



**THINK GLOBALLY,  
ACT GLOBALLY**

TECHNISCHE UNIVERSITÄT BERGAKADEMIE FREIBERG

2024



**TUBAF**

Die Ressourcenuniversität.  
Seit 1765.

# OUR RESPONSIBILITY

” *The strength of our university arises from its clear profile and the commitment of its members across disciplinary boundaries. Diversity, tolerance, and a lived openness to the world shape our university community.*

*For over 250 years, we have been teaching and researching topics that lay the foundations for society and its essential services. Never before in history have the challenges been so fundamental and existential for future development. The guiding principle of **actively initiating and participating in transformation processes for the sustainable development** of society is at the core of our university. Engaging with economic, ecological, and technical issues that affect humanity's future shapes our research and teaching.*

”

# UNIVERSITY PROFILE

- One of Germany's most research-intensive universities
- Clear and unique research profile as a resource university
- Strong interdisciplinarity in research and teaching
- Globally recognized resource university
- Freiberg.Science.City. – a renowned science location
- A university town with tradition – Alexander von Humboldt studied here, and the discovery of the elements Germanium and Indium marked scientific milestones



# FROM OUR HISTORY

**Founding**  
of the Bergakademie  
21. Nov 1765

**Student Detention Room**  
The only preserved student  
detention room (*Karzer*) at a  
German University of  
Technology

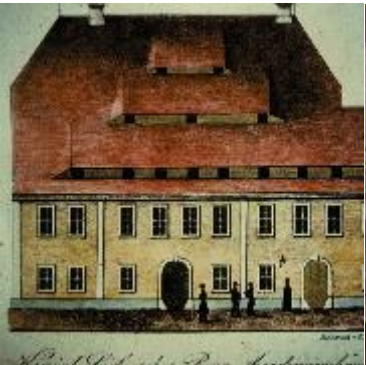
**Independent right to  
confer doctorates**

**Establishment of the Dr.  
Erich Krüger Foundation**

**Foundation of  
HIF**



**New Library and  
Lecture Hall Center**



1765

1796

1851-1872

1885

1920

1993

2006

2008

2011

2021

2023

**First university laboratory**  
established by Prof. Lampadius

**First female  
student, Mary  
Hegler, enrolled**

**Recht zur Bezeichnung  
„Technische Universität“**

**Eröffnung  
terra mineralia**

**Eröffnung ZEHS**

# INTERDISCIPLINARY TEACHING & RESEARCH

## Interdisciplinary network – our six faculties

- Faculty 1 Mathematics and Computer Science
- Faculty 2 Chemistry, Physics and Bioscience
- Faculty 3 Geosciences, Geoengineering and Mining
- Faculty 4 Mechanical, Process and Energy Engineering
- Faculty 5 Materials Science and Technology
- Faculty 6 Business Administration

**6**  
Faculties

**32** Institutes

**89** Professors

**6** Junior professors

As of: 01.05.2024



# EUROPEAN UNIVERSITY

## EURECA-PRO - TU Bergakademie is part of the European University Alliance for Sustainability of the EU

Studying and researching together for greater sustainability

- Research, teaching, and strategic development
- Transfer and communication as bridges to society

### Partnerships

- Montanuniversität Leoben
- Technische Universität Bergakademie Freiberg
- Universidad de León
- Silesian University of Technology
- Universitatea din Petroșani
- Hochschule Mittweida
- Hasselt University
- Université de Lorraine



The European University Alliance  
on Responsible Consumption  
and Production

# FAMILY-FRIENDLY UNIVERSITY

## Support services for studying with children

- A variety of counseling services
- Arrangement of an individual study plan
- Childcare
- Accommodation options for student parents
- Baby care rooms and play areas on campus
- Junior University and Junior Researchers

## Family-friendly working conditions

- Service agreement for mobile work
- Support for balancing work, caregiving, and family



# ACTIVE TOGETHER

- Preservation and promotion of the health of employees and students
- Health-related offers and initiatives
- Creation and maintenance of healthy working, teaching, and research conditions



