

Montanuniversität Leoben, Austria



PhD Position

Project: TecEUS – Technology-critical Elements in Urban Spheres

FWF-project (2020-2022)

Job description: We offer a PhD position with the topic: *Technology-critical elements in urban spheres* in the field of analytical chemistry with a strong focus on mass spectrometry in a young team within a highly transdisciplinary FWF-funded project.

Extent of employment: 30 hours per week. Classification under the collective agreement of the university: B1; Gross monthly salary (depending on previous experience) at least: € 2.196,80 (additionally we offer an attractive personnel development program and social benefits)

Duration of employment: Three years. Start anytime.

Workplace: Mainly MUL Leoben, Austria; Occasionally BOKU Vienna, Austria

Applications to: johanna.irrgeher@unileoben.ac.at

Project background:

TecEUS aims at the systematic quantification of drivers, sources, pathways and sinks as well as environmental and human health threats of technology-critical elements (TCEs; e.g. In, Au, Sb, Nd) in the urban spheres of Vienna. Due to their abundant use, TCEs are increasingly released into the environment during manufacturing, use and disposal. Substantial knowledge is missing with regards to current levels found in the environment, environmental cycles and potential health hazards of TCEs. The potential toxicity to human health and the environment requires the development of analytical techniques, monitoring and scenario modelling to inform precautionary policy and requirements for innovation.

Within this FWF-funded project, TCEs levels will be measured systematically in water, soil, plants, aerosol, supported by citizen science approaches involving residents and gardeners. Novel analytical techniques based on mass spectrometry will allow to detect the low levels of TCEs expected in natural samples. Green façades and plants will be evaluated for the efficiency to bind airborne TCEs both in field studies and in controlled greenhouse experiments. A simplified socio-ecological model will be developed depicting the biophysical stocks and flows of TCEs and their human health implications along with the development of prospective scenarios and monitoring requirements.

The transdisciplinary project combines analytical environmental chemistry (Montanuniversität Leoben, Dept. of Chemistry), landscape engineering (University of Natural Resources Vienna, Institute of Soil Bioengineering and Landscape Construction), socio-ecological modelling (University of Natural Resources Vienna, Institute of Social Economy) and human health (Medical University Vienna, Centre of Public Health).

Responsibilities

The successful candidate will develop analytical methods to quantify TCEs in environmental sample matrices based on ICP-MS techniques, both based on solution analysis as well as imaging techniques by laser-based techniques. The student will be in charge of sample preparation, method development and analysis. The candidate will be involved in project coordination, field and laboratory experiments related to urban greening and data processing, as well. The publication of the results in peer reviewed scientific journals is obligatory. The PhD student will be supervised by the project leader Dr. Johanna Irrgeher (Montanuniversität Leoben, johanna.irrgeher@unileoben.ac.at).

Person specification

- You have a Master's degree in Chemistry, Environmental Sciences, or equivalent degree in Natural Sciences with a strong background in Analytical Chemistry
- You are enthusiastic and highly motivated
- You are a team player with excellent (English) communication skills and are motivated to work in a collaborative project with other PhD students
- You have excellent skills in scientific writing
- You are well-structured and willing to take over responsibility in project coordination and management
- You have a strong interest in analytical chemistry and mass spectrometry
- Experience with trace element and isotope ratio analysis by ICP-MS is an asset

Applications: Please send us your CV, transcript of records, a one-page motivation letter and 1-2 letters of recommendation (if available). Montanuniversität Leoben seeks to increase the number of its female faculty and staff members. Therefore, qualified women are strongly encouraged to apply. In case of equal qualification, female candidates will be given preference unless reasons specific to an individual male candidate tilt the balance in his favor.