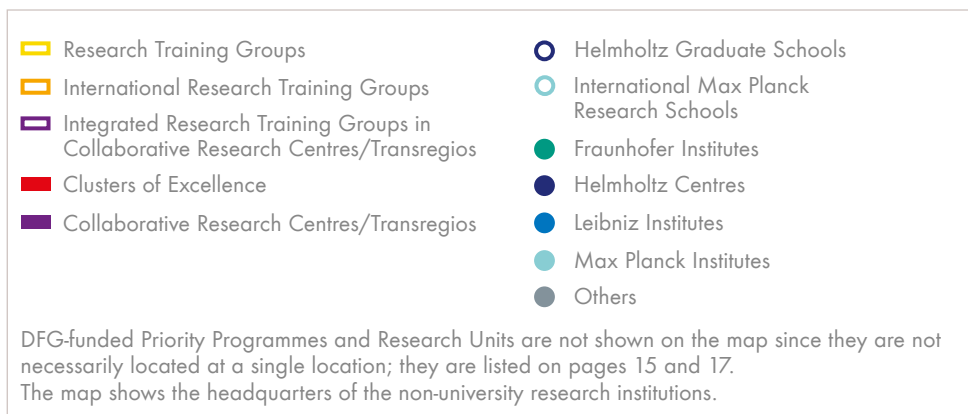
Materials science and engineering research in Germany is primarily conducted at universities but also at non-university research institutions. Almost all universities and many universities of applied sciences host a materials science and engineering research section. The spectrum ranges from small monothematic working groups to large interdisciplinary departments and covers a variety of topics from traditional areas to new explorative research fields.

This brochure is intended to give an initial overview. The following map and tables highlight research consortia and graduate training programmes at universities and non-university research institutes with a main focus on materials science and engineering.

On top of this, there is a lot more to discover: e.g. the DFG funds a multitude of individual projects in the area of materials science and engineering. These individual grants outweigh the research consortia both in number and in overall funding volume. Towards the end of this brochure, you will find a link to the online database GEPRIS that provides an overview of all DFG-funded research projects. You will also find additional important links for further information about programmes in the field of materials science and engineering and profiles of German universities and research institutions.

We invite you to explore the many opportunities that Germany has to offer and welcome your feedback.

OVERVIEW



Clusters of Excellence (EXC) promote cutting-edge research. They serve to strengthen the research profiles of universities or university consortia in internationally competitive fields. They create excellent training and career opportunities for early career researchers. Within the framework of the Excellence Strategy, they can receive between €3 million and €10 million annually and are funded for seven years, starting in 2019. A second seven-year period is possible.

Collaborative Research Centres (CRC) are organisational units established at universities which enable researchers to pursue an outstanding research programme crossing the boundaries of disciplines, institutes, departments and faculties. The traditional Collaborative Research Centre is generally applied for by one university and is conducted by researchers of that university. Early career support is a key objective of the Collaborative Research Centre Programme. Early career researchers may get involved in a CRC in numerous ways, for example within the framework of an Integrated Research Training Group. Collaborative Research Centres are funded for a period of up to 12 years.

Transregios (TRR) are Collaborative Research Centres in which up to three universities collaborate with each other and submit a joint application. The contributions of the cooperative partners are essential, complementary and synergetic to the joint research objective. Funding facilitates close, nationwide collaboration among the participating universities and researchers, as well as networking and shared use of resources. There is also the option of international Transregios.

Location	Institution	Title	Funded Since	Contact
CLUSTERS OF EXCELLENCE				
 Freiburg	Albert-Ludwigs-Universität Freiburg	Living, Adaptive and Energy-autonomous Materials Systems (livMatS) (EXC 2193)	2019	www.livmats.uni-freiburg.de
 Karlsruhe	Karlsruher Institut für Technologie	3D Matter Made to Order (3DMM2O) (EXC 2082)	2019	www.3dmattermadetoorder.kit.edu
 Munich	Ludwig-Maximilians-Universität München Technische Universität München	e-conversion (EXC 2089)	2019	www.e-conversion.de
 Ulm	Universität Ulm Karlsruher Institut für Technologie	POLiS – Post Lithium Storage Cluster of Excellence (EXC 2154)	2019	www.postlithiumstorage.org
COLLABORATIVE RESEARCH CENTRES				
 Aachen	Rheinisch-Westfälische Technische Hochschule Aachen	Functional Microgels and Microgel Systems (CRC 985)	2012	www.microgels.de
 Aachen	Rheinisch-Westfälische Technische Hochschule Aachen	Precision Manufacturing by Controlling Melt Dynamics and Solidification in Production Processes (CRC 1120)	2014	www.sfb1120.rwth-aachen.de
 Aachen	Rheinisch-Westfälische Technische Hochschule Aachen	Resistively Switching Chalcogenides for Future Electronics – Structure, Kinetics, and Device Scalability "Nanoswitches" (CRC 917)	2011	www.sfb917.rwth-aachen.de
 Aachen	Rheinisch-Westfälische Technische Hochschule Aachen	Structural and Chemical Atomic Complexity: From Defect Phase Diagrams to Material Properties (CRC 1394)	2020	www.sfb1394.rwth-aachen.de
 Bayreuth	Universität Bayreuth	From Particulate Nanosystems to Mesotechnology (CRC 840)	2009	www.sfb840.uni-bayreuth.de
 Bayreuth	Universität Bayreuth	MICROPLASTICS – Understanding the Mechanisms and Processes of Biological Effects, Transport and Formation (CRC 1357)	2019	www.sfb-mikroplastik.uni-bayreuth.de

