



Research in Germany

MATERIALS SCIENCE
AND ENGINEERING

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Research in
Germany



Land of Ideas



Research in Germany

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Editor: Vera Pfister

Assistant Editor: Sonja Schaffartzik

Contact: researchmarketing@dfg.de

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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.

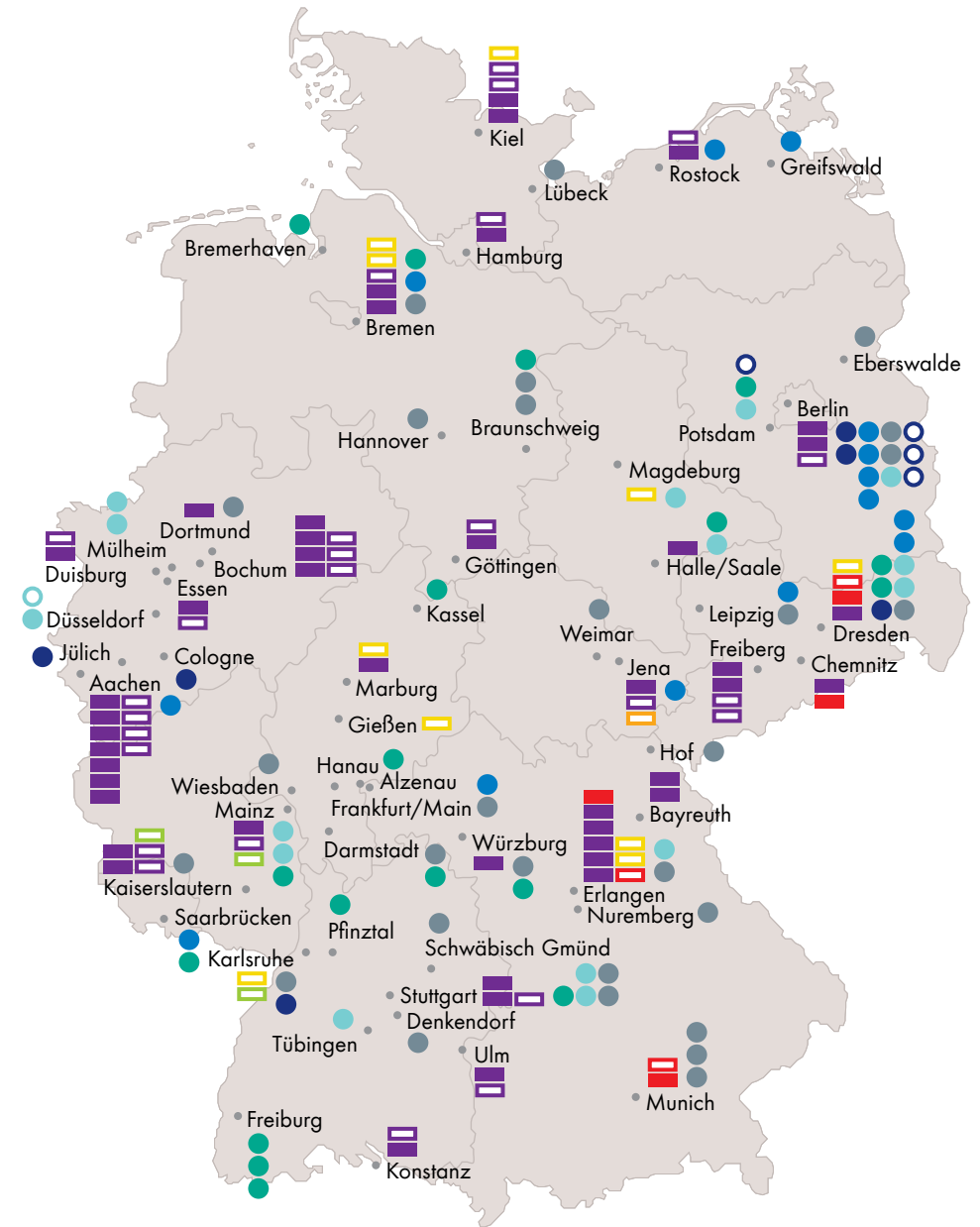
Materials science and engineering research in Germany is primarily conducted at universities but also at non-university research institutions. Almost all universities and many universities of applied sciences host a materials science and engineering research section. The spectrum ranges from small monothematic 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



