Research in Germany

MATERIALS SCIENCE AND ENGINEERING

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Research in Germany

Land of Ideas

Research in Germany

MATERIALS SCIENCE AND ENGINEERING

Imprint

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PREFACE

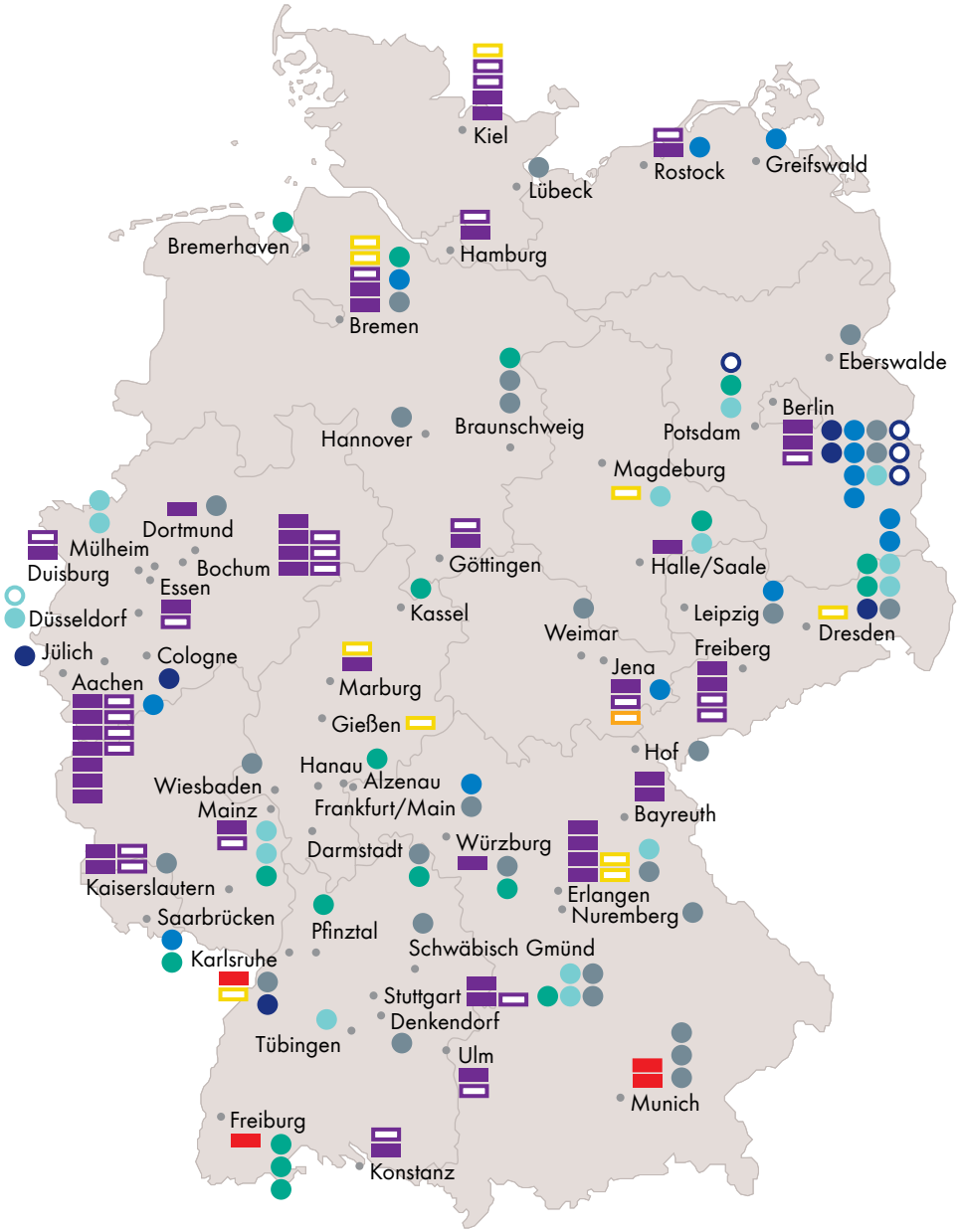
This brochure provides a first insight into research in Germany in the field of materials science and engineering and is especially recommended to early career researchers from abroad.