CENTRES OF RESEARCH

Location	Institution	Title	Funded Since	Contact
 Berlin	Humboldt-Universität zu Berlin	Hybrid Inorganic/Organic Systems for Opto-Electronics (HIOS) (CRC 951)	2011	www.physik.hu-berlin.de/sfb951
 Darmstadt	Technische Universität Darmstadt	FLAIR – Fermi Level Engineering Applied to Oxide Electroceramics (CRC 1548)	2023	www.mawi.tu-darmstadt.de/flair
 Erlangen	Friedrich-Alexander-Universität Erlangen-Nürnberg	Additive Manufacturing (CRC 814)	2011	www.sfb814.de
 Erlangen	Friedrich-Alexander-Universität Erlangen-Nürnberg	CLINT – Catalysis at Liquid Interfaces (CRC 1452)	2021	www.sfb1452.research.fau.eu
 Erlangen	Friedrich-Alexander-Universität Erlangen-Nürnberg	Design of Particulate Products (CRC 1411)	2020	www.crc1411.research.fau.eu
 Erlangen	Friedrich-Alexander-Universität Erlangen-Nürnberg	Synthetic Carbon Allotropes (CRC 953)	2011	www.sfb953.research.fau.eu
 Freiberg	Technische Universität Bergakademie Freiberg	Multi-Functional Filters for Metal Melt Filtration – A Contribution towards Zero Defect Materials (CRC 920)	2011	www.tu-freiberg.de/en/forschung/sfb920
 Göttingen	Georg-August-Universität Göttingen	Atomic Scale Control of Energy Conversion (CRC 1073)	2013	www.uni-goettingen.de/en/437142
 Hamburg	Technische Universität Hamburg-Harburg	Tailor-Made Multi-Scale Materials Systems (CRC 986)	2012	www.tuhh.de/sfb986
 Hannover	Gottfried Wilhelm Leibniz Universität Hannover	Oxygen-free Production – Processes and Local Mechanisms in Oxygen-free Atmosphere for the Development of Sustainable Production Techniques and Manufacturing Processes (CRC 1368)	2020	www.sfb1368.uni-hannover.de
 Kaiserslautern	Technische Universität Kaiserslautern	Microscale Morphology of Component Surfaces (MICOS) (CRC 926)	2011	www.sfb926.de
 Kiel	Christian-Albrechts-Universität zu Kiel	Magnetoelectric Sensors: From Composite Materials to Biomagnetic Diagnostics (CRC 1261)	2016	www.biomagnetic-sensing.de

CENTRES OF RESEARCH

Location	Institution	Title	Funded Since	Contact
 Kiel	Christian-Albrechts-Universität zu Kiel	Neurotronics: Bio-inspired Information Pathways (CRC 1461)	2021	www.crc1461-neurotronics.de
 Marburg	Philipps-Universität Marburg	Structure and Dynamics of Buried Interfaces (CRC 1083)	2013	www.uni-marburg.de/sfb1083
 Rostock	Universität Rostock	Electrically Active Implants – Elaine (CRC 1270)	2017	www.elaine.uni-rostock.de
 Stuttgart	Universität Stuttgart	Adaptive Skins and Structures for the Built Environment of Tomorrow (CRC 1244)	2016	www.sfb1244.uni-stuttgart.de
 Stuttgart	Universität Stuttgart	Molecular Heterogeneous Catalysis in Confined Geometries (CRC 1333)	2017	www.sfb1313.uni-stuttgart.de
COLLABORATIVE RESEARCH CENTRES/TRANSREGIOS				
 Aachen	Rheinisch-Westfälische Technische Hochschule Aachen	Pulsed High Power Plasmas for the Synthesis of Nanostructural Functional Layers (TRR 87)	2010	www.sfbtr87.de
 Bochum	Ruhr-Universität Bochum			
 Aachen	Rheinisch-Westfälische Technische Hochschule Aachen	Damage Controlled Forming Processes (TRR 188)	2016	www.trr188.de
 Dortmund	Technische Universität Dortmund			
 Bayreuth	Universität Bayreuth	From the Fundamentals of Biofabrication towards Functional Tissue Models (TRR 225)	2017	www.trr225biofab.de
 Erlangen	Friedrich-Alexander-Universität Erlangen-Nürnberg			
 Würzburg	Universitätsklinikum Würzburg			
 Bochum	Ruhr-Universität Bochum	Mobile Material Characterization and Localization by Electromagnetic Sensing (MARIE) (TRR 196)	2016	www.trrmarie.de/sfbtr196marie
 Duisburg	Universität Duisburg-Essen			
 Bochum	Ruhr-Universität Bochum	Heterogeneous Oxidation Catalysis in the Liquid Phase – Mechanisms and Materials in Thermal, Electro-, and Photocatalysis (TRR 247)	2018	www.forschung.ruhr-uni-bochum.de/heterogeneous-oxidation-catalysis-liquid-phase
 Essen	Universität Duisburg-Essen			

