

At the TU Bergakademie Freiberg, Faculty of Mechanical, Process and Energy Engineering,  
Institute of Thermal Engineering an open position of a

### **Research Associate (m/f/d) – reference number 95-E/2023**



within the DFG Research Training Group GRK 2802 “Refractory Recycling: A contribution for raw material-, energy- and climate-efficiency in high temperature processes”, Cohort II, PhD project P6 „Modeling and assessment of the thermomechanical behavior of MgO-C and Al<sub>2</sub>O<sub>3</sub>-C materials based on recyclates and usage of environmentally friendly binders“

is available from July 1<sup>st</sup>, 2024.

**Pay grade:** according to German pay grade E13 TV-L  
**Hours:** 1,0 FTE (40 hours/week; part-time possible)  
**Contract type:** fixed-term for 48 months (until June 30<sup>th</sup>, 2028)

The focus of the Research Training Group 2802 is an interdisciplinary education of PhD students in order to be able to acquire the abilities to explore the material property spectrum as well as the limitations of a new generation of high temperature materials on the basis of refractory recyclates with specific thermo-mechanical, chemical and functional properties in high temperature processing in the metallurgy, and to develop new ideas accompanied by new scientific fields. Thereby a material oriented CO<sub>2</sub>-reduction shall be achieved via refractory material recycling.

The aim of the PhD project P3 is a prediction of the temperature-dependent thermal conductivity of refractory recyclates and composites, as well as the associated quantities thermal diffusivity, heat capacity and thermal shock behaviour depending on their composition and history. Methods are the use and further development of different thermal conductivity measurement methods for the fastest possible evaluation of the changes compared to the original materials in a wide temperature range, coupled with the development of mathematical models for the quantitative evaluation of the most important influencing factors.

#### **Job description:**

- working on a multidisciplinary scientific topic in the field of recycling of refractory materials
- analysis, structuring, completion and evaluation of the database with regard to thermophysical properties of recycle-based materials
- comparison and evaluation of theoretical models for determining the properties of heterogeneous materials as a function of their composition and various structural parameters
- development of a semi-empirical model for the prediction of thermophysical properties of recycle-based materials
- discussion of results within an interdisciplinary research team
- writing of reports
- writing and submitting of scientific publications in peer-reviewed journals
- presentation of research results at national and international conferences

#### **What you can expect from us:**

- working at a family-friendly university with flexible working hours
- remuneration according to the provisions of the collective agreement for the public service of the German federal states in accordance with the personal requirements
- attractive fringe benefits, e.g. Asset-based benefits (VL), company pension schemes (VBL), health management, “Job-Ticket”
- a wide range of networking, mentoring and development opportunities
- a focused research programme and a structured training strategy

**What we expect from you:**

- university diploma or master's degree in Engineering, Materials Science, Materials Engineering or related disciplines
- outstanding theoretical knowledge and practical skills in thermodynamics / heat transfer
- an aptitude for experimental and theoretical research work
- good team-working and communication skills
- advances English and German skills, both written and spoken
- readiness and ability to complete a PhD thesis

For selecting the best suited and highly motivated PhD candidates a three-stage weighted procedure will be applied:

**Stage I. Submitted written application documents** (weighting: letter of motivation 10%, final grade 50%, relevance of the master's or diploma thesis 40%)

**Stage II. Online interview via the conferencing system BigBlueButton** (weighting: motivation 30%, professional skills 50%, language skills 20%)

**Stage III. Oral presentation at the TU Bergakademie Freiberg** (weighting: 10-minute oral presentation on the given topic: 50%, discussion 50%).

**For further information please contact Prof. Tobias M. Fieback**  
(phone: +49-3731 39-3960, e-mail: [tobias.fieback@ttd.tu-freiberg.de](mailto:tobias.fieback@ttd.tu-freiberg.de)).

The applicant (m/f/d) must meet the hiring requirements for fixed-term employment contracts according to the WissZeitVG. Applicants with disabilities will receive preferential consideration, provided they possess equal qualifications. For consideration, we ask you to submit proof of your disabled status together with your application documents. TU Bergakademie is committed to increasing the number of women in teaching and research positions, hence qualified female candidates are especially encouraged to apply.

Written applications, including a CV, motivation letter and copies of all relevant qualifications documents (certificates, diplomas) as well as and a summary of the thesis, should be submitted by **June 5<sup>th</sup>, 2024** stating **reference number (95-E/2024)** to the following address:

**TU Bergakademie Freiberg, Dezernat für Personalangelegenheiten, 09596 Freiberg or e-mail:**  
**[bewerbungen@tu-freiberg.de](mailto:bewerbungen@tu-freiberg.de)**

Your application documents will not be returned, please only submit copies. TU Bergakademie Freiberg is always looking for scientific personnel from various disciplines. Further information can be found at <http://tu-freiberg.de>.