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.



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- Clusters of Excellence
- Collaborative Research Centres/Transregios
- Helmholtz Graduate Schools
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- Leibniz Institutes
- Max Planck Institutes
- Others

DFG-funded Priority Programmes and Research Units are not shown on the map since they are not necessarily located at a single location; they are listed on pages 15 and 17.
The map shows the headquarters of the non-university research institutions.

CENTRES OF RESEARCH

-FUNDED BY DFG-

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.fit.uni-freiburg.de/livMatS-en
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
Munich	Ludwig-Maximilians-Universität München Technische Universität München	**Munich Center for Quantum Science and Technology** (EXC 2111)	2019	www.munich-quantum-center.de
COLLABORATIVE RESEARCH CENTRES				
Aachen	Rheinisch-Westfälische Technische Hochschule Aachen	**Steel – ab initio Quantum Mechanics Guided Design of New Fe Based Materials** (CRC 761)	2007	http://abinitio.iehk.rwth-aachen.de/en
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	**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	**Functional Microgels and Microgel Systems** (CRC 985)	2012	www.microgels.de
Bayreuth	Universität Bayreuth	**From Particulate Nanosystems to Mesotechnology** (CRC 840)	2009	www.sfb840.uni-bayreuth.de (DE)
Berlin	Humboldt-Universität zu Berlin	**Hybrid Inorganic/ Organic Systems for Opto-Eletronics (HIOS)** (CRC 951)	2011	www.physik.hu-berlin.de/sfb951
Berlin	Technische Universität Berlin	**Semiconductor Nanophotonics: Materials, Models, Devices** (CRC 787)	2007	www.sfb787.tu-berlin.de

Location	Institution	Title	Funded Since	Contact
Bremen	Universität Bremen	From Colored States to Evolutionary Structural Materials (CRC 1232)	2016	www.uni-bremen.de/farbige-zustaende.html (DE)
Erlangen	Friedrich-Alexander-Universität Erlangen-Nürnberg	Additive Manufacturing (CRC 814)	2011	www.sfb814.de
Erlangen	Friedrich-Alexander-Universität Erlangen-Nürnberg	Synthetic Carbon Allotropes (CRC 953)	2011	www.sfb953.fau.de
Freiberg	Technische Universität Bergakademie	TRIP-Matrix-Composites – Design of Tough, Transformation-Strengthened Composities and Structures Based on Fe-ZrO2 (CRC 799)	2008	http://tu-freiberg.de/forschung/sfb799
Freiberg	Technische Universität Bergakademie	Multi-Functional Filters for Metal Melt Filtration – A Contribution towards Zero Defect Materials (CRC 920)	2011	https://tu-freiberg.de/en/forschung/sfb920/sonderforschungsbereich-920
Göttingen	Georg-August-Universität Göttingen	Atomic Scale Control of Energy Conversion (CRC 1073)	2013	www.uni-goettingen.de/en/437142.html
Halle/Saale	Martin-Luther-Universität Halle-Wittenberg	Functionality of Oxidic Interfaces (CRC 762)	2007	www.physik.uni-halle.de/sfb762
Hamburg	Technische Universität Hamburg-Harburg	Tailor-Made Multi-Scale Materials Systems (CRC 986)	2012	www.tuhh.de/alt/sfb986
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.sfb1261.de/index.php/en
Kiel	Christian-Albrechts-Universität zu Kiel	Function by Switching (CRC 677)	2007	www.sfb677.uni-kiel.de
Konstanz	Universität Konstanz	Anisotropic Particles as Building Blocks: Tailoring Shape, Interactions and Structures (CRC 1214)	2016	www.sfb1214.uni-konstanz.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/en