CENTRES OF RESEARCH

Location	Institution	Title	Funded Since	Contact
 Bochum Erlangen	Ruhr-Universität- Bochum Friedrich-Alexander- Universität Erlangen- Nürnberg	From Atoms to Turbine Blades – A Scientific Basis for a New Generation of Single Crystal Superalloys (TRR 103)	2011	www.sfb-transregio103.de
 Darmstadt Duisburg	Technische Universität Darmstadt Universität Duisburg- Essen	Hysteresis Design of Magnetic Materials for Efficient Energy Conversion: HoMMage (TRR 270)	2020	www.tu-darmstadt.de/sfb270
 Dresden Erlangen Paderborn	Technische Universität Dresden Friedrich-Alexander- Universität Erlangen- Nürnberg Universität Paderborn	Development of Methods for Mechanical Joinability in Versatile Process Chains (TRR 285)	2019	www.trr285.uni-paderborn.de
 Hannover	Medizinische Hochschule Hannover Gottfried Wilhelm Leibniz Universität Hannover	Safety Integrated and Infection Reactive Implants (TRR 298)	2021	www.maschinenbau.uni-hannover.de/collaborative-research-centres
 Jena Ulm	Friedrich-Schiller- Universität Jena Universität Ulm	Light-driven Molecular Catalysts in Hierarchically Structured Materials – Synthesis and Mechanistic Studies (CatalLight) (TRR 234)	2018	www.catalight.eu
 Kaisers- lautern Mainz	Technische Universität Kaiserslautern Johannes Gutenberg- Universität Mainz	Spin+X: Spin in its Collective Environment (TRR 173)	2015	www.uni-kl.de/trr173

RESEARCH UNITS

-FUNDED BY DFG-

Research Units (FOR) often contribute to establishing new research directions. Research Units are made up of a team of researchers working together on a research project which is often of an interdisciplinary nature. Research Units consist of several researchers and subprojects. The subprojects of a Research Unit are often located at several locations throughout Germany. Research Units are generally funded for up to six years.

Research Units are not shown on the map. Only the titles of the thematic focus and the project websites are listed.

RESEARCH UNITS

Title	Funded Since	Contact
Functional Surfaces through Adiabatic High-Speed Processes: Microstructure, Mechanisms and Model Development – FUNDAM ³ ENT (FOR 5380)	2022	www.gepris.dfg.de/gepris/projekt/460484491
Mechanism-based Characterization and Modeling of Permanent and Bioresorbable Implants with Tailored Functionality based on Innovative in Vivo, in Vitro and in Silico Methods (FOR 5250)	2022	www.for5250.mb.tu-dortmund.de
Solidification Cracks during Laser Beam Welding: High Performance Computing for High Performance Processing (FOR 5134)	2021	www.for5134.science
Energy Landscapes and Structure in Ion Conducting Solids (ELSICS) (FOR 5065)	2021	www.uni-marburg.de/en/fb15/for5065
The Materials Science of Teeth in Function: Principles of Durable, Dynamic Dental Interphases (FOR 2804)	2021	www.zahnerhaltung.charite.de/forschung/dfg_forschergruppe_2804_interdent
Periodic Low-dimensional Defect Structures in Polar Oxides (FOR 5044)	2020	www.for5044.de
Ultrasonic Monitoring of Fibre Metal Laminates Using Integrated Sensors (FOR 3022)	2020	www.tu-braunschweig.de/ima/research/forschungsgruppe-3022
Multifunctional, Coarse Grain Refractory Composite Materials for Key-Components in High Temperature Applications (FOR 3010)	2020	www.tu-freiberg.de/forschung/for3010
UNODE – Unusual Anode Reactions (FOR 2982)	2019	www.ruhr-uni-bochum.de/for2982
Graded Implants for Tendon-Bone Junctions (FOR 2180)	2015	www.gradierte-implantate.de
Memristive Devices for Neuronal Systems (FOR 2093)	2014	www.for2093.uni-kiel.de

PRIORITY PROGRAMMES

- FUNDED BY DFG -

Priority Programmes (SPP) have a programmatic focus and the purpose of advancing knowledge in an emerging field of research through collaborative networked support. They are characterised by their enhanced quality of research through the use of new methods and forms of collaboration in emerging fields. As a rule, one programme can consist of up to 30 individual subprojects located at several institutions across Germany; it usually has one coordinating person. Priority Programmes normally receive funding for a period of up to six years.

Priority Programmes are not shown on the map. Only the titles of the overall themes and the project website are listed.

