Faculty of Environmental Sciences

At the Department of Forest Sciences, Institute of Soil Science and Site Ecology, the Chair of Soil Resources and Land Use is looking for a highly motivated

Research Associate / PhD student

(Subject to personal qualification, employees are remunerated according to salary group E 13 TV-L)

The position is part of a DFG funded project “Production of microbial extracellular polymeric substances in soil-like systems – The role of nutrient imbalances, water availability and presence of mineral surfaces” starting 1 October 2019 and entails 65% of the fulltime weekly hours. We offer a contract for 36 months. The period of employment is governed by the Fixed Term Research Contract Act (WissZeitVG). The position offers the chance to obtain further academic qualification (e.g. PhD).

Position: Most microbial life on earth is thought to exist in biofilms, whereby extracellular polymeric substances (EPS) form a main component of the biofilm dry mass and impart several functions. Although, soil microorganisms are known to produce EPS, it is unclear if and under which conditions they do so in soils. The interplay between microorganisms and soil environmental conditions is likely to control microbial production of EPS. However, we are lacking in precise knowledge about the factors driving the production, composition and spatial expansion of EPS in soil. Within this project, we will identify and quantify the most important driving factors on EPS production in soil-like systems as the availability of nutrients (C, N and P), fluctuations in water potential, and mineral surfaces. A series of experimental approaches with increasing complexity from liquid media, over soil chips to artificial soil systems will be used by a combination of extraction and visualization techniques. The spatially heterogeneous soil environment will be addressed with several visualization techniques which have become available very recently. In this context various new methods will be evaluated and developed, especially approaches to study EPS in soils in situ including 3D.

Requirements: For our project on EPS in soil systems we are looking for a highly motivated PhD student with a university degree (master or equivalent) in earth or natural sciences (e.g., Soil Sciences, Earth Sciences, Environmental Sciences), microbiology or related subjects with strong laboratory experience. A fundamental understanding in soil science and microbiology is required. The potential candidate should have experience in microbiological techniques (e.g. cultivation of microbes, work under sterile conditions), chemical and biochemical analysis. Specific experience in visualization techniques and image analysis are most welcome. Experience in microscopy (light required; SEM, CSLM), x-Ray imaging (µCT desirable) is especially desirable. As this project will be done in close collaboration with partners in Straubing (Germany) and Lund (Sweden), the potential PhD candidate is expected to work in intensive collaboration with our partners including internships at these institutes for several months. Excellent knowledge of spoken and written English and excellent communication skills are expected, command of German is a desired skill. We offer an inspiring international and interdisciplinary atmosphere. State-of-the-art analytical tools are available for EPS visualization and the analysis of the EPS composition.

For further information please contact Dr. Cordula Vogel by e-mail.

Applications from women are particularly welcome. The same applies to people with disabilities.
Please submit your application including CV, motivation letter, a summary of your master thesis (if already completed) and the names (affiliation, telephone, e-mail) of two references by **1 August 2019** (stamped arrival date applies) via the TU Dresden SecureMail Portal [https://securemail.tu-dresden.de](https://securemail.tu-dresden.de) by sending it as a single pdf document to [cordula.vogel@tu-dresden.de](mailto:cordula.vogel@tu-dresden.de) or as a hard copy to TU Dresden, Fakultät Umweltwissenschaften, Fachrichtung Forstwissenschaften, Institut für Bodenkunde und Standortslehre, Professur für Bodenressourcen und Landnutzung, Frau Dr. Cordula Vogel, Pienner Strasse 19, 01737 Tharandt, Germany. Please submit copies only, as your application will not be returned to you. Expenses incurred in attending interviews cannot be reimbursed.

**Reference to data protection:** Your data protection rights, the purpose for which your data will be processed, as well as further information about data protection is available to you on the website: [https://tu-dresden.de/karriere/datenschutzhinweis](https://tu-dresden.de/karriere/datenschutzhinweis)