Location	Institution	Title	Funded Since	Contact
Stuttgart	Universität Stuttgart	Adaptive Skins and Structures for the Built Environment of Tomorrow (CRC 1244)	2016	www.sfb1244.uni-stuttgart.de/en
Stuttgart	Universität Stuttgart	Molecular Heterogeneous Catalysis in Confined Geometries (CRC 1333)	2017	www.sfb1313.uni-stuttgart.de
COLLABORATIVE RESEARCH CENTRES/TRANSREGIOS				
Aachen Bochum	Rheinisch-Westfälische Technische Hochschule Aachen Ruhr-Universität Bochum	Pulsed High Power Plasmas for the Synthesis of Nanostructural Functional Layers (TRR 87)	2010	www.sfbtr87.de (DE)
Aachen Bremen	Rheinisch-Westfälische Technische Hochschule Aachen Universität Bremen	Function Oriented Manufacturing Based on Characteristic Process Signatures (TRR 136)	2013	www.prozesssignaturen.de/en
Aachen Dortmund	Rheinisch-Westfälische Technische Hochschule Aachen Technische Universität Dortmund	Damage Controlled Forming Processes (TRR 188)	2016	www.trr188.de
Bayreuth Erlangen Würzburg	Universität Bayreuth Friedrich-Alexander-Universität Erlangen-Nürnberg Universitätsklinikum Würzburg	From the Fundamentals of Biofabrication towards Functional Tissue Models (TRR 225)	2017	http://trr225biofab.de
Bochum Duisburg	Ruhr-Universität Bochum Universität Duisburg-Essen	Mobile Material Characterization and Localization by Electromagnetic Sensing (MARIE) (TRR 196)	2016	www.trrmarie.de/sfbtrr196marie
Bochum Essen	Ruhr-Universität Bochum Universität Duisburg-Essen	Heterogeneous Oxidation Catalysis in the Liquid Phase – Mechanisms and Materials in Thermal, Electro-, and Photocatalysis (TRR 247)	2018	tba

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
Jena Ulm	Friedrich-Schiller-Universität Jena Universität Ulm	**Light-Driven Molecular Catalysts in Hierarchically Structured Materials – Synthesis and Mechanistic Studies** (TRR 234)	2018	www.ceec.uni-jena.de/en/Our+Research/Light_Energy+Conversion
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.

Title	Funded Since	Contact
Graded Implants for Tendon-Bone Junctions ("Graded Implants") (FOR 2180)	2015	www.gradierte-implantate.de (DE)
Memristive Devices for Neuronal Systems (FOR 2093)	2014	www.for2093.uni-kiel.de
Acting Principles of Nano-Scaled Matrix Additives for Composite Structures (FOR 2021)	2014	www.tu-braunschweig.de/iaf/forschung/forschung/wirkprinzipien/index.html
High-Temperature Shape Memory Alloys (FOR 1766)	2012	www.for1766.de
Dynamics and Interactions of Semiconductor Nanowires for Optoelectronics (FOR 1616)	2012	www.for1616.uni-jena.de
Multiphysical Synthesis and Integration of Complex RF Circuits – MUSIK (FOR 1522)	2012	www.tu-ilmenau.de/de/musik
Dislocation based Plasticity (FOR 1650)	2011	www.for1650.kit.edu
Chemistry and Technology of the Ammonothermal Synthesis of Nitrides (FOR 1600)	2011	www.ammono-for.org
Organic-Inorganic Nanocomposites through Twin Polymerization (FOR 1497)	2011	www.zwipo.tu-chemnitz.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.