PRIORITY PROGRAMMES

Title	Funded Since	Contact
CodeChi – Chitin, Chitosan and Chito-Oligosaccharides and their Interaction with Proteins of the Extracellular Matrix and Cellular Signaling (SPP 2416)	2022	www.codechi.de
Engineered Artificial Minerals (EnAM) – a Geo-metallurgical Tool to Recycle Critical Elements from Waste Streams (SPP 2315)	2021	www.tu-freiberg.de/fakult4/mvtat/spp-2315-enam
Polymer-based Batteries (SPP 2248)	2020	www.spp2248.uni-jena.de
2D Materials – Physics of van der Waals [hetero] Structures (2DMAP) (SPP 2244)	2020	www.2dmp.tu-dresden.de
Cooperative Multilevel Multistable Micro Actuator Systems (KOMMMA) (SPP 2206)	2019	www.spp-komma.de
Perovskite Semiconductors: From Fundamental Properties to Devices (SPP 2196)	2019	www.perovskite-spp.uni-konstanz.de/spp-2196
Property-controlled Metal Forming Processes (SPP 2183)	2019	www.spp2183.de (DE)
Skymionics: Topological Spin Phenomena in Real-Space for Applications (SPP 2137)	2018	www.skymionics.ph.tum.de
Materials for Additive Manufacturing (SPP 2122)	2018	www.gepris.dfg.de/gepris/projekt/359962234
Surface Conditioning in Machining Processes (SPP 2086)	2018	www.iwt-bremen.de/research/priority-programmes/priority-programmes/spp-2086
The Utilization of Residual Stresses Induced by Metal Forming (SPP 2086)	2017	www.utg.mw.tum.de/spp2013
Compositionally Complex Alloys – High Entropy Alloys (CCA – HEA) (SPP 2006)	2017	www.sppccahea.uni-bayreuth.de
Nanoparticle Synthesis in Spray Flames: Spray Syn: Measurement, Simulation, Processes (SPP 1980)	2017	www.gepris.dfg.de/gepris/project/312959688
Manipulation of Matter Controlled by Electric and Magnetic Fields: Towards Novel Synthesis and Processing Routes of Inorganic Materials (SPP 1959)	2016	www.fieldsmatter.de

Fraunhofer Society is one of the world's leading organisations for applied research with an annual research budget of 2.9 billion euros, 76 institutes and more than 30,000 employees. Fraunhofer's R&D portfolio covers a wide range of fields, including health, security, communications, transport, energy and the environment. www.fraunhofer.de

The Helmholtz Association contributes to solving major challenges facing society, science and industry with world-level research in six areas: energy, earth and environment, health, key technologies, structure of matter and aeronautics, space and transport. With more than 43,000 employees in 18 research centres and an annual budget of approximately 6 billion euros, the Helmholtz Association is Germany's largest scientific organisation. www.helmholtz.de

The Leibniz Association is an umbrella organisation of 97 research institutes. The annual budget amounts to 2 billion euros. Some 11,500 researchers – approximately 25% of them from abroad – work on a widely diverse range of subjects, including the humanities and social sciences, economics, spatial and life sciences, mathematics, natural and engineering sciences and environmental research. www.leibniz-association.eu

The Max Planck Society for the Advancement of Science is one of Germany's largest independent non-profit research organisations. The Max Planck Society has been allocated approximately 1.92 billion euros for 2022. A combined total of 15,300 researchers, postdoctoral/junior researchers and visiting researchers at 86 Max Planck Institutes conduct basic research in the natural sciences, life sciences, social sciences and humanities. One third of the researchers and more than half of the junior and visiting researchers come from abroad. www.mpg.de

Location	Institution	Contact
FRAUNHOFER INSTITUTES		
● Braunschweig	Fraunhofer Institute for Wood Research Wilhelm-Klauditz-Institut (WKI)	www.wki.fraunhofer.de
● Bremen Dresden	Fraunhofer Institute for Manufacturing Technology and Advanced Materials (IFAM)	www.ifam.fraunhofer.de
● Bremerhaven	Fraunhofer Institute for Wind Energy Systems (IWES)	www.iwes.fraunhofer.de
● Darmstadt	Fraunhofer Institute for Structural Durability and System Reliability (LBF)	www.lbf.fraunhofer.de
● Dresden	Fraunhofer Institute for Ceramic Technologies and Systems (IKTS)	www.ikts.fraunhofer.de
● Freiburg	Fraunhofer Institute for High-Speed Dynamics, Ernst-Mach-Institut (EMI)	www.emi.fraunhofer.de
● Freiburg	Fraunhofer Institute for Mechanics of Materials (IWM)	www.iwm.fraunhofer.de
● Freiburg	Fraunhofer Institute for Solar Energy Systems (ISE)	www.ise.fraunhofer.de
● Halle/Saale	Fraunhofer Institute for Microstructure of Materials and Systems (IMWS)	www.imws.fraunhofer.de
● Hanau/ Alzenau	Fraunhofer Project Group Materials Recycling and Resource Strategies (IKWS)	www.iwks.fraunhofer.de
● Kassel	Fraunhofer Institute for Energy Economics and Energy System Technology (IEE)	www.iee.fraunhofer.de
● Mainz	Fraunhofer Institute for Microengineering and Microsystems (IMM)	www.imm.fraunhofer.de
● Pflintal	Fraunhofer Institute for Chemical Technology (ICT)	www.ict.fraunhofer.de
● Potsdam- Golm	Fraunhofer Institute for Applied Polymer Research (IAP)	www.iap.fraunhofer.de
● Saarbrücken	Fraunhofer Institute for Nondestructive Testing (IZFP)	www.izfp.fraunhofer.de
● Stuttgart	Fraunhofer Institute for Building Physics (IBP)	www.ibp.fraunhofer.de
● Würzburg	Fraunhofer Institute for Silicate Research (ISC)	www.isc.fraunhofer.de
HELMHOLTZ CENTRES		
● Berlin	Helmholtz-Zentrum Berlin für Materialien und Energie (HZB)	www.helmholtz-berlin.de
● Cologne	German Aerospace Center (DLR)	www.dlr.de
● Dresden- Rossendorf	Helmholtz-Zentrum Dresden-Rossendorf (HZDR)	www.hzdr.de
● Jülich	Forschungszentrum Jülich (FZ Jülich)	www.fz-juelich.de
● Karlsruhe	Karlsruhe Institute of Technology (KIT)	www.kit.edu

