

PhD-project in soil science: ‚Mechanistic understanding of soil functions by submicron scale analyses with NanoSIMS‘

We offer a 3-year PhD-position at the Chair of Soil Science of the Technische Universität München (www.tum.de / www.soil-science.com) within a DFG-funded project. The group of Prof. Ingrid Kögel-Knabner is located at Freising-Weihenstephan, nearby Munich in southern Bavaria. The announced position includes a salary according to TV-L E13 (65%), corresponding to the German TV-L system (Tarifvertrag für den Öffentlichen Dienst der Länder). The anticipated starting date is January or February 2015.

Description:

Soils are highly heterogeneous structures in which organic and inorganic as well as living and non-living building blocks are interacting to form biogeochemical interfaces. While processes at these interfaces are occurring at the micro- or submicron-scale, they are reasoned to influence the behaviour of soils at the global scale. Consequently, analytical methodologies with a high resolution are required in order to investigate these processes with the final goal to mechanistically understand BGI formation. Among spectroscopic methodologies nano scale secondary ion mass spectroscopy (NanoSIMS) is a relatively young technique and has only been used in soil science during the last decade.

While NanoSIMS measurements in soils are currently providing excellent qualitative data on various soil processes, a leap towards producing quantitative data remains to be made. For approaching this topic we aim to combine NanoSIMS analyses with atomic force microscopy (AFM) in order to enable scaling to bulk scale measurements, such as C/N analyses or nuclear magnetic resonance (NMR) data. Samples for these experiments will range from simple laboratory microcosm systems in the beginning to soils from field experiments in a later stage of the project.

This position gives an opportunity to use cutting edge technologies, such as NanoSIMS and AFM, in an internationally renowned group focusing on the fate and stabilisation of soil organic matter.

Requirements:

Applicants should have a M. Sc. degree in physics, chemistry, geosciences, geoecology, biology, environmental sciences or a related discipline. Candidates with experience in microscopic techniques like secondary ion spectroscopy, epi-fluorescence, scanning and/or transmission electron microscopy (SEM, TEM) are highly welcome. Experience with sample preparation and (geo-) statistical modelling approaches will be highly beneficial. The candidate should be highly motivated, team-oriented and willing to work with advanced analytical techniques.

Applications:

A single pdf-file including letter of motivation, a CV, the contact data of 2 referees, and a statement of research interests should be sent by email to Dr. Christian Schurig (christian.schurig@wzw.tum.de) until November 24th 2014. Evaluation of the application will start soon after the deadline. For questions concerning your application feel free to contact christian.schurig@wzw.tum.de.