Title	Funded Since	Contact
Materials for Additive Manufacturing (SPP 2122)	2018	www.uni-due.de/matframe
Skyrmionics: Topological Spin Phenomena in Real-Space for Applications (SPP 2137)	2018	www.skyrmionics.ph.tum.de
Surface Conditioning in Machining Processes (SPP 2086)	2018	http://gepris.dfg.de/gepris/projekt/359102403
Compositionally Complex Alloys – High Entropy Alloys (CCA - HEA) (SPP 2006)	2017	www.sppccahea.uni-bayreuth.de/en
The Utilization of Residual Stresses Induced by Metal Forming (SPP 2086)	2017	www.utg.mw.tum.de/en/spp2013
Nanoparticle Synthesis in Spray Flames: Spray Syn: Measurement, Simulation, Processes (SPP 1980)	2017	www.uni-due.de/spp1980
Manipulation of Matter Controlled by Electric and Magnetic Fields: Towards Novel Synthesis and Processing Routes of Inorganic Materials (SPP 1959)	2016	www.fieldsmatter.de
Tailored Disorder – A Science- and Engineering-Based Approach to Materials Design for Advanced Photonic Applications (SPP 1839)	2015	www.spp1839.tum.de
High Frequency Flexible Bendable Electronics for Wireless Communication Systems (FFLexCom) (SPP 1796)	2015	https://fflexcom.de
Electromagnetic Sensors for Life Sciences (ESSENCE) (SPP 1857)	2015	www.essence.tu-darmstadt.de (DE)
Strong Coupling of Thermo-Chemical and Thermo-Mechanical States in Applied Materials (SPP 1713)	2014	http://chemomechanics.de
Material Synthesis Near Romm Temperature (SPP 1708)	2014	www.low-temperature-synthesis.de
Topological Insulators: Materials – Fundamental Properties – Devices (SPP 1666)	2013	www.helmholtz-berlin.de/forschung/oe/em/m-dynamik/projekte/topologische-isolatoren/index_en.html
Topological Engineering of Ultra-Strong Glasses (SPP 1594)	2012	www.spp1594.uni-jena.de
Regeneratively Produced Fuels by Light Driven Water Splitting: Investigation of Involved Elementary Processes and Prospects for Technological Implementation (SPP 1613)	2012	www.solarh2.tu-darmstadt.de
Intrinsic Hybrid Structures for Lightweight Constructions (SPP 1712)	2012	www.spp-1712-hybrider-leichtbau.de (DE)

NON-UNIVERSITY RESEARCH INSTITUTIONS

Fraunhofer Society is one of the world's leading organisations for applied research with an annual research budget of 2.5 billion euros, 72 institutes and more than 26,600 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 40,000 employees in 18 research centres and an annual budget of approximately 4.7 billion euros, the Helmholtz Association is Germany's largest scientific organisation. www.helmholtz.de

The Leibniz Association is an umbrella organisation of 93 research institutes. The annual budget amounts to 1.93 billion euros. Some 9,800 researchers – approximately 20% 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 1.7 billion euros for 2018. A combined total of 15,600 researchers, postdoctoral/junior researchers and visiting researchers at 84 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/en.html
Bremen Dresden	Fraunhofer Institute for Manufacturing Technology and Advanced Materials (IFAM)	www.ifam.fraunhofer.de/en.html
Bremerhaven	Fraunhofer Institute for Wind Energy Systems (IWES)	www.iwes.fraunhofer.de/en.html
Darmstadt	Fraunhofer Institute for Structural Durability and System Reliability (LBF)	www.lbf.fraunhofer.de/en.html
Dresden	Fraunhofer Institute for Ceramic Technologies and Systems (IKTS)	www.ikts.fraunhofer.de/en.html
Freiburg	Fraunhofer Institute for Solar Energy Systems (ISE)	www.ise.fraunhofer.de/en.html
Freiburg	Fraunhofer Institute for Mechanics of Materials (IWM)	www.iwes.fraunhofer.de/en.html
Freiburg	Fraunhofer Institute for High-Speed Dynamics, Ernst-Mach-Institut (EMI)	www.emi.fraunhofer.de/en.html
Halle/Saale	Fraunhofer Institute for Microstructure of Materials and Systems (IMWS)	www.imws.fraunhofer.de/en.html
Hanau Alzenau	Fraunhofer Project Group Materials Recycling and Resource Strategies (IKWS)	www.iwks.fraunhofer.de/en.html
Kassel	Fraunhofer Institute for Energy Economics and Energy System Technology (IEE)	www.iee.fraunhofer.de/en.html
Mainz	Fraunhofer Institute for Microengineering and Microsystems (IMM)	www.imm.fraunhofer.de/en.html
Pfinztal	Fraunhofer Institute for Chemical Technology (ICT)	www.ict.fraunhofer.de/en.html
Potsdam-Golm	Fraunhofer Institute for Applied Polymer Research (IAP)	www.iap.fraunhofer.de/en
Saarbrücken	Fraunhofer Institute for Nondestructive Testing (IZFP)	www.izfp.fraunhofer.de/en.html
Stuttgart	Fraunhofer Institute for Building Physics (IBP)	www.ibp.fraunhofer.de/en.html
Würzburg	Fraunhofer Institute for Silicate Research (ISC)	www.isc.fraunhofer.de/en.html
HELMHOLTZ CENTRES		
Berlin	Helmholtz-Zentrum Berlin für Materialien und Energie (HZB)	www.helmholtz-berlin.de/index_en.html
Cologne	German Aerospace Center (DLR)	www.dlr.de
Dresden-Rossendorf	Helmholtz-Zentrum Dresden-Rossendorf (HZDR)	www.hzdr.de