## University Health Management

Programs to promote physical, mental, and social health



## University Sports Center

More than 40 sports and 80 courses

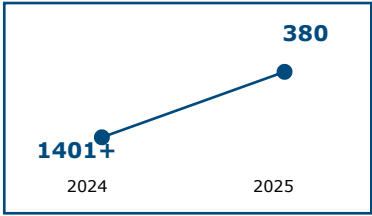


# QS WORLD UNIVERSITY RANKINGS 2025

## Overall International Result



Overall Rank  
**=380**

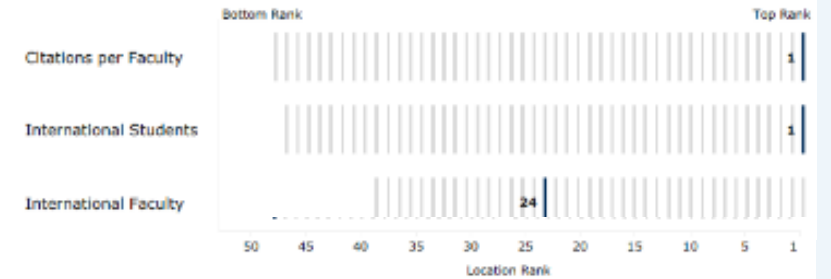


## Comparison within Germany

**48**  
Institutions evaluated in  
Germany

Technische Universität  
Bergakademie Freiberg  
Other institutions in  
Germany

### Indicator Rank among Institutions in Germany



## Ranking by Subject - Germany

**Ranked 1st** among German universities in Geoengineering (Mining and Minerals Engineering)

**Ranked 2nd** among German universities in Drilling Technology and Fluid Mining (Placeholder)



# STUDY AND TEACHING

TECHNISCHE UNIVERSITÄT BERGAKADEMIE FREIBERG

2024



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# MISSION STATEMENT FOR TEACHING & STUDYING

## Teaching – diverse, interdisciplinary, practice-oriented

- Conveying subject-specific and interdisciplinary competencies
- Integration of current research findings
- Promotion of research-based thinking
- Practical relevance
- Promotion of intercultural exchange and global cooperation
- Diversity-conscious teaching
- Integration of digital technologies to enhance teaching methods
- Preparation for the digital workplace
- Further education and training for lifelong learning



# #TUBAFstudium

## Friendly atmosphere

- Excellent advisory and support network
- Individual study organization

## Campus University


- Short distances to lecture halls
- Modern facilities
- Laboratories, technical equipment, and large research facilities on campus
- Lecture halls and laboratory spaces are guaranteed

## Central campus housing

- 10 residential complexes – all-inclusive apartments and rooms (furniture, water, electricity, heating, internet, TV (cable connection))
- Rent between €220 and €415 per month


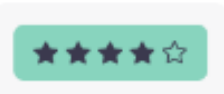
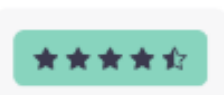



# CHE-RANKING 2024: CHEMISTRY



## Studieninhalt



Wie gut gestaltet sich der Studieninhalt?

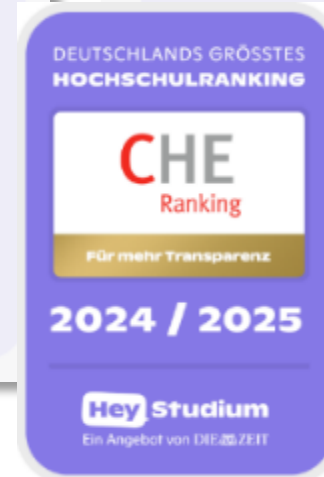
- Fachwissenschaftliche Kompetenzen** 5   
Wie steht es um die Vermittlung dieser Kompetenzen während des Studiums?
- Fachübergreifende Kompetenzen** 5   
Wie steht es um die Vermittlung dieser Kompetenzen während des Studiums?
- Methodische Kompetenzen** 5   
Wie steht es um die Vermittlung dieser Kompetenzen während des Studiums?



## Organisation

Wie gut ist das Studium in den verschiedenen Bereichen organisiert?

- Studienorganisation** 5   
Wie gut funktioniert der Zugang zu Lehrveranstaltungen? Können Pflichtveranstaltungen ohne Überschneidungen besucht werden?
- Laborpraktika** 5   
Wie gut werden Laborpraktika betreut? Wie sind die Versuche aufgebaut?



