Job advertisement

Vacancy ID: 165/2021

Closing date: 20 June 2021

Friedrich Schiller University is a traditional university with a strong research profile rooted in the heart of Germany. As a university covering all disciplines, it offers a wide range of subjects. Its research is focused on the areas Light—Life—Liberty. It is closely networked with non-research institutions, research companies and renowned cultural institutions. With around 18,000 students and more than 8,600 employees, the University plays a major role in shaping Jena's character as a cosmopolitan and future-oriented city.
The DFG-funded Collaborative Research Centre 1076 "AquaDiva – Understanding the Links between Surface and Subsurface Biogeosphere" is an ambitious research centre at Friedrich Schiller University. Its integrated research training group IRTG AquaDiva is educating doctoral researchers in a structured, interdisciplinary training program (www.aquadiva.uni-jena.de) and invites applications for PhD positions in various fields of research.

The Institute of Physical Chemistry seeks to fill the position of a

Doctoral Researcher in Linear and Nonlinear Raman Spectroscopy (m/f/d)

commencing on September 1, 2021 or at the earliest possible date
in the project "**Microbial Responses to Infiltration Inputs into Groundwater of the Hainich CZE**" (A03).

Background

In project A03, different Raman techniques in combination with microfluidics will be used for the detection and sorting of isotopically labeled single bacterial cells. In this subproject, all Raman spectroscopic and coherent Raman spectroscopic experiments will be established for the isotope experiments on single bacterial cells to understand the mechanism of isotope labeling. In addition, also the layout and the combination of the spectroscopic methods with microfluidics will be addressed to sort the bacterial cells according the respective isotope incorporation.

Your responsibilities:

- Establishing the different Raman spectroscopic experiments
- Cultivating and isotopic labelling experiments of different bacteria
- Performing microfluidic experiments
- 2D correlation analysis
- Work on a scientific qualification project: doctorate
- Writing and publishing scientific papers in peer-reviewed journals
- Presenting results at national and international conferences

Your profile

- M.Sc. degree in Natural Sciences (e.g., **chemistry, physics**, or related discipline) is necessary; candidates expected to earn their degree by September 2021 are welcome to apply
- Solid knowledge of Raman spectroscopy is expected
- Experience with bacterial cultivation would be desirable but is not mandatory
- Excellent English communication skills, both written and spoken, are desirable
- Enthusiasm to play an active role in the interdisciplinary research team of AquaDiva
- Highly motivated and creative individuals with an interest to shape their own thesis project

We offer:

- A doctoral researcher position with generous research funding and the possibility of a three-month research stay abroad
- Participation in a strongly interdisciplinary research project and diverse experimental and theoretical approaches, combined with the opportunity for research on an innovative and unique Critical Zone research platform
- A communicative atmosphere within an international scientific network of universities and research institutes providing top-level research facilities, equipment and infrastructure

- A comprehensive mentoring programme with supervision by a team of advisors and qualification and development measures in the frame of the IRTG AquaDiva and embedded with the Jena Graduate Academy
- A family-friendly working environment with a variety of offers for families, and University health promotion including a wide range of University sports activities
- Remuneration based on the provisions of the Collective Agreement for the Public Sector of the Federal States (TV-L) at salary scale E13 — depending on the candidate's personal qualifications—, including a special annual payment in accordance with the collective agreement.

The position is initially limited to 3 years, with the possibility of extension to end of June 2025.
This is a part-time position with 65% of the working hours of a full-time employee (26 hours per week).
The project is supervised by Prof. Dr. J. Popp; the place of work will be Jena – *City of Science*.

FSU Jena and CRC AquaDiva seek to increase the number of women in those research areas where they are underrepresented and therefore explicitly encourage women to apply. Candidates with severe disabilities will be given preference in the case of equal qualifications and suitability.

Are you eager to work for us? Then submit your application, addressed to Prof. Dr. Jürgen Popp and stating the vacancy ID 165/2021, by 20 June 2021 to our online application portal at
crc-aquadiva.freshteam.com/jobs.

All applications should be in English and include (in one PDF file, max. size 15 MB) at least the following:
1. Cover letter (max. 1 page, describing your motivation, research interests, and relevant experiences)
2. Curriculum vitae (max. 2 pages, including contact details of at least two scientific references)
3. Scans of certificates, diplomas, and other (e.g., Master's and Bachelor's certificate – if not in English or German, please provide a translation)

Selected applicants will be invited for a short presentation and a personal interview with the project leader/s at our online recruitment symposium, presumably in July/August 2021.

