



At the Faculty of Mechanical, Process and Energy Engineering, Institute of Mechanics and Fluid Dynamics an open position of a



Research Associate (m/f/d) – reference number 116-E/2022

within the DFG Research Training Group “Refractory Recycling: A contribution for raw material-, energy- and climate-efficiency in high temperature processes”, PhD project P6 “Modeling and assessment of the thermomechanical behavior of MgO-C and Al₂O₃-C materials based on recyclates and usage of environmentally friendly binders” is available.

Pay grade: according to German pay grade E13 TV-L
Hours: 1,0 FTE (part-time possible)
Contract type: 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 CO₂-reduction shall be achieved via refractory material recycling. The aim of PhD project P6 is to establish a simulation tool that supports the research on the novel MgO-C, Al₂O₃-C refractory materials based on refractory recyclates and environmentally friendly binders from the modeling side. The primary focus lies on enabling a solid mechanics-based assessment of the thermal shock resistance of these materials that are holistically investigated with the Research Training Group. In addition to the assessment of already produced refractory materials, it shall be possible to predict thermomechanical properties in the sense of a virtual laboratory. Quantities of central influence on the thermal shock behavior will then be identified via such numerical experiments based on experimentally calibrated and validated models.

Job description:

- working on a multidisciplinary scientific topic in the field of recycling of refractory materials
- readiness and ability to complete a PhD thesis
- conceptualization and formulation of novel modeling approaches, implementation of such models into finite element environments as well as verification and validation of model predictions
- analysis, interpretation and assessment of simulation results
- 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
- a wide range of networking, mentoring and development opportunities
- a focused research programme and a structured training strategy,
- attractive fringe benefits, e.g. Asset-based benefits (VL), company pension schemes (VBL), health management, “Job-Ticket”

What we expect from you:

- a higher-than-average university diploma or M.Sc. degree in engineering or natural sciences, applied mathematics or related fields
- a strong background and practical experience in continuum mechanics, FE-analysis and material modeling
- an aptitude for theoretical and computationally oriented research
- good team-working and communication skills
- fluency in spoken and written English and German

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

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

**For further information please contact Prof. Björn Kiefer, Ph.D.
(phone: +49-3731 39-2075, e-mail Bjoern.Kiefer@imfd.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 **June 7th, 2022** stating **reference number (116-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>