# INNOVATIVE STUDY CONCEPTS

## 68 Bachelor's, Master's and Diploma degree programs, including:

- Geosciences and Geoengineering 15
- Engineering Sciences 18
- Materials and Matierals Science 7
- Business Sciences 13
- Mathematics, Computer Science, and Natural Sciences 9

**3.712**  
Students

**33%** female students

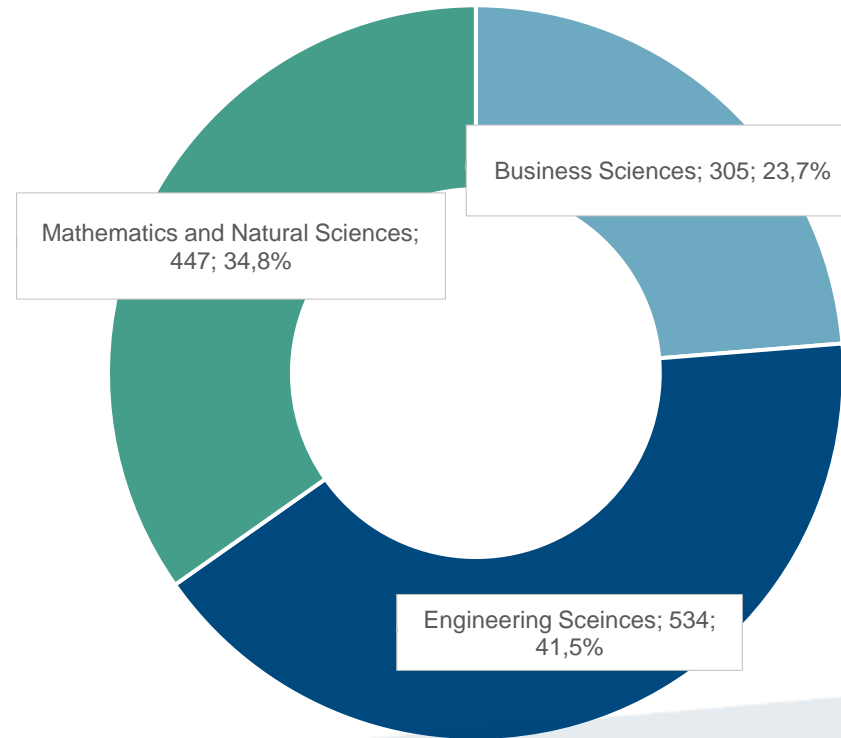
**83%** STEM students

**52%** international students

As of: 01.05.2024

# STUDENTS BY FIELD OF STUDY WiSe 2023/24

New students by field of study



# FORMS OF STUDY

## On-campus study with virtual offerings

### Cooperative Studies

- Study programs with strong industry partners

### Teacher training-oriented programs in STEM fields

- Applied Computer Science, Applied Natural Sciences

### Orientation study program WIN

- (2 semesters of courses in business, law, engineering, and natural sciences, tailored to individual needs)

### Mobility study with multiple joint Master's degrees

- EMERALD, ENTER, SINREM, RAVEN programs – Triple degree programs, typically starting at a partner university abroad





# OFFERINGS IN THE VIRTUAL SPACE

Virtual teaching and learning offerings complement on-site instruction, such as:

- Virtual student mobility and teaching support for Ukraine
- E-assessment and digital exams
- Mixed- und Metareality teaching collections
  - *Cornerstone* – Virtual Reality in Geoscience
- Digital internships and virtual laboratories



# COOPERATIVE STUDIES

## ADVANTAGE

- Networking with industry partners
- Getting to know the professional world early
- Financial support for studies

## TYPES

- Internship
- Supervision of a thesis
- Part-time employment

## BASIS

Part-time contract with individual agreements on salary, working hours, and objectives

  
TUBAF

Kooperationsvertrag

Arbeitsvertrag

  
Industrie



# STUDY FINANCING

## Study funding through BAföG

29<sup>th</sup> BAföG amendment in 2024 with increased financial allowances, introduction of a study start-up aid, and higher housing cost allowances for students living away from home

## Deutschlandstipendium

118 Deutschlandstipendium recipients in 2023

## Job opportunities

For student and research assistants at our institutes

## Student internship agreements with industry

Especially in engineering sciences

## Cooperative Study

Studying in collaboration with universities and industry partners



# CAREER SERVICES

## Career entry preparation counseling

- Development of personal and competency profiles
- Individual application portfolio review
- Preparation for job interviews

## Training in professional and leadership skills

- Development of soft skills
- Building interdisciplinary knowledge
- Coaching for job applications and career start

## Networking

- Career fair ORTE connects students with companies

## Job offers

- Own dedicated job portal "Jobteaser"



# ANGEBOTE FÜR DEN WISSENSCHAFTLICHEN NACHWUCHS

## Doctorates

- Conventional Doctorate or
- Doctorate within the framework of a structured doctoral program