Queries concerning the application process should be directed to the IRTG coordinator, Dr. Anke Hädrich (aquadiva-recruitment@uni-jena.de); for project-related questions, please contact Dr. Petra Rösch (petra.roesch@uni-jena.de).
More project details can be found at www.aquadiva.uni-jena.de/Open_Positions.html.

For further information for applicants, please also refer to www4.uni-jena.de/stellenmarkt_hinweis.html (in German)
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Job advertisement

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The Institute of Physical Chemistry seeks to fill the position of a

Doctoral Researcher in Chemometrics / Machine Learning (m/f/d)

commencing on September 1, 2021 or at the earliest possible date
in the project "**Microbial Responses to Infiltration Inputs into Groundwater of the Hainich CZE**" (A03).

Background

In project A03, different Raman techniques in combination with microfluidics will be used for the detection and sorting of isotopically labeled single bacterial cells. In this subproject, the Raman and CRS data will be used to establish different adapted chemometric / machine learning algorithms in order to differentiate normal from isotopically labeled bacteria. Here, a special emphasis will be on algorithms for the analysis of spectra from multi-labeling experiments. The output of these algorithms will then be used as triggering signal for the microfluidic device.

Your responsibilities:

- Research on chemometrics and machine learning for the discrimination of bacteria
- Supervised and unsupervised learning for separation of bacteria according to their labelling profile
- Work on a scientific qualification project: doctorate
- Writing and publishing scientific papers in peer-reviewed journals
- Presenting results at national and international conferences

Your profile

- M.Sc. degree in Natural Sciences (e.g., **chemistry, physics, computer science, or mathematics** or related discipline) is necessary; candidates expected to earn their degree by September 2021 are welcome to apply
- Solid knowledge of statistics and/or mathematics and profound programming skills in a higher programming language (Matlab, R, Python) is expected
- **Excellent technical skills** in: machine learning, data mining, multivariate statistics, mathematical modelling, statistics, image analysis
- Excellent English communication skills, both written and spoken, are desirable
- Enthusiasm to play an active role in the interdisciplinary research team of AquaDiva
- Highly motivated and creative individuals with an interest to shape their own thesis project

We offer:

- A doctoral researcher position with generous research funding and the possibility of a three-month research stay abroad
- Participation in a strongly interdisciplinary research project and diverse experimental and theoretical approaches, combined with the opportunity for research on an innovative and unique Critical Zone research platform

- A communicative atmosphere within an international scientific network of universities and research institutes providing top-level research facilities, equipment and infrastructure
- A comprehensive mentoring programme with supervision by a team of advisors and qualification and development measures in the frame of the IRTG AquaDiva and embedded with the Jena Graduate Academy
- A family-friendly working environment with a variety of offers for families, and University health promotion including a wide range of University sports activities
- Remuneration based on the provisions of the Collective Agreement for the Public Sector of the Federal States (TV-L) at salary scale E13 — depending on the candidate's personal qualifications—, including a special annual payment in accordance with the collective agreement

The position is initially limited to 3 years, with the possibility of extension to end of June 2025.
This is a part-time position with 65% of the working hours of a full-time employee (26 hours per week).
The project is supervised by Prof. Dr. J. Popp; the place of work will be Jena – *City of Science*.

FSU Jena and CRC AquaDiva seek to increase the number of women in those research areas where they are underrepresented and therefore explicitly encourage women to apply. Candidates with severe disabilities will be given preference in the case of equal qualifications and suitability.

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2. Curriculum vitae (max. 2 pages, including contact details of at least two scientific references)
3. Scans of certificates, diplomas, and other (e.g., Master's and Bachelor's certificate – if not in English or German, please provide a translation)

Selected applicants will be invited for a short presentation and a personal interview with the project leader/s at our online recruitment symposium, presumably in July/August 2021.

Queries concerning the application process should be directed to the IRTG coordinator, Dr. Anke Hädrich (aquadiva-recruitment@uni-jena.de); for project-related questions, please contact Dr. Petra Rösch (petra.roesch@uni-jena.de) or PD Dr. Thomas Bocklitz (thomas.bocklitz@uni-jena.de).
More project details can be found at www.aquadiva.uni-jena.de/Open_Positions.html.