NON-UNIVERSITY RESEARCH INSTITUTIONS

Location	Institution	Contact
● Teltow (Berlin)	Helmholtz-Zentrum hereon GmbH	www.hereon.de
LEIBNIZ INSTITUTES		
● Aachen	Leibniz Institute for Interactive Materials (DWI)	www.dwi.rwth-aachen.de
● Berlin	Leibniz Institute for Crystal Growth (IKZ)	www.ikz-berlin.de
● Berlin	Max Born Institute for Nonlinear Optics and Short Pulse Spectroscopy im Forschungsverbund Berlin (MBI)	www.mbi-berlin.de
● Berlin	Paul-Drude-Institut für Festkörperelektronik (PDI)	www.pdi-berlin.de
● Berlin	Weierstrass Institute for Applied Analysis and Stochastics (WIAS)	www.wias-berlin.de
● Bremen	Leibniz Institute for Materials Engineering (IWT)	www.iwt-bremen.de
● Dresden	Leibniz Institute for Solid State and Materials Research Dresden (IFW)	www.ifw-dresden.de
● Dresden	Leibniz Institute of Polymer Research Dresden (IPF)	www.ipfdd.de
● Frankfurt/Main	Leibniz Institute Innovations for High Performance Microelectronics (IHP)	www.ihp-microelectronics.com
● Greifswald	Leibniz Institute for Plasma Science and Technology (INP)	www.inp-greifswald.de
● Jena	Institute of Photonic Technology (IPHT)	www.ipht-jena.de
● Leipzig	Leibniz Institute for Surface Modification (IOM)	www.iom-leipzig.de
● Rostock	Leibniz Institute for Catalysis (LIKAT)	www.catalysis.de
● Saarbrücken	Leibniz Institute for New Materials (INM)	www.leibniz-inm.de
MAX PLANCK INSTITUTES		
● Berlin	Fritz Haber Institute of the Max Planck Society (FHI-Berlin)	www.fhi-berlin.mpg.de
● Dresden	Max Planck Institute for Chemical Physics of Solids (CPES)	www.cpfs.mpg.de
● Dresden	Max Planck Institute for the Physics of Complex Systems (MPIPKS)	www.pks.mpg.de
● Düsseldorf	Max-Planck-Institut für Eisenforschung GmbH (MPIE)	www.mpie.de
● Erlangen	Max Planck Institute for the Science of Light (MPL)	www.mpl.mpg.de
● Halle/Saale	Max Planck Institute of Microstructure Physics (MPI-Halle)	www.mpi-halle.mpg.de
● Magdeburg	Max Planck Institute for Dynamics of Complex Technical Systems Magdeburg (MPI-Magdeburg)	www.mpi-magdeburg.mpg.de
● Mainz	Max Planck Institute for Chemistry (MPIC)	www.mpic.de
● Mainz	Max Planck Institute for Polymer Research (MPIP)	www.mpip-mainz.mpg.de
● Mülheim	Max Planck Institute for Chemical Energy Conversion (CEC)	www.cec.mpg.de
● Mülheim	Max-Planck-Institut für Kohlenforschung (KOFO)	www.kofo.mpg.de
● Potsdam	Max Planck Institute for Colloids and Interface (MPIKG)	www.mpikg.mpg.de