Graduate Schools	Helmholtz Graduate Schools
Research Training Groups	International Max Planck Research Schools
International Research Training Groups	Fraunhofer Institutes
Integrated Research Training Groups in Clusters of Excellence	Helmholtz Centres
Integrated Research Training Groups in Collaborative Research Centres/Transregios	Leibniz Institutes
Clusters of Excellence	Max Planck Institutes
Collaborative Research Centres/Transregios	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) were established at universities in the framework of the German Excellence Initiative (2005 - 2017) and promote cutting-edge research. Their objective is to engage in scientific networking and collaboration in research fields of particular promise for the future. They also offer excellent training conditions and career opportunities for early career researchers.

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.

CENTRES OF RESEARCH

Location	Institution	Title	Funded Since	Contact
CLUSTERS OF EXCELLENCE				
 Chemnitz	Technische Universität Chemnitz	MERGE Technologies for Multifunctional Lightweight Structures (EXC 1075)	2012	www.tu-chemnitz.de/MERGE
 Dresden	Technische Universität Dresden	Center for Advancing Electronics Dresden (cfaed) (EXC 1056)	2012	www.cfaed.tu-dresden.de
 Erlangen	Friedrich-Alexander-Universität Erlangen-Nürnberg	Engineering of Advanced Materials – Hierarchical Structure Formation for Functional Devices (EXC 315)	2007	www.eam.uni-erlangen.de
 Munich	Ludwig-Maximilians-Universität München Technische Universität München Universität Augsburg	Nanosystems Initiative Munich (NIM) (EXC 4)	2006	www.nano-initiative-munich.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-Electronics (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

CENTRES OF RESEARCH

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 Composites and Structures Based on Fe-ZrO ₂ (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	Magnetolectric 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

CENTRES OF RESEARCH

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	Rheinisch-Westfälische Technische Hochschule Aachen	Pulsed High Power Plasmas for the Synthesis of Nanostructural Functional Layers (TRR 87)	2010	www.sfbtr87.de (DE)
Bochum	Ruhr-Universität Bochum			
Aachen	Rheinisch-Westfälische Technische Hochschule Aachen	Function Oriented Manufacturing Based on Characteristic Process Signatures (TRR 136)	2013	www.prozesssignaturen.de/en
Bremen	Universität Bremen			
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	http://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/sfbtrr196marie
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	tba
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
Chemnitz Dresden Erlangen	Technische Universität Chemnitz Technische Universität Dresden Friedrich-Alexander-Universität Erlangen-Nürnberg	Production Technologies for Light Metal and Fiber Reinforced Composite Based Components with Integrated Piezoceramic Sensors and Actuators (TRR 39)	2006	www.pt-piesa.tu-chemnitz.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
Kaiserslautern 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
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.



PRIORITY PROGRAMMES

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 Room 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
Caloric Effects in Ferroic Materials: New Concepts for Cooling (SPP 1599)	2012	www.ferroiccooling.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)
Generation of Multifunctional Inorganic Materials by Molecular Bionics (SPP 1569)	2011	www.uni-stuttgart.de/spp1569
High Temperature Superconductivity in Iron Pnictides (SPP 1458)	2010	www.pniktid-supraleiter.de



Fraunhofer Society is one of the world's leading organisations for applied research with an annual research budget of 2.3 billion euros, 72 institutes and more than 25,000 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 39,100 employees in 18 research centres and an annual budget of approximately 4.5 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 1.8 billion euros for 2017. A combined total of 14,000 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.ief.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

NON-UNIVERSITY RESEARCH INSTITUTIONS

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.hzgj.de/institutes_platforms/biomaterial_science/index.php.en
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/en
● 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.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.cfps.mpg.de
● Dresden	Max Planck Institute for the Physics of Complex Systems (MPIPKS)	www.mpiyks-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

NON-UNIVERSITY RESEARCH INSTITUTIONS

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
● Kaiserslautern	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 (FMFA))	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 -












Graduate Schools (GSC) were established at universities in the framework of the German Excellence Initiative (2005 - 2017). Their objective is to provide training and qualification for outstanding doctoral students from Germany and abroad within an excellent research environment. They serve as an instrument of quality assurance in promoting early career researchers and offer large networks that cover wide areas of research.