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The Institute of Geosciences seeks to fill the position of a

Doctoral Researcher in Hydrogeology (m/f/d)

commencing on September 1, 2021 or at the earliest possible date
in the project "**Monitoring Migration Pathways in the Subsurface Using Polymer Tracer Libraries**" (C05).

Background

This project will create synthetic polymers based on poly(ethylene) glycol with specific size and functional moieties that act as functional analogues of natural organic matter (NOM) and therefore can be used as tracers of colloidal NOM transport in porous media. By an exhaustive characterization, we can select a promising set of tracers that will finally be applied in a joint field-scale tracer experiment in the Hainich Critical Zone Exploratory. The resulting tracer breakthrough curves will then be used to reconstruct the migration pathways of NOM using numerical models.

Your responsibilities:

- Participate in the creation of a polymer tracer library
- Conducting transport/adsorption experiments in the lab and the field
- Reconstructing the pathways of colloid migration with numerical models
- Work on a scientific qualification project: doctorate
- Writing and publishing scientific papers in peer-reviewed journals
- Presenting results at national and international conferences

Your profile

- M.Sc. degree in environmental science, hydrogeology, soil science or similar fields is necessary; candidates expected to earn their degree by September 2021 are welcome to apply
- Solid knowledge of solute transport in porous media and general hydrogeology / soil science is expected
- Experience with spectroscopic techniques is needed; experience with numerical modeling would be desirable but is not mandatory
- Excellent English communication skills, both written and spoken, are required
- Enthusiasm to play an active role in the interdisciplinary research team of AquaDiva
- Highly motivated and creative individuals with an interest to shape their own thesis project
- Readiness and ability to work in the field
- Driver's license is necessary

We offer:

- A doctoral researcher position with generous research funding and the possibility of a three-month research stay abroad

- Participation in a strongly interdisciplinary research project and diverse experimental and theoretical approaches, combined with the opportunity for research on an innovative and unique Critical Zone research platform
- A communicative atmosphere within an international scientific network of universities and research institutes providing top-level research facilities, equipment and infrastructure
- A comprehensive mentoring programme with supervision by a team of advisors and qualification and development measures in the frame of the IRTG AquaDiva and embedded with the Jena Graduate Academy
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- Remuneration based on the provisions of the Collective Agreement for the Public Sector of the Federal States (TV-L) at salary scale E13 — depending on the candidate's personal qualifications—, including a special annual payment in accordance with the collective agreement

The position is initially limited to 3 years, with the possibility of extension to end of June 2025.
This is a part-time position with 65% of the working hours of a full-time employee (26 hours per week).
The project is supervised by Dr. Thomas Ritschel; the place of work will be Jena – *City of Science*.

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Are you eager to work for us? Then submit your application, addressed to Dr. Thomas Ritschel and stating the vacancy ID 167/2021, by 20 June 2021 to our online application portal at

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1. Cover letter (max. 1 page, describing your motivation, research interests, and relevant experiences)
2. Curriculum vitae (max. 2 pages, including contact details of at least two scientific references)
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Selected applicants will be invited for a short presentation and a personal interview with the project leader/s at our online recruitment symposium, presumably in July/August 2021.

Queries concerning the application process should be directed to the IRTG coordinator, Dr. Anke Hädrich (aquadiva-recruitment@uni-jena.de); for project-related questions, please contact Dr. Thomas Ritschel (thomas.ritschel@uni-jena.de).
More project details can be found at www.aquadiva.uni-jena.de/Open_Positions.html.

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The Laboratory of Organic and Macromolecular Chemistry seeks to fill the position of a

Doctoral Researcher in Polymer Sciences (m/f/d)

commencing on September 1, 2021 or at the earliest possible date
in the project "**Monitoring migration pathways in the subsurface using polymer tracer libraries**" (C05).

Background

This project aims to understand complex migration pathways in the subsurface by a synthetic design of novel macromolecular tracers based on the uniqueness of the anionic ring opening polymerization of ethylene oxide monomers. The chemical scratchboard should thereby address water solubility, hydrophilicity/hydrophobicity, stability/degradability, nontoxicity, and traceability. The worldwide unique combination of synthesis facilities and advanced characterization techniques established in the laboratory should be developed and utilized in the framework of the highly interdisciplinary project. The new tracers should then find applications (in strong collaboration with geoscientists) to mimic and trace the transport behaviour of natural matter.

