

Helmholtz-Zentrum Dresden-Rossendorf e.V.



With cutting-edge research in the fields of ENERGY, HEALTH and MATTER, around 1,500 employees from more than 70 nations at Helmholtz-Zentrum Dresden-Rossendorf (HZDR) are committed to mastering the great challenges facing society today. At the Helmholtz Institute Freiberg for Resource Technology (HIF), innovative technologies for the circular economy are developed to provide and use mineral and metal-bearing raw materials more efficiently and to recycle them in an environmentally friendly way. The Helmholtz Institute Freiberg for Resource Technology is looking for a PhD Student (f/m/d) Mechanical Recycling Processes and Advanced Characterization of Future Electronic Devices Towards Responsible Electronics.

PhD Student (f/m/d) Mechanical Recycling Processes and Advanced Characterization of Future Electronic Devices Towards Responsible Electronics

City: Freiberg; Starting date (earliest): 01/09/26; Duration: 36 months;

Remuneration: TVöD-Bund, EG 13; Reference number: 2026/92; Closing date: 14/08/26

Tasks

- Comprehensive characterization of future electronic devices, utilizing tools like SEM-EDS, XRF, X-ray tomography, MLA, Raman, etc.
- Analysis of comminution and liberation (shredding-milling) behavior of the devices, including materials-metals distribution across different particle sizes and characterization of 2D- and 3D properties of the size-reduced products
- Safe handling of advanced, polymetallic, and complex materials
- Development and research of physical and physicochemical separation routes for the materials, utilizing size, shape, gravity, magnetic, electrostatic, surface characteristic, and combined/other possible separation routes
- Implementation of statistical/machine learning (ML) techniques (for example, particle-based separation models) for process models
- Contribution towards the development of predictive particle-based separation models
- Following-up with collaboration partners within the DFG excellence cluster "Rec2"
- Thorough and robust scientific reporting, and intensive publication activity

Requirements

- Completed university studies (Master/Diploma) in the field of Process Engineering, Chemical Engineering, Mechanical Engineering, Applied Sciences, Material Sciences, Process Metallurgy, Mineral Processing or related field
- Proven research experience in at least one of the following areas:
 - Advanced solid-phase characterization using techniques such as SEMEDS, XRF, X-ray tomography, MLA, Raman spectroscopy, or related methods
 - Mineral processing and physicochemical separation processes

- Data analysis, statistical analysis, and visualization using programming languages and software tools such as R, Python, or equivalent platforms
- Proven team player with strong communication skills for interdisciplinary collaboration
- Independent, creative, flexible and self-driven researcher with a strong problem-solving mindset
- Strong analytical skills, scientific curiosity, and critical thinking to ensure scientific rigor
- Excellent writing and spoken English
- Good German language skills would be an advantage

What we offer

- A vibrant research community in an open, diverse and international work environment
- Scientific excellence and extensive professional networking opportunities
- A structured PhD program with a comprehensive range of continuing education and networking opportunities - more information about the PhD program at the HZDR can be found [here](#)
- Salary and social benefits in accordance with the collective agreement for the public sector (TVöD-Bund) including 30 days of paid holiday leave, company pension scheme (VBL)
- Depending on the personal qualifications, the candidate may be classified in salary group 13 according to TVöD-Bund
- We support a good work-life balance with the possibility of part-time employment, mobile working and flexible working hours
- Numerous company health management offerings
- Employee discounts with well-known providers via the platform Corporate Benefits
- An employer subsidy for the "Deutschland-Ticket Jobticket"

Application

We look forward to receiving your application documents (including cover letter, CV, diplomas/transcripts, etc.), which you can submit via our online-applicationsystem: <https://www.hzdr.de/db/Cms?pNid=490&pLang=en&pOid=78193>

More information at <https://stellenticket.de/205854/TUB/>
Offer visible until 14/08/26

