At the TU Bergakademie Freiberg, Faculty of Materials Science and Materials Technology, Institute of Iron and Steel Technology an open position of a

Research Associate (m/f/d) – reference number 297-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 P5 „Investigation of the effect of MgO-C products based on recyclates and environmentally friendly binders on the sulphidic purity of the steel and spinel formation”

is available from July 1st, 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 30th, 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 CO2-reduction shall be achieved via refractory material recycling.

The aim of the PhD project P5, cohort II is to research the interaction of a low-sulphur-containing manganese-boron steel MBW1500 and a highly basic desulfurization slag with MgO-C products based on recyclates and environmentally friendly binders. In order to determine the influence of thermophysical properties on the interaction with new refractories, the viscosity, surface tension and density of the slags with high sulfur capacity are determined as a function of (SiO2), (MgO), (S), and temperature. The [S]/[S] distribution between the MBW1500 steel and the slag is studied in a crucible of MgO-C products based on the recyclates in the MFG-40. The inclusion population of the steel samples after the examination in the MFG-40 is interpreted by a chemical analysis and analyzed with optical examination methods such as light microscopy combined with AFA (Automatic Feature Analysis) in P-SEM.

Job description:
− working on a multidisciplinary scientific topic in the field of interaction of low sulphur manganese boron steel MBW1500, ladle slags with MgO-C products based on recyclates
− readiness and ability to complete a PhD thesis
− analysis of experimental data, interpretation of 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
− renumeration 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 Materials Technology, Steelmaking or related disciplines
- outstanding theoretical knowledge and practical skills in steelmaking
- an aptitude for experimental research work
- good team-working and communication skills
- excellent English and German skills, both written and spoken

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. Dr. Olena Volkova (phone: +49-3731 39-3100, e-mail: volkova@iest.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 March 15, 2024 stating reference number (297-E/2023) 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](http://tu-freiberg.de).