Your responsibilities:

- Design and synthesis of new poly(ethylene oxide)-based tracers, utilizing existing facilities in the laboratory
- In-depth characterization by high-end and established physicochemical methods in the group
- Interaction with the partners from the Geosciences to concertedly reach the project goals
- Work on a scientific qualification project: doctorate
- Writing and publishing scientific papers in peer-reviewed journals
- Presenting results at national and international conferences

Your profile

- M.Sc. degree in chemistry or similar fields is necessary; candidates expected to earn their degree by September 2021 are welcome to apply
- Basic knowledge of polymer science and standard characterization techniques is expected
- Experience with synthetic methods is needed; experience with more advanced polymer characterization (hydrodynamic methods, light scattering, chromatography) would be desirable but is not mandatory
- Excellent English communication skills, both written and spoken, are desirable
- Enthusiasm to play an active role in the interdisciplinary research team of AquaDiva
- Highly motivated and creative individuals with an interest to shape their own thesis project
- Readiness and ability to work in the interdisciplinary field of chemical design and real applications in environmental settings

We offer:

- A doctoral researcher position with generous research funding and the possibility of a three-month research stay abroad

- Participation in a strongly interdisciplinary research project and diverse experimental and theoretical approaches, combined with the opportunity for research on an innovative and unique Critical Zone research platform
- A communicative atmosphere within an international scientific network of universities and research institutes providing top-level research facilities, equipment and infrastructure
- A comprehensive mentoring programme with supervision by a team of advisors and qualification and development measures in the frame of the IRTG AquaDiva and embedded with the Jena Graduate Academy
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- Remuneration based on the provisions of the Collective Agreement for the Public Sector of the Federal States (TV-L) at salary scale E13 — depending on the candidate's personal qualifications—, including a special annual payment in accordance with the collective agreement

The position is initially limited to 3 years, with the possibility of extension to end of June 2025.
This is a part-time position with 65% of the working hours of a full-time employee (26 hours per week).
The project is supervised by Professor Dr. Ulrich S. Schubert; the place of work will be Jena – *City of Science*.

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Are you eager to work for us? Then submit your application, addressed to Prof. Dr. Ulrich S. Schubert and stating the vacancy ID 168/2021, by 20 June 2021 to our online application portal at
crc-aquadiva.freshteam.com/jobs.

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2. Curriculum vitae (max. 2 pages, including contact details of at least two scientific references)
3. Scans of certificates, diplomas, and other (e.g., Master's and Bachelor's certificate – if not in English or German, please provide a translation)

Selected applicants will be invited for a short presentation and a personal interview with the project leader/s at our online recruitment symposium, presumably in July/August 2021.

Queries concerning the application process should be directed to the IRTG coordinator, Dr. Anke Hädrich (aquadiva-recruitment@uni-jena.de); for project-related questions, please contact Prof. Dr. Ulrich S. Schubert (ulrich.schubert@uni-jena.de).
More project details can be found at www.aquadiva.uni-jena.de/Open_Positions.html.

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The DFG-funded Collaborative Research Centre 1076 "AquaDiva – Understanding the Links between Surface and Subsurface Biogeosphere" is an ambitious research centre with more than 70 researchers from various research areas (www.aquadiva.uni-jena.de). It is located at Friedrich Schiller University and three non-university research institutes in Jena and Leipzig.

The Cheminformatics Group at the Faculty of Chemistry and Earth Sciences
seeks to fill the position of a

Postdoctoral Researcher in Cheminformatics/Bioinformatics (m/f/d)

commencing on September 1, 2021, or at the earliest possible date
in the project "**Metagenomic prediction of biosynthetic capacity in the Critical Zone**".

Background

This project aims to predict metabolites from microbes in groundwater based on metagenomic information. The groundwater is dominated by rare species and any prediction methods for the groundwater metabolome are potentially highly speculative.