Location	Institution	Contact
Jülich	Forschungszentrum Jülich (FZ Jülich)	www.fz-juelich.de
Karlsruhe	Karlsruhe Institute of Technology (KIT)	www.kit.edu
Teltow (Berlin)	Helmholtz-Zentrum Geesthacht Centre for Materials and Coastal Research / Institute of Biomaterial Science in Teltow (HZG)	www.hzg.de/institutes_platforms/biomaterial_science/index.php.en
LEIBNIZ INSTITUTES		
Aachen	Leibniz Institute for Interactive Materials (DWI)	www.dwi.rwth-aachen.de
Berlin	Leibniz Institue for Crystal Growth (IKZ)	www.ikz-berlin.de/en
Berlin	Max Born Institute for Nonlinear Optics and Short Pulse Spectoscopy 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 Institue of Polymer Research Dresden (IPF)	www.ipfdd.de
Frankfurt/Main	Leibniz Institue 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 Institue for New Materials (INM)	www.inm-gmbh.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.mpipks-dresden.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

Location	Institution	Contact
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/en
Potsdam	Max Planck Institute for Colloids and Interface (MPIKG)	www.mpikg.mpg.de
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.ibmb.tu-braunschweig.de/index.php/institute.html
Bremen	Bremen Institute for Materials Testing (MPA), Leibniz Institute for Materials Engineering (IWT)	www.mpa-bremen.de
Darmstadt	State Materials Testing Institute Darmstadt (MPA), Technische Universität Darmstadt	www.mpa-ifw.tu-darmstadt.de/startseite_mpaifw/index.en.jsp
Denkendorf	Institute of Textile Chemistry and Chemical Fibres (iTCF)	www.itcf-denkendorf.de
Dortmund	Materialprüfungsamt Nordrhein-Westfalen (MPA NRW)	www.mpanrw.de/home/
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 (DE)
Frankfurt/Main	DECHEMA-Forschungsinstitut (DFI)	http://dechema-dfi.de
Hannover	Materialprüfanstalt für das Bauwesen und Produktionstechnik (MPA BAU Hannover)	www.mpa-hannover.de (DE)