NON-UNIVERSITY RESEARCH INSTITUTIONS

Location	Institution	Contact
● Stuttgart Tübingen	Max Planck Institute for Intelligent Systems (IS)	www.is.mpg.de
● Stuttgart	Max Planck Institute for Solid State Research (FKF)	www.fkf.mpg.de
OTHERS		
● Berlin	Federal Institute for Materials Research and Testing (BAM)	www.bam.de
● Berlin Braunschweig	Physikalisch-Technische Bundesanstalt, The National Metrology Institute of Germany (PTB)	www.ptb.de
● Braunschweig	Institute of Building Materials, Concrete Construction and Fire Safety (iBMB)	www.tu-braunschweig.de/ibmb
● Bremen	Bremen Institute for Materials Testing (MPA), Leibniz Institute for Materials Engineering (IWT)	www.iwt-bremen.de/research/scientific-departments/institute-for-materials-testing-mpa
● Darmstadt	State Materials Testing Institute Darmstadt (MPA), Technische Universität Darmstadt	www.mpa-ifw.tu-darmstadt.de/startseite_mpaifw
● Denkendorf	Institute of Textile Chemistry and Chemical Fibres (ITCF)	www.ditf.de
● Dortmund	Materialprüfungsamt Nordrhein-Westfalen (MPA NRW)	www.mpanrw.de
● Dresden	Materialprüfungsanstalt für das Bauwesen Dresden (MPA Dresden)	www.mpa-dresden.com
● Eberswalde	Materialprüfanstalt Brandenburg (MPA Eberswalde)	www.mpaew.de (DE)
● Erlangen Garching (Munich) Hof Nuremberg Würzburg	Bayerische Zentrum für Angewandte Energieforschung e.V. (ZAE Bayern)	www.zae-bayern.de
● Frankfurt/Main	DECHEMA-Forschungsinstitut (DFI)	www.dechema-dfi.de
● Hannover	Materialprüfanstalt für das Bauwesen und Produktionstechnik (MPA BAU Hannover)	www.mpa-hannover.de
● Karlsruhe	Institute of Concrete Structures and Building Materials, Materials Testing and Research Institute (MPA Karlsruhe)	www.imb.kit.edu
● Leipzig	Leipzig Institute for Materials Research and Testing	www.mfpa-leipzig.de (DE)

Location	Institution	Contact
● Lübeck	Materialprüfanstalt Schleswig-Holstein (MPA Schleswig-Holstein)	www.th-luebeck.de/forschung-und-transfer/kompetenzen/kompetenzbereiche/materialpruefanstalt-mpa (DE)
● Munich	Materials Testing Institute for Civil Engineering (MPA BAU)	www.mpa.bgu.tum.de (DE)
● Munich	TUM School of Engineering and Design	www.ed.tum.de
● Schwäbisch Gmünd	fem Research Institute for Precious Metals + Metals Chemistry (FEM)	www.fem-online.de
● Stuttgart	Materials Testing Institute University of Stuttgart (MPA Stuttgart, Otto-Graf-Institut (FMPI))	www.mpa.uni-stuttgart.de
● Stuttgart	Zentrum für Sonnenenergie- und Wasserstoff-Forschung Baden-Württemberg (ZSW)	www.zsw-bw.de
● Weimar	Materialforschungs- und -prüfanstalt an der Bauhaus-Universität Weimar (MFPA Weimar, Amtliche Prüfstelle im Freistaat Thüringen)	www.mfpa.de (DE)
● Wiesbaden	Materialprüfanstalt für Bauwesen Wiesbaden (MPA Wiesbaden)	www.mpa-wiesbaden.de (DE)

GRADUATE TRAINING

- FUNDED BY DFG -

Research Training Groups (RTG) combine an ambitious research programme at universities with comprehensive training, tailored supervision and academic freedom to form an ideal environment for a successful doctorate. Research Training Groups can also have an interdisciplinary approach. They are funded for a period of up to nine years.

International Research Training Groups (IRTG) provide opportunities for joint doctoral training programmes between German universities and universities abroad. The research and study programmes are jointly developed and supervised. Doctoral students in the programme spend six months at the partner institution.

Integrated Research Training Groups (within Collaborative Research Centres/Transregios) offer ideal research environments for doctoral researchers. The main aim of these structured training programmes is to provide young scientists and academics with opportunities to independently carry out research at an early stage of their career. The programmes further take care to closely integrate early career researchers into an academic network. Working in Clusters of Excellence or Collaborative Research Centres projects, doctoral researchers achieve additional qualifications. As research assistants in these projects, they contribute to the Research Centre's success. They are closely involved with the projects and have access to the entire project infrastructure.

GRADUATE TRAINING

Location	Institution	Title	Funded Since	Contact
RESEARCH TRAINING GROUPS				
 Bremen	Universität Bremen	Micro-, Meso- and Macroporous Nonmetallic Materials: Fundamentals and Applications (RTG 1860)	2012	www.mimenima.uni-bremen.de
 Bremen	Universität Bremen	Quantum Mechanical Materials Modelling – QM ³ (RTG 2247)	2016	www.rtg-qm3.de
 Dresden	Technische Universität Dresden	Hydrogel-based Microsystems (RTG 1865)	2012	www.tu-dresden.de/ing/elektrotechnik/ife/graduierntenkolleg
 Erlangen	Friedrich-Alexander-Universität Erlangen-Nürnberg	Energy Conversion Systems: From Materials to Devices (RTG 2495)	2020	www.igk2495.fau.de
 Erlangen	Friedrich-Alexander-Universität Erlangen-Nürnberg	Fracture Across Scales: Integrating Mechanics, Materials Science, Mathematics, Chemistry, and Physics (RTG 2423)	2017	www.frascal.research.fau.eu
 Erlangen	Friedrich-Alexander-Universität Erlangen-Nürnberg	In Situ Microscopy with Electrons, X-rays and Scanning Probes (RTG 1896)	2013	www.grk1896.forschung.fau.de
 Freiberg	Technische Universität Bergakademie Freiberg	Refractory Recycling: A Contribution for Raw Material-, Energy- and Climate-Efficiency in High Temperature Processes (RTG 2802)	2022	www.tu-freiberg.de/forschung/grk2802
 Jena	Friedrich-Schiller-Universität Jena	Materials-Microbes-Microenvironments (M-M-M): Antimicrobial Biomaterials with Tailored Structures and Properties (RTG 2723)	2022	www.mmm.uni-jena.de
 Karlsruhe	Karlsruher Institut für Technologie	Integrated Engineering of Continuous-Discontinuous Long Fiber Reinforced Polymer Structures (RTG 2078)	2014	www.grk2078.kit.edu
 Karlsruhe	Karlsruher Institut für Technologie	Materials Compounds from Composite Materials (RTG 2561)	2020	www.iam.kit.edu/wk/rtg2561.php
 Marburg	Philipps-Universität Marburg	Functionalization of Semiconductors (RTG 1782)	2011	www.uni-marburg.de/grk1782