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 Clusters of Excellence or 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
GRADUATE SCHOOLS				
 Kaiserslautern Mainz	Technische Universität Kaiserslautern Johannes Gutenberg-Universität Mainz	MAaterials Science IN MainZ (MAINZ) (GSC 266)	2007	www.mainz.uni-mainz.de
 Karlsruhe	Karlsruher Institut für Technologie	Karlsruhe School of Optics and Photonics (GSC 21)	2006	www.KSOP.de
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/graduierntenkolleg
 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


GRADUATE TRAINING

Location	Institution	Title	Funded Since	Contact
 Marburg	Philipps-Universität Marburg	Functionalization of Semiconductors (RTG 1782)	2011	www.uni-marburg.de/grk1782
INTERNATIONAL RESEARCH TRAINING GROUPS				
 Jena	Friedrich-Schiller-Universität Jena	Guided Light, Tightly Packed: Novel Concepts, Components and Applications (RTG 2101)	2014	www.asp.uni-jena.de/GRK2101.html
Québec (Canada)	Université Laval			
Toronto (Canada)	University of Toronto			
INTEGRATED RESEARCH TRAINING GROUPS IN CLUSTERS OF EXCELLENCE				
 Dresden	Technische Universität Dresden	Graduate School and Postgraduate Program within: Center for Advancing Electronics Dresden (cfaed) (EXC 1056)	2012	https://cfaed.tu-dresden.de/career-development/graduate-school-postgraduate-program
 Erlangen	Friedrich-Alexander-Universität Erlangen-Nürnberg	Graduate School Advanced Materials and Processes (GS AMP) within: Engineering of Advanced Materials – Hierarchical Structure Formation for Functional Devices (EXC 315)	2007	https://eam.fau.de/graduate-school
 Munich	Ludwig-Maximilians-Universität München Technische Universität München Universität Augsburg	NIM Graduate Program within: Nanosystems Initiative Munich (NIM) (EXC 4)	2006	www.nano-initiative-munich.de/graduate-program
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

GRADUATE TRAINING

Location	Institution	Title	Funded Since	Contact
 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 Composites and Structures Based on Fe-ZrO ₂ (CRC 799)	2008	https://tu-freiberg.de/en/forschung/forschungsprojekte/grossforschung/sfb799/promotion-young-researchers/integrated-research-t
 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/sonderforschungs-bereich-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
 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: Magnetolectric Sensors: From Composite Materials to Biomagnetic Diagnostics (CRC 1261)	2016	www.sfb1261.de/index.php/en



GRADUATE TRAINING

Location	Institution	Title	Funded Since	Contact
 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/
 Stuttgart	Universität Stuttgart	Integrated Research Training Group "Interface-Driven Multi-Field Processes in Porous Media" (IRTG-IMP) 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

GRADUATE TRAINING

Location	Institution	Title	Funded Since	Contact
 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.

GRADUATE TRAINING

Location	Title	Contact
HELMHOLTZ GRADUATE SCHOOLS		
○ Berlin	Materials for Solar Energy Conversion Graduate School (MatSEC)	www.helmholtz-berlin.de/angebote/jobskarriere/promotion/graduierenschule/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



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. <http://gepris.dfg.de>



The Research Explorer: Information on more than 19 000 institutes at German universities and non-university research institutions, searchable by geographic location, subject and other structural criteria. <http://research-explorer.dfg.de>



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



NOTES



Contact

German Research Foundation (DFG)
DFG Head Office Germany
www.dfg.de
researchmarketing@dfg.de

DFG Deutsche
Forschungsgemeinschaft