



At the Faculty of Materials Science and Materials Technology, Institute of Materials Engineering, an open position of a



Research Associate (m/f/d) – reference number 168-E/2022

within the DFG Research Training Group “Refractory Recycling: A contribution for raw material-, energy- and climate-efficiency in high temperature processes” (GRK 2802), PhD project P2 “High-temperature mechanical properties of carbon-bonded $\text{Al}_2\text{O}_3\text{-C}$ and MgO-C from refractory recyclates“

is available.

Pay grade: according to German pay grade E13 TV-L
Hours: 1,0 FTE (part-time possible)
Contract type: 1.1.2023 fixed-term for 48 months

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_2 -reduction shall be achieved via refractory material recycling.

Within the scope of the PhD project P2, the stress relaxation and creep behaviour of $\text{Al}_2\text{O}_3\text{-C}$ and MgO-C refractory materials based on recyclates at high temperatures up to $1500\text{ }^\circ\text{C}$ are to be studied. Of particular interest is the influence of impurities compared to the use of new raw materials as well as the evaluation of further, functional additives. In addition, the use of environmentally friendly binders (gelatine, tannin, lactose, etc.) in the refractory materials and their effect on the thermomechanical properties plays an important role. The high-temperature properties are correlated with occurring damage mechanisms such as crack formation.

Job description:

- working on a multidisciplinary scientific topic in the field of recycling of refractory materials
- planning and execution of experiments for the mechanical high-temperature testing of environmentally friendly refractory materials and their microstructure characterisation
- analysis of experimental data, interpretation of results
- discussion of results within an interdisciplinary research team
- writing of reports and preparing presentations
- writing and submission of scientific publications to peer-reviewed journals in English language
- presentation of results at national and international conferences

What you can expect from us:

- working at a family-friendly university with flexible working hours
- 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 Materials Engineering, Materials Science, or related disciplines
- outstanding theoretical knowledge and practical skills in materials testing and characterization
- an aptitude for experimental research work
- good team-working and communication skills
- advanced German and English skills
- readiness and ability to complete a PhD thesis

A three-stage, weighted process is used to select the best suited and highly motivated PhD candidates.

For more information, see:

GRK 2802 website: <https://tu-freiberg.de/forschung/grk2802/stellenangebote>

**For further information please contact Prof. Dr. Horst Biermann
(phone: +49-3731 39-3564, e-mail: biermann@ww.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) and a summary of the thesis, should be submitted by **August 9th, 2022** stating **reference number (168-E/ 2022)** to the following address:

**TU Bergakademie Freiberg, Dezernat für Personalangelegenheiten, 09596 Freiberg or e-mail:
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/wirtschaft/karriere/stellenausschreibungen>