GRADUATE TRAINING

Location	Institution	Title	Funded Since	Contact
INTERNATIONAL RESEARCH TRAINING GROUPS				
 Duisburg	Universität Duisburg-Essen	Scalable 2D-Materials Architectures (2D-MATURE): Synthesis and Processing, Characterization and Functionality, Implementation and Demonstration (IRTG 2803)	2022	www.gepris. dfg.de/gepris/ projekt/461605777
Waterloo (Kanada)	University of Waterloo			
INTEGRATED RESEARCH TRAINING GROUPS IN COLLABORATIVE RESEARCH CENTRES				
 Aachen	Rheinisch- Westfälische Technische Hochschule Aachen	Graduate School within: Functional Microgels and Microgel Systems (CRC 985)	2012	www.microgels.rwth- aachen.de
 Aachen	Rheinisch- Westfälische Technische Hochschule Aachen	Integrated Research Training Group within: Resistively Switching Chalcogenides for Future Electronics – Structure, Kinetics, and Device Scalability „Nanoswitches“ (CRC 917)	2011	www.sfb917.rwth- aachen.de
 Aachen	Rheinisch- Westfälische Technische Hochschule Aachen	Integrated Research Training Group within: Structural and Chemical Atomic Complexity: From Defect Phase Diagrams to Material Properties (CRC 1394)	2020	www.sfb1394.rwth- aachen.de
 Darmstadt	Technische Universität Darmstadt	Integrated Research Training Group “Junior FLAIR” within: FLAIR – Fermi Level Engineering Applied to Oxide Electroceramics (CRC 1548)	2023	www.mawi.tu- darmstadt.de/flair
 Erlangen	Friedrich-Alexander- Universität Erlangen- Nürnberg	Integrated Research Training Group within: Additive Manufacturing (CRC 814)	2021	www.crc814. research.fau.eu
 Erlangen	Friedrich-Alexander- Universität Erlangen- Nürnberg	Integrated Research Training Group within: Design of Particulate Products (CRC 1411)	2020	www.crc1411. research.fau.eu
 Freiberg	Technische Universität Bergakademie	Integrated Research Training Group within: Multi- functional Filters for Metal Melt Filtration – A Contribution towards Zero Defect Materials (CRC 920)	2011	www.tu-freiberg.de/ forschung/sfb920/ sonderforschungs- bereich-920

GRADUATE TRAINING

Location	Institution	Title	Funded Since	Contact
 Göttingen	Georg-August-Universität Göttingen	Integrated Research Training Group within: Atomic Scale Control of Energy Conversion (CRC 1073)	2013	www.uni-goettingen.de/irtg/438103
 Hamburg	Technische Universität Hamburg-Harburg	Integrated Research Training Group within: Tailor-Made Multi-Scale Materials Systems (CRC 986)	2012	www.tuhh.de/sfb986/projects/integrated-research-training-group
 Kaiserslautern	Technische Universität Kaiserslautern	Integrated Research Training Group within: Microscale Morphology of Component Surfaces (MICOS) (CRC 926)	2011	www.sfb926.de
 Kiel	Christian-Albrechts-Universität zu Kiel	Integrated Research Training Group within: Magnetoelectric Sensors: From Composite Materials to Biomagnetic Diagnostics (CRC 1261)	2016	www.biomagnetic-sensing.de
 Rostock	Universität Rostock	Integrated Research Training Group within: Electrically Active Implants – Elaine (CRC 1270)	2017	www.elaine.uni-rostock.de/projects/service-projects/projectirtg
 Stuttgart	Universität Stuttgart	Integrated Research Training Group “Interface-Driven Multi-Field Processes in Porous Media” (IRTG-IMPM) within: Molecular Heterogeneous Catalysis in Confined Geometries (CRC 1333)	2017	www.sfb1313.uni-stuttgart.de/integrated-research-training-group
INTEGRATED RESEARCH TRAINING GROUPS IN COLLABORATIVE RESEARCH CENTRES/TRANSREGIOS				
 Aachen	Rheinisch-Westfälische Technische Hochschule Aachen	Integrated Research Training Group within: Pulsed High Power Plasmas for the Synthesis of Nanostructural Functional Layers (TRR 87)	2010	www.sfbtr87.de (DE)
Bochum	Ruhr-Universität Bochum	Graduate School within: Mobile Material Characterization and Localization by Electromagnetic Sensing (MARIE) (TRR 196)	2016	www.trrmarie.de/graduate-school
Bochum Duisburg	Ruhr-Universität Bochum Universität Duisburg-Essen			