## Graduate Program

- Graduate schools and
- Early-Career Research Groups

## Continuing Education Program and Workshops

## Consulting and Coaching





# INTERNATIONAL ORIENTATION AND NETWORKING



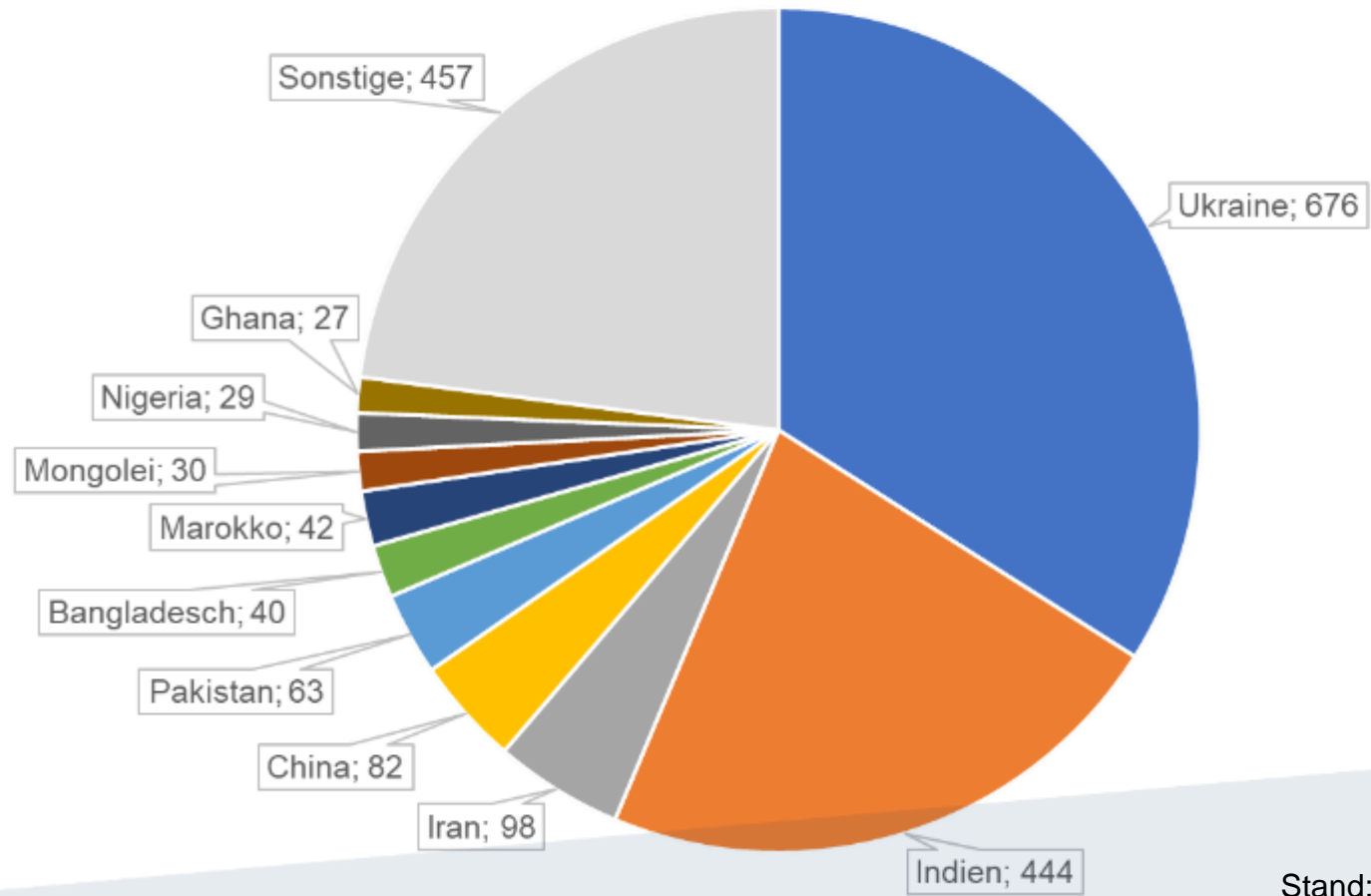
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# STUDENTS FROM AROUND THE WORLD



Stand: 01.05.2024



# INTERNATIONAL MOBILITY

## 255 partner universities

- across six continents in 70 countries

## Erasmus+ Study and Internship worldwide

## Erasmus+ Multiple Degree Programs

- ENTER – M. Sc. in Engineering, Entrepreneurship and Resources
- EMerald – M. Sc. in Georesources Engineering
- SINReM – M. Sc. in Sustainable and Innovative Natural Resource Management