Location	Institution	Contact
Kaisers-lautern	Technische Universität Kaiserslautern Materialprüfamt	www.mpa.uni-kl.de (DE)
Karlsruhe	Materials Testing and Research Institute (MPA Karlsruhe)	www.mpa.kit.edu/english
Leipzig	Leipzig Institute for Materials Research and Testing	www.mfpa-leipzig.de/en
Lübeck	Materialprüfanstalt Schleswig-Holstein (MPA Schleswig-Holstein)	www.fh-luebeck.de/forschung-und-dienstleistung/kompetenzen/kompetenzbereiche/materialpruefanstalt-mpa/uebersicht/ (DE)
Munich	Staatliches Materialprüfamt für den Maschinenbau der Technischen Universität München	www.mpa.mw.tum.de (DE)
Munich	Materials Testing Institute for Civil Engineering (MPA BAU)	www.mpa.bgu.tum.de (DE)
Schwäbisch Gmünd	fem Research Institute for Precious Metals + Metals Chemistry (FEM)	www.fem-online.de/en
Stuttgart	Materials Testing Institute University of Stuttgart (MPA Stuttgart, Otto-Graf-Institut (FMPA))	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.

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 – QM³** (RTG 2247)	2016	www.rtg-qm3.de
Dresden	Technische Universität Dresden	**Hydrogel-Based Microsystems** (RTG 1865)	2012	www.tu-dresden.de/ing/elektrotechnik/ife/graduiertenkolleg
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
Gießen	Justus-Liebig-Universität Gießen	**Substitution Materials for Sustainable Energy Technologies** (RTG 2204)	2015	www.uni-giessen.de/fbz/zentren/lama/lehre/grk_2204
Karlsruhe	Karlsruher Institut für Technologie	**Integrated Engineering of Continuous-Discontinuous Long Fiber Reinforced Polymer Structures** (RTG 2078)	2014	www.grk2078.kit.edu
Kiel	Christian-Albrechts-Universität zu Kiel	**Materials for Brain (M4B): Thin Film Functional Materials for Minimally Invasive Therapy of Brain Diseases** (RTG 2154)	2016	www.grk2154.uni-kiel.de/en
Magdeburg	Otto-von-Guericke-Universität Magdeburg	**Micro-Macro Interactions of Structured Media and Particle Systems** (RTG 1554)	2009	www.grk1554.ovgu.de/grk1554/en
Marburg	Philipps-Universität Marburg	**Functionalization of Semiconductors** (RTG 1782)	2011	www.uni-marburg.de/grk1782

Location	Institution	Title	Funded Since	Contact
INTERNATIONAL RESEARCH TRAINING GROUPS				
Jena Québec (Canada) Toronto (Canada)	Friedrich-Schiller-Universität Jena Université Laval Université du Québec University of Toronto	**Guided Light, Tightly Packed: Novel Concepts, Components and Applications** (RTG 2101)	2014	www.asp.uni-jena.de/GRK2101.html
INTEGRATED RESEARCH TRAINING GROUPS IN COLLABORATIVE RESEARCH CENTRES				
Aachen	Rheinisch-Westfälische Technische Hochschule Aachen	**Integrated Research Training Group within: Steel – ab initio Quantum Mechanics Guided Design of New Fe Based Materials** (CRC 761)	2007	http://abinitio.iehk.rwth-aachen.de/en/node/174 (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/project_mgk_Phase_2.html
Aachen	Rheinisch-Westfälische Technische Hochschule Aachen	**Graduate School within: Functional Microgels and Microgel Systems** (CRC 985)	2012	www.microgels.de
Berlin	Technische Universität Berlin	**"School of Nanophotonics" within: Semiconductor Nanophotonics: Materials, Models, Devices** (CRC 787)	2007	www.sfb787.tu-berlin.de/menue/school_of_nanophotonics_son
Bremen	Universität Bremen	**Integrated Research Training Group within: From Colored States to Evolutionary Structural Materials** (CRC 1232)	2016	www.uni-bremen.de/farbige-zustaende/%C3%BCber-uns/graduiertenkolleg (DE)
Freiberg	Technische Universität Bergakademie	**Integrated Research Training Group within: TRIP-Matrix-Composites – Design of Tough, Transformation-Strengthened Composities and Structures Based on Fe-ZrO2** (CRC 799)	2008	https://tu-freiberg.de/en/forschung/forschungsprojekte/grossforschung/sfb799/promotion-young-researchers/integrated-research-t