Your responsibilities:

- Implementing methods and software towards the prediction of metabolites from microbes in groundwater, based on metagenomic information in collaboration with the further team and based on methods that have been developed by us and collaborators
- Management of the project and reporting to the project leader
- Writing and publishing scientific papers in peer-reviewed journals
- Presenting results at national and international conferences
- Supervision of students and doctoral candidates in degree theses

Your profile

- PhD degree in cheminformatics, bioinformatics, or similar fields is necessary; candidates expected to earn their degree by September 2021 are welcome to apply
- Proficiency in at least one modern programming language (Python, Java, …) is expected
- Knowledge in computational metabolism is advantageous
- Excellent English communication skills, both written and spoken
- Enthusiasm to play an active role in the interdisciplinary research team of AquaDiva
- Highly motivated and creative individuals with an interest to shape the research project

We offer:

- A postdoctoral researcher position with generous research funding and the possibility of research stays abroad
- Participation in a strongly interdisciplinary research project and diverse experimental and theoretical approaches, combined with the opportunity for research on an innovative and unique Critical Zone research platform
- A communicative atmosphere within an international scientific network of universities and research institutes providing top-level research facilities, equipment and infrastructure
- Individual qualification and development measures in the frame of the Integrated Research Training Group AquaDiva and embedded with the Jena Graduate Academy

- University health promotion including a wide range of University sports activities and a family-friendly working environment with a variety of offers for families
- Remuneration based on the provisions of the Collective Agreement for the Public Sector of the Federal States (TV-L) at salary scale E13 — depending on the candidate's personal qualifications—, including a special annual payment in accordance with the collective agreement

The position is limited until June 30, 2025. This is a full-time position (40 hours per week).
The project is supervised by Prof. Dr. C. Steinbeck; the place of work will be Jena – *City of Science*.

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Are you eager to work for us? Then submit your application, addressed to Prof. Dr. C. Steinbeck and stating the vacancy ID 169/2021, by 20 June 2021 to our online application portal at

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2. Curriculum vitae (max. 2 pages, including contact details of at least two scientific references)
3. Scans of certificates, diplomas, and other (e.g., PhD/M.Sc/B.Sc. certificate – if not in English or German, please provide a translation)

Selected applicants will be invited for a short presentation and a personal interview with the project leader/s at our online recruitment symposium, presumably in July/August 2021.

Queries concerning the application process should be directed to the IRTG coordinator, Dr. A. Hädrich (aquadiva-recruitment@uni-jena.de); for project-related questions, please contact Prof. Dr. C. Steinbeck (christoph.steinbeck@uni-jena.de).
More project details can be found at www.aquadiva.uni-jena.de/Open_Positions.html.

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The Institute of Biodiversity / Aquatic Geomicrobiology Group at the Faculty of Biosciences
seeks to fill the position of a

Doctoral Researcher in Molecular Microbial Ecology (m/f/d)

commencing on September 1, 2021 or at the earliest possible date
in the project **"Microbial Responses to Infiltration Inputs into Groundwater of the Hainich CZE**" (A03).

Background

This project will determine the fate of surface-derived and chemolithoautotrophically produced microbial carbon in groundwater of the Hainich aquifers. By combining Raman microspectroscopy with stable isotope probing (SIP), a novel high-throughput cell sorting method will be established, to track fluxes of microbial carbon and separate metabolically active microbes. Metagenomics analysis of sorted subpopulations will be interpreted within the context of CO_2 fixation rate measurements for a transect-wide functional analysis of the deep biosphere.

Your responsibilities:

- Design and monitoring of joint microcosm experiments employing SIP
- Exploring microbial community dynamics using advanced bioinformatics and multivariate statistics
- Targeted metagenomics of Raman-sorted populations
- Execution of CO_2 fixation rate measurements
- Teamwork within AquaDiva to synthesize data from different omic approaches (metabolomics, metaproteomics)
- Work on a scientific qualification project: doctorate
- Writing and publishing scientific papers in peer-reviewed journals
- Presenting results at national and international conferences

Your profile

- M.Sc. degree in Microbiology, Microbial Ecology, Molecular Ecology or similar fields is necessary; candidates expected to earn their degree by September 2021 are welcome to apply
- Strong background in molecular microbial ecology is expected
- Experience with high-throughput sequencing and analysis of amplicon sequencing datasets or metagenomics/metatranscriptomics analyses, with biogeochemistry, and with multivariate statistics (e.g., R, Python) is desirable
- Experience with SIP application and data analysis would be desirable but are not mandatory
- Excellent English communication skills, both written and spoken, are desirable
- Enthusiasm to play an active role in the interdisciplinary research team of AquaDiva
- Highly motivated and creative individuals with an interest to shape their own thesis project
- Readiness and ability to work in the field
- Driver's license would be advantageous

We offer:

- A doctoral researcher position with generous research funding and the possibility of a three-month research stay abroad
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This is a part-time position with 65% of the working hours of a full-time employee (26 hours per week).
The project is supervised by Prof. Dr. K. Küsel and Dr. M. Taubert; the place of work will be Jena – *City of Science*.

