

## 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 Group Geometallurgy and Particle Based Process Modelling is looking for a PhD Student (f/m/d) Upscaling Particle-Based Separation Models: Bridging Laboratory and Industrial Flotation Processes.

### **PhD Student (f/m/d) Upscaling Particle-Based Separation Models: Bridging Laboratory and Industrial Flotation Processes**

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

Remuneration: TVöD-Bund: EG 13; Reference number: 2026/77; Closing date: 04/07/26

#### **Tasks**

- Multiscale test work: Conduct batch-scale, locked-cycle, and mini-pilot plant trials to collect the necessary data
- Particle-based separation model (PSM) training: Train PSMs for flotation trials in different scales and interpret results to understand the flotation mechanisms controlling each of the flotation process in each case
- Transfer function development: Create cross-scale transfer functions that incorporate physical boundary conditions and ore microstructures to correlate small-scale lab results with complex interactions in large-scale cells
- Model validation: Test model predictions for the data acquired in the different scales. Conceptualize a strategy to validate the new PSMs with industrial process data

#### **Requirements**

- Completed university studies (Master/Diploma) in the field of Chemical/Metallurgical/(Mineral) Process Engineering, Data Science, Statistics, Machine Learning or related field
- Relevant professional experience in the specified area
- Strong background in at least one of these topics:
  - Population balance models for mineral processing (focus on flotation)
  - Data analysis, statistics, and machine learning
  - Flotation processing experimentation in different scales
- General understanding of mineral separation processes and primary raw materials
- Understanding of ore microstructures, particle characterization, and mineralogy
- Data curation experience is advantageous
- Laboratory experience is advantageous

- Proven team player with strong communication skills for interdisciplinary collaboration
- Independent, self-driven researcher with a strong problem-solving mindset
- Critical thinking to assess model performance, detect artefacts, and ensure scientific rigor
- Proficiency in R, Python, or another high-level programming language for data handling, ML model development, and statistical analysis
- Excellent written and spoken English

## 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=77842>

More information at <https://stellenticket.de/204631/TUBS/>

Offer visible until 04/07/26