## International Office

Service center for incoming and outgoing

## Welcome Center for international students





# SAXON LIAISON OFFICES WORLDWIDE

## SAXON SCIENCE LIAISON

Attracting students to study  
at a Saxon university

Offices of the Saxon universities:

TU Dresden: :  
Taiwan, India, Chennai

TU Chemnitz:  
Chile, Santiago

Universität Leipzig:  
Vietnam, Hanoi

## TUBAF:

Uzbekistan: Taschkent  
Mongolia: Ulaanbaatar

## TUBAF / Univ. Lpz. / HAW:

Africa, Egypt, ...



# SCIENCE AND RESEARCH

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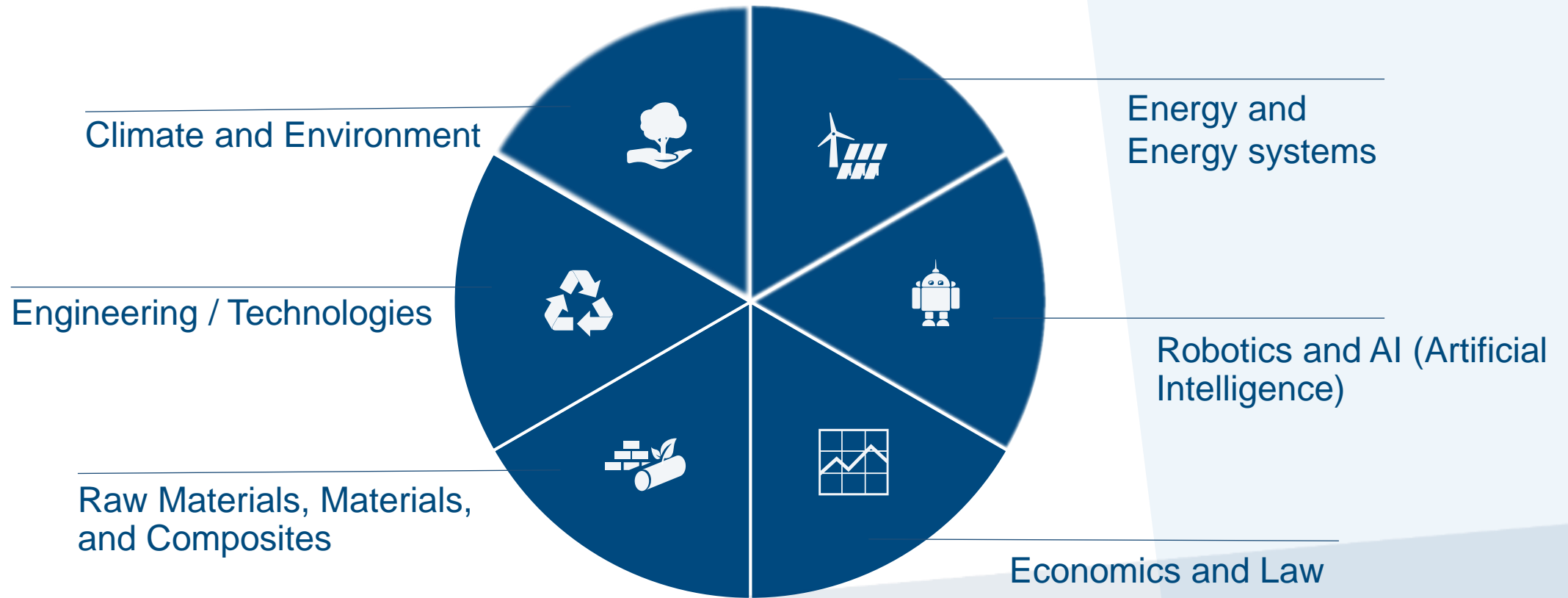
2024



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# AREAS OF EXPERTISE



# RESEARCH AND SCIENCE CAMPUS

## Profile

Geo - Materials / Composites - Energy - Environment

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## Research Strength

Top 10 in third-party funding per professor nationwide in Germany

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## Scientific Infrastructure

Behavioral Research Lab, HPC Cluster, Cleanroom Laboratory, Research and Teaching Mine

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## Interdisciplinary Centers