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Queries concerning the application process should be directed to the IRTG coordinator, Dr. Anke Hädrich (aquadiva-recruitment@uni-jena.de); for project-related questions, please contact Dr. Martin Taubert (martin.taubert@uni-jena.de).
More project details can be found at www.aquadiva.uni-jena.de/Open_Positions.html.

For further information for applicants, please also refer to www4.uni-jena.de/stellenmarkt_hinweis.html (in German)
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Job advertisement

Vacancy ID: 171/2021

Closing date: 20 June 2021

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The DFG-funded Collaborative Research Centre 1076 "AquaDiva – Understanding the Links between Surface and Subsurface Biogeosphere" is an ambitious research centre at Friedrich Schiller University. Its integrated research training group IRTG AquaDiva is educating doctoral researchers in a structured, interdisciplinary training program (www.aquadiva.uni-jena.de) and invites applications for PhD positions in various fields of research.

The Institute of Microbiology / Department of Microbial Interactions seeks to fill the position of a

Doctoral Researcher in Microbiology / Biotechnology (m/f/d)

commencing on September 1, 2021 or at the earliest possible date
in the project "**Subsurface Planctomycetes as sources for novel biotechnological applications**" (A07).

Background

This project aims to understand the role of Planctomycetes in subsurface ecosystems. We will apply our recently established deep cultivation strategy (Wiegand *et. al.* Nature Microbiology 2020) to target Planctomycetes throughout the Critical Zone with a focus on groundwater habitats. We will employ methods such as classical plate inoculation, semi-automated liquid inoculation using robotics, and bioreactor-based enrichment techniques to obtain novel Planctomycetes. Obtained strains will be subject of in-depth characterization including genome sequencing and analysis, (super-resolution) light microscopy, physiological characterization, and valid taxonomic description.

Your responsibilities:

- You will assist at sampling campaigns
- You will oversee all cultivation attempts with parttime help from a technician
- You will oversee and perform in-depth characterization of obtained strains in multiple collaborations
- You will explore biotechnological usability of obtained strains
- Work on a scientific qualification project: doctorate
- Writing and publishing scientific papers in (high-impact) peer-reviewed journals
- Presenting results at national and international conferences

Your profile

- M.Sc. degree in microbiology, biotechnology, or similar fields is necessary; candidates expected to earn their degree by September 2021 are welcome to apply
- Solid knowledge of culturing elusive microbes such as Planctomycetes is expected
- Experience with either reactor-based enrichment of Planctomycetes or the cultivation of aerobic Planctomycetes is needed; experience with taxonomic characterization and valid publication of strains would be desirable but are not mandatory
- Excellent English communication skills, both written and spoken, are desirable
- Enthusiasm to play an active role in the interdisciplinary research team of AquaDiva
- Highly motivated and creative individuals with an interest to shape their own thesis project
- Readiness and ability to work in the field
- Driver's license would be advantageous

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This is a part-time position with 65% of the working hours of a full-time employee (26 hours per week).
The project is supervised by Prof. Dr. Christian Jogler and PD Dr. Torsten Schubert; the place of work will be Jena – *City of Science*.

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Are you eager to work for us? Then submit your application, addressed to Prof. Dr. Christian Jogler and stating the vacancy ID 171/2021, by 20 June 2021 to our online application portal at
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Vacancy ID: 172/2021

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The Plant Biodiversity Group, Institute of Ecology and Evolution at the Faculty of Biological Sciences seeks to fill the position of a

Doctoral Researcher in Plant Functional Biodiversity (m/f/d)

commencing on September 1, 2021 or at the earliest possible date
in the project "**Interactions of Forest Structure and Plant Functional Biodiversity as Drivers of Water, Organic Matter, and Nutrient Fluxes**" (B01)

Background

This project aims to disentangle variations among and within different types of forest stands that relate the fluxes in water, organic matter, and nutrients at the surface of the Critical Zone exploratories to the taxonomic and functional diversity of the vegetation. The successful PhD candidate contributes to this project by investigating the effect of the spatio-temporal variations in the canopy structure on the variation of the taxonomic and functional composition of the understory vegetation including mosses and the belowground structures. This project leads to a better understanding of the importance of the understory vegetation for spatiotemporal variations in water and matter fluxes in forest ecosystems that eventually affect subsurface patterns.