GRADUATE TRAINING

Location	Institution	Title	Funded Since	Contact
 Darmstadt Duisburg	Technische Universität Darmstadt Universität Duisburg-Essen	Integrated Research Training Group “Junior HoMMage” within: Hysteresis Design of Magnetic Materials for Efficient Energy Conversion: HoMMage (TRR 270)	2020	www.tu-darmstadt.de/sfb270
 Hannover	Medizinische Hochschule Hannover Gottfried Wilhelm Leibniz Universität Hannover	Integrated Research Training Group within: Safety Integrated and Infection Reactive Implants (TRR 298)	2021	www.gepris.dfg.de/gepris/projekt/426335750
 Jena Ulm	Friedrich-Schiller-Universität Jena Universität Ulm	Integrated Research Training Group within: Light-Driven Molecular Catalysts in Hierarchically Structured Materials – Synthesis and Mechanistic Studies (TRR 234)	2018	www.catalight.uni-jena.de/irtg
 Kaiserslautern Mainz	Technische Universität Kaiserslautern Johannes Gutenberg-Universität Mainz	“Spin+X Young Researcher College” within: Spin+X: Spin in its Collective Environment (TRR 173)	2015	www.uni-kl.de/trr173

GRADUATE TRAINING

- AT NON-UNIVERSITY RESEARCH INSTITUTIONS -

Helmholtz Graduate Schools provide a roof under which a varied number of curricula in different fields, or across disciplines, can find a home. Helmholtz Graduate Schools constitute a valuable addition to the wide range of training programmes available within the Helmholtz Association. They offer optimal conditions for PhD students to work and enable them to create a network of contacts with fellow university researchers while also fostering the integration of participants into the research environment.

International Max Planck Research Schools (IMPRS) offer talented German and international junior scientists the opportunity to earn a doctorate under excellent research conditions. The research schools are established by one or several Max Planck Institutes. These IMPRS work in close cooperation with universities and other – sometimes international – research institutions. This provides an extraordinary framework for the graduate students to work in, and is a great advantage in interdisciplinary research projects, or in projects that require special equipment.

GRADUATE TRAINING

Location	Title	Contact
HELMHOLTZ GRADUATE SCHOOLS		
○ Berlin	Graduate School Future Information Technologies (FIT)	www.helmholtz-berlin.de/jobskarriere/karrierewege/promotion-am-hzb/graduierenschulen/gradschoolfit
○ Berlin	Materials for Solar Energy Conversion Graduate School (MatSEC)	www.helmholtz-berlin.de/jobskarriere/karrierewege/promotion-am-hzb/graduierenschulen
○ Potsdam-Golm	Graduate School "Perovskites – Basic Research for High Efficiency Solar Cells" (HyPerCells)	www.helmholtz-berlin.de/jobskarriere/karrierewege/promotion-am-hzb/graduierenschulen/perovskites
INTERNATIONAL MAX PLANCK RESEARCH SCHOOLS (IMPRS)		
○ Düsseldorf	IMPRS for Interface Controlled Materials for Energy Conversion (IMPRS-SurMat)	www.imprs-surmat.mpg.de

SOCIETIES AND ASSOCIATIONS

IN GERMANY

Bundesverband Materialwissenschaft und Werkstofftechnik (BVMatWerk):
www.bvmatwerk.de (DE)

OPEN POSITIONS

Research in Germany: www.research-in-germany.org/jobs

Fraunhofer Society: www.fraunhofer.de/en/jobs-and-career

Helmholtz Association: www.helmholtz.de/en/career

Leibniz Society: www.leibniz-gemeinschaft.de/en/careers/jobs

Max Planck Society: www.mpg.de/jobboard

FURTHER INFORMATION

RESEARCH INSTITUTIONS, PROJECTS, FUNDING, CONTACTS

Research in Germany

Land of Ideas

The “Research in Germany” Portal: Information on research and funding opportunities, academic and research-related job portals, as well as advice on preparing a research stay or initiating a collaboration with German research organisations. www.research-in-germany.org



German Project Information System (GEPRIS): Online database providing information about all current DFG-funded research projects and contact information for the Principal Investigators. www.gepris.dfg.de



German Research Institutions (GERIT): Information on more than 25,000 institutes at German universities and non-university research institutions, searchable by geographic location, subject and other structural criteria. www.gerit.org



Website of the DFG: Further background information about DFG funding programmes, funding guidelines, and lists of currently DFG-funded activities. www.dfg.de



The German Rectors’ Conference (HRK) Research Map:

The interactive HRK *Research Map* database provides information on the research priorities that are of strategic institutional importance for each university.
www.hrk.de/home (go to → *Research Map*)

The Higher Education Compass: Information on Germany’s higher education institutions, the range of courses and programmes that they offer, their worldwide cooperation, and who to contact locally.
www.hochschulkompass.de/en/study-in-germany

Contact

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DFG Deutsche
Forschungsgemeinschaft