Center for Water Research Freiberg (ZeWaF), Center for Efficient High-Temperature Material Transformation (ZeHS), FCCE Freiberg Center for Circular Economy, High-Pressure Research Center, Scientific Diving Center, CircEcon – Research Center for Greenhouse Gas-Neutral Circular Economy

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## Innovative University



Cooperation network with BA Sachsen, University of Meißen, and the State Association of Cultural & Creative Industries

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## Freiberg.Science.City

Network with Freiberg companies, the city, research institutions: Helmholtz Institute Freiberg for Resource Technology (HIF), Fraunhofer THM, and the district

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## Unique Foundation Engagement

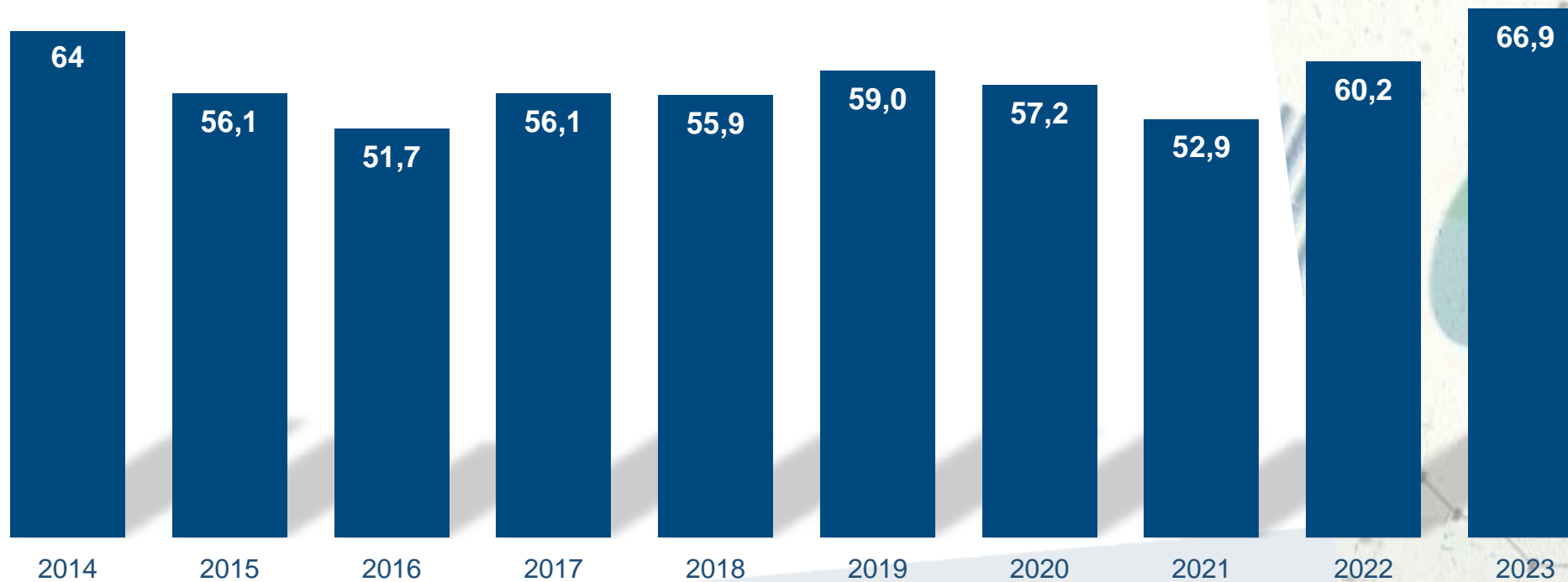
Dr. Erich Krüger Foundation, TUBAF Foundation, and others

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# DEVELOPMENT OF THIRD-PARTY FUNDING

Total Third-Party Funding (in million €)



# TOP 10 THIRD-PARTY FUNDING

Drittmittel­einnahmen und Drittmittel je Professorin und Professor der Universitäten mit den höchsten Drittmittel­einnahmen je Professorin und Professor in 1 000 Euro

Hochschule	Drittmittel­einnahmen je Professorin und Professor <sup>1</sup>		Drittmittel­einnahmen insgesamt 2021
	2021	2020	
Technische Hochschule Aachen	932,1	935,7	330 907
Technische Universität München	799,8	752,8	347 031
Universität Stuttgart	763,6	661,2	210 379
Technische Universität Darmstadt	568,1	558,7	157 370
Karlsruher Institut für Technologie (KIT) - Bereich Hochschule	566,7	546,2	163 787
Technische Universität Dresden	563,7	604,0	235 049
Technische Universität Braunschweig	543,1	500,6	122 208
Universität Hannover	502,8	473,6	152 343
<b>TU Bergakademie Freiberg</b>	<b>499,1</b>	<b>566,5</b>	<b>47 417</b>
Technische Universität Berlin	486,7	425,7	167 917