Your responsibilities:

- Investigate the seasonal variations in the taxonomic and functional composition of the understory vegetation in forest stands with different canopy structures and compositions
- Assess the importance of intra- and interspecific plant functional trait responses of herb and moss species for water and nutrient fluxes in the forest
- Relate spatio-temporal variations in the biotic environment to changes in nutrient and water fluxes (the latter are measured in the framework of related projects)
- Work on a scientific qualification project: doctorate
- Writing and publishing scientific papers in peer-reviewed journals
- Presenting results at national and international conferences

Your profile

- M.Sc. degree in plant biodiversity, ecology, (geo-)botany or similar fields is necessary; candidates expected to earn their degree by September 2021 are welcome to apply
- Solid knowledge in vegetation ecology and functional ecology is expected
- Experience in sampling vegetation, measuring functional traits and applying modern statistical analyses are needed; experience with plant identification (including mosses) and phenological observation techniques would be desirable but are not mandatory
- Excellent English communication skills, both written and spoken, are desirable
- Enthusiasm to play an active role in the interdisciplinary research team of AquaDiva
- Highly motivated and creative individuals with an interest to shape their own thesis project
- Readiness and ability to work in the field (on AquaDiva sites in Thuringia/ Germany)
- Driver's license would be advantageous

We offer:

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The position is initially limited to 3 years, with the possibility of extension to end of June 2025.
This is a part-time position with 65% of the working hours of a full-time employee (26 hours per week).
The project is supervised by Prof. Dr. Christine Römermann; the place of work will be Jena – *City of Science*.

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Are you eager to work for us? Then submit your application, addressed to Prof. Dr. Christine Römermann and stating the vacancy ID 172/2021, by 20 June 2021 to our online application portal at
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Job advertisement

Vacancy ID:173/2021

Closing date: 20 June 2021

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The Institute of Geosciences / Applied Geology Group seeks to fill the position of a

Doctoral Researcher in Environmental Sciences / Colloid and Interface Sciences (m/f/d)

commencing on September 1, 2021 or at the earliest possible date
in the project "**Retroaction of Geochemical Perturbations and Critical Zone Media Reactivity on Trace Element Speciation and Transport Parameters**" (C07).

Background

This project aims to understand the transport of clay minerals out of the soil zone using synthetic clay mineral colloids with the multi-method nanoparticle/mass spectrometric platform (SP-ICP-MS, (e)AF4, NTA, LC-OCD-OND) available in the group. The characterization of the flow path geometry will be addressed through 3D/4D tomographic methods (µCT/XRM) available. The special focus is on the dynamics, control and feedback of the trace element speciation and transport on the subsurface microbiome of the Critical Zone investigated from the laboratory-scale to the cross-project field experiment.

Your responsibilities:

- Stability/mobility analyses of structurally labelled synthetic clay nanoparticles in natural media
- Rock matrix dissolution experiments and monitoring by tomographic techniques
- Field monitoring and colloid characterization of extreme hydraulic events and joint multi-tracer experiments including the delivery of input parameters for microbiome analyses
- Work on a scientific qualification project: doctorate
- Writing and publishing scientific papers in peer-reviewed journals
- Presenting results at national and international conferences

Your profile

- M.Sc. degree in geosciences / environmental sciences / aquatic geochemistry or similar fields is necessary; candidates expected to earn their degree by September 2021 are welcome to apply
- Solid knowledge of aquatic (geo)chemistry, hydrogeology, and analytical (geo)chemistry is expected
- Experience with ICP-MS and/or liquid chromatography methods or tomographic methods (µCT, XRM) are needed; experience with field water-sampling techniques would be desirable but is not mandatory
- Excellent English communication skills, both written and spoken, are desirable
- Enthusiasm to play an active role in the interdisciplinary research team of AquaDiva
- Highly motivated and creative individuals with an interest to shape their own thesis project
- Readiness and ability to work in the field
- Driver's license would be advantageous

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- A doctoral researcher position with generous research funding and the possibility of a three-month research stay abroad

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The position is initially limited to 3 years, with the possibility of extension to end of June 2025.
This is a part-time position with 65% of the working hours of a full-time employee (26 hours per week).
The project is supervised by Prof. Dr. Thorsten Schäfer, the place of work will be Jena – *City of Science*.