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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	https://tu-freiberg.de/en/forschung/sfb920/sonderforschungsbereich-920
Göttingen	Georg-August-Universität Göttingen	**Integrated Research Training Group within: Atomic Scale Control of Energy Conversion** (CRC 1073)	2013	www.uni-goettingen.de/en/irtg/438103.html
Hamburg	Technische Universität Hamburg-Harburg	**Integrated Research Training Group within: Tailor-Made Multi-Scale Materials Systems** (CRC 986)	2012	www.tuhh.de/alt/sfb986/projects/integrated-research-training-group.html
Kaisers-lautern	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.sfb1261.de/index.php/en
Kiel	Christian-Albrechts-Universität zu Kiel	**Integrated Research Training Group within: Function by Switching** (CRC 677)	2007	www.sfb677.uni-kiel.de/pages_en/igk.html
Konstanz	Universität Konstanz	**Integrated Research Training Group "Chemistry and Physics of Nanostructured Multi-Component Systems" within: Anisotropic Particles as Building Blocks: Tailoring Shape, Interactions and Structures** (CRC 1214)	2016	www.sfb1214.uni-konstanz.de/en/irtg-sfb1214
Rostock	Universität Rostock	**Integrated Research Training Group within: Electrically Active Implants – Elaine –** (CRC 1270)	2017	www.elaine.uni-rostock.de/en/research-training-group/

GRADUATE TRAINING

Location	Institution	Title	Funded Since	Contact
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 Bochum	Rheinisch-Westfälische Technische Hochschule Aachen Ruhr-Universität Bochum	**Integrated Research Training Group within: Pulsed High Power Plasmas for the Synthesis of Nanostructural Functional Layers** (TRR 87)	2010	www.sfbtr87.de (DE)
Bochum Duisburg	Ruhr-Universität Bochum Universität Duisburg-Essen	**Graduate School within: Mobile Material Characterization and Localization by Electromagnetic Sensing (MARIE)** (TRR 196)	2016	www.trrmarie.de/graduate-school
Bochum Essen	Ruhr-Universität Bochum Universität Duisburg-Essen	**Integrated Research Training Group within: Heterogeneous Oxidation Catalysis in the Liquid Phase – Mechanisms and Materials in Thermal, Electro-, and Photocatalysis** (TRR 247)	2018	tba
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.ceec.uni-jena.de/en/Our+Research/Light_Energy+Conversion
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/young-researcher-college

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.

Location	Title	Contact
HELMHOLTZ GRADUATE SCHOOLS		
Berlin	Materials for Solar Energy Conversion Graduate School (MatSEC)	www.helmholtz-berlin.de/angebote/jobskarriere/promotion/graduiertenschule/index_en.html
Berlin	Graduate School of Hybrid Materials for Efficient Energy Generation and Information Technologies (Hybrid4Energy)	www.helmholtz-berlin.de/angebote/jobskarriere/promotion/hybrid4energy/index_en.html
Berlin	Graduate School Future Information Technologies (FIT)	www.helmholtz-berlin.de/angebote/jobskarriere/promotion/gradschoolfit/index_en.html
Potsdam-Golm	Graduate School "Perovskites – Basic Research for High Efficiency Solar Cells"	www.helmholtz-berlin.de/angebote/jobskarriere/promotion/perovskites/index_en.html
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.html**

Helmholtz Association: **www.helmholtz.de/en/jobs_talent**

Leibniz Society: **www.leibniz-gemeinschaft.de/en/karriere**

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**

GEPRIS

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

GERIT – German Research Institutions

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**

DFG

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

HRK

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*)

HIGHER EDUCATION COMPASS

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**

NOTES

Contact

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DFG Head Office Germany
www.dfg.de
researchmarketing@dfg.de

DFG Deutsche Forschungsgemeinschaft