# SOCIAL RESPONSIBILITY AND TRANSFER



## Responsibility for Solving Future Challenges

Active contributions to addressing current challenges:

- Shaping the energy transition
- Sustainable resource management
- Climate and environmental protection
- Materials and composites
- Recycling
- Digitalization and AI



## Knowledge Transfer

Communication between Science and the Public



## Technology Transfer and Commercialization Partnerships

Transfer of knowledge, inventions, and patents into industry



## Entrepreneurship

Promotion of spin-offs from academia and support for innovative startups

# INTERDISCIPLINARY CENTERS

- Center for Efficient High-Temperature Material Transformation (ZeHS)
- Cooperation Center for Smart Materials Design (together with DESY)
- Center for Water Research (ZeWaF)
- Freiberg Center for Circular Economy (FCCE)
- Freiberg High-Pressure Research Center (FHP)
- Center for Intelligent Subsurface Structures
- Research Center for Greenhouse Gas-Neutral Circular Economy (CircEcon)
- Interdisciplinary Ecological Center (IÖZ)
- Scientific Diving Center





# DFG GRADUATE SCHOOL GRK 2802

Refractory Recycling – A Contribution to Resource, Energy, and Climate Efficiency in High-Temperature Processes

## Objectives

- Interdisciplinary, structured training of doctoral candidates in the field of recycling and upcycling of refractory materials
- Researching a new generation of coarse-grained high-temperature materials based on refractory recyclates with special functional properties for high-temperature metallurgical processes

## Core Ideas

Core Idea I: Recycling	Core Idea II: Upcycling
Refractory Recyclates for Novel Refractory Materials Using Environmentally Friendly Binders (Resin-Free, Tar-Free)	Refractory Recyclates for Novel Composite Materials
Application: Lining material for steel ladles	Application: Electrode material for aluminum melting flux electrolysis



# PROMOTION OF SPIN-OFFS

## Saxeed Founder Network

2023	Consulting for 35 start-up projects, resulting in 3 successful spin-offs so far
	Support for two EXIST Research Transfers and one EXIST Start-up Scholarship, with three EXIST applications submitted



KlimaPay: Application for EXIST Start-up Scholarship Platform for decentralized parcel delivery via private travelers, aimed at reducing the CO2 footprint (10/2023)



MiViA GmbH: Completion of an investment with the Technology Founder Fund Saxony (09/2023)  
Automated microstructure analysis in seconds using artificial intelligence



# EXCELLENT INFRASTRUCTURE



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# LARGE-SCALE RESEARCH, LABORATORIES, Technology

Research Facilities and Institutes on Campus



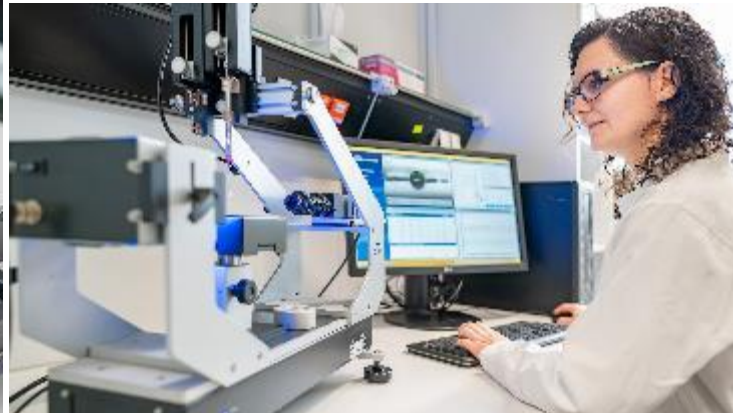
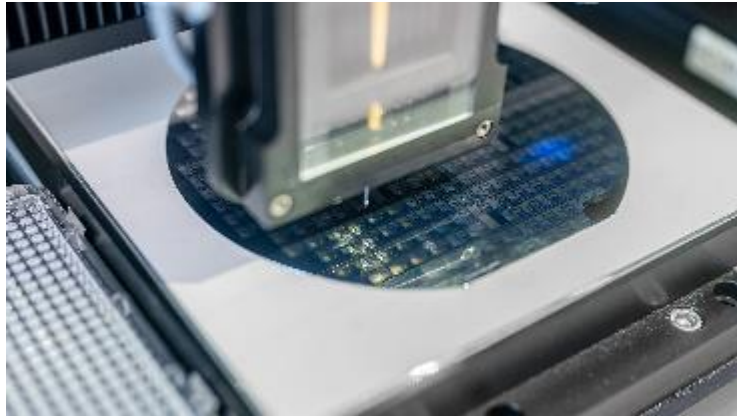
# NEW UNIVERSITY LIBRARY AND LECTURE HALL CENTER