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Are you eager to work for us? Then submit your application, addressed to Prof. Dr. Thorsten Schäfer and stating the vacancy ID 173/2021, by 20 June 2021 to our online application portal at
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Selected applicants will be invited for a short presentation and a personal interview with the project leader/s at our online recruitment symposium, presumably in July/August 2021.

Queries concerning the application process should be directed to the IRTG coordinator, Dr. Anke Hädrich (aquadiva-recruitment@uni-jena.de); for project-related questions, please contact Prof. Dr. Thorsten Schäfer (thorsten.schaefer@uni-jena.de).
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Job advertisement

Vacancy ID: 174/2021

Closing date: 20 June 2021

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The Institute of Biodiversity / Aquatic Geomicrobiology Group at the Faculty of Biosciences
seeks to fill the position of a

Doctoral Researcher in Molecular Microbial Ecology (m/f/d)

commencing on September 1, 2021 or at the earliest possible date
in the project "**From the Forest Canopy to the Aquifer:**
Role of Microbial Processes in the Origin and Fate of Nitrate in the Earth´s Critical Zone" (B05).

Background

This project aims to explore the interaction and niche differentiation between key microbial players involved in the formation and removal of nitrate in groundwater. Combining molecular approaches with novel cultivation techniques, we will address the role of complete ammonia oxidizers (comammox) in groundwater nitrification, the effect of geologic setting on the preferred nitrate reduction pathway, and how nitrogen loss is supported by linkages between different nitrate reducing processes.

Your responsibilities:

- Analysis of microbial groups involved in nitrification, denitrification, anammox, and DNRA by molecular techniques and assessment of process rates using ^{15}N-based approaches
- Enrichment of microbial consortia involved in groundwater nitrate reduction using novel high-throughput cultivation techniques and bioreactors
- Characterization of enriched consortia by microscopy and metagenomics/-transcriptomics
- Work on a scientific qualification project: doctorate
- Writing and publishing scientific papers in peer-reviewed journals
- Presenting results at national and international conferences

Your profile

- M.Sc. degree in microbiology, biogeochemistry, geo-ecology or similar fields is necessary; candidates expected to earn their degree by September 2021 are welcome to apply
- Solid knowledge of microbial ecology of the nitrogen cycle and biogeochemistry of aquatic environments is expected
- Experience with molecular methods to investigate microbial communities in environmental samples are needed (nucleic acid extraction, PCR, qPCR); experience with (anaerobic) cultivation techniques and with the analysis of next generation sequencing data would be desirable but are not mandatory
- Excellent English communication skills, both written and spoken, are desirable
- Enthusiasm to play an active role in the interdisciplinary research team of AquaDiva
- Highly motivated and creative individuals with an interest to shape their own thesis project
- Readiness and ability to work in the field
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This is a part-time position with 65% of the working hours of a full-time employee (26 hours per week).
The project is supervised by Dr. Martina Herrmann; the place of work will be Jena – *City of Science*.

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Job advertisement

Vacancy ID: 175/2021

Closing date: 20 June 2021

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The Institute of Geoscience /Terrestrial Ecohydrology Group at the Faculty of Chemistry and Earth Sciences seeks to fill the position of a

Doctoral Researcher in Ecohydrology (m/f/d)

commencing on September 1, 2021 or at the earliest possible date
in the project "**Evolution of Water and Matter Cycles within the Earth's Critical Zone**" (B02).

Background

This project aims to understand how the substantial spatial heterogeneity of water and matter fluxes caused by canopies, root uptake, and soil properties is organized at the ecosystem scale and how this affects the precipitation partitioning into evapotranspiration and deep percolation. In doing so, the project seeks to reveal the drivers of spatial input and output patterns and thus rendering them predictable. For this, we use an innovative nested observation network with a design targeted at concerted evaluation of above- and belowground processes shaping water fluxes.