Modern Service Center for Studies and Research



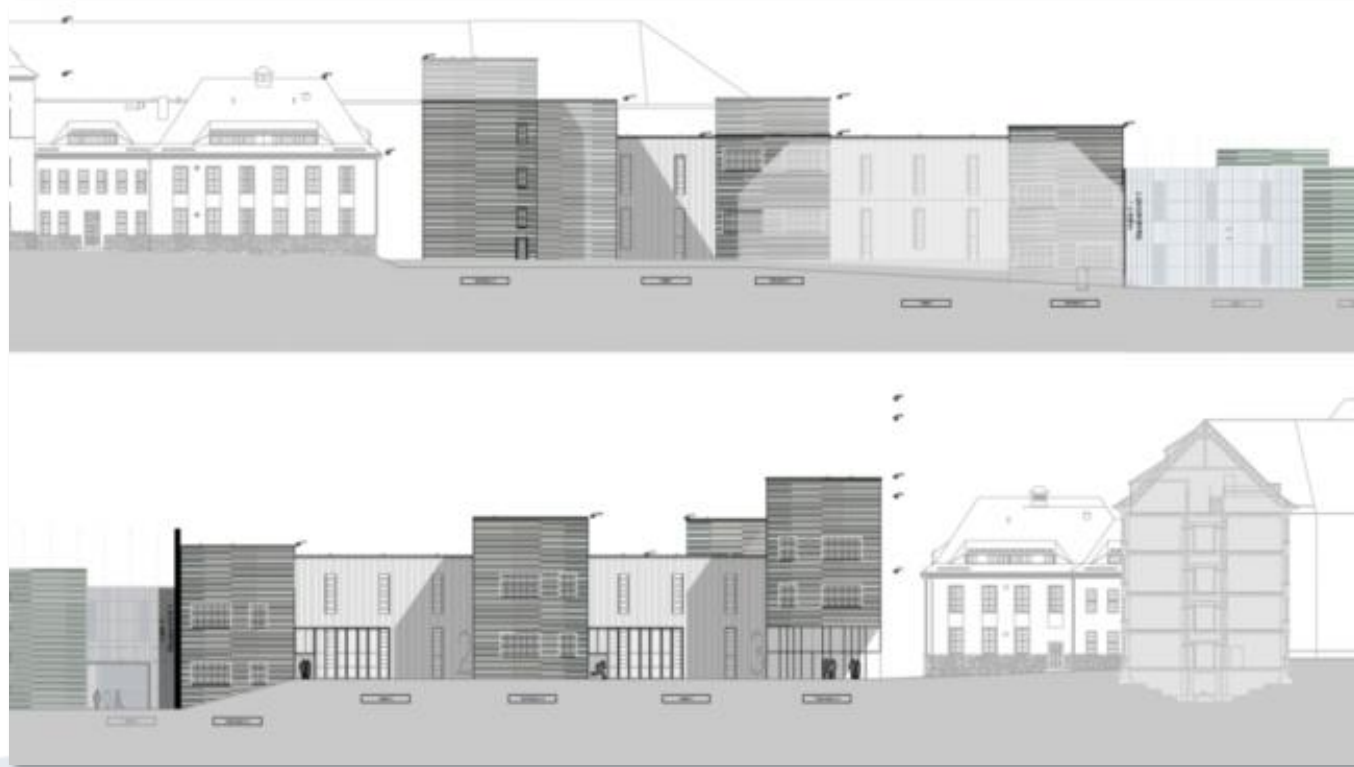
# MOST MODERN LABORATORY BUILDINGS

Clemens-Winkler Laboratory  
New Building with Three Laboratory Wings



# PILOT PLANT FOR MACHINE AND PROCESS DEVELOPMENT

Expansion with two experimental halls and three pilot plant sections



# THANK YOU FOR YOUR ATTENTION

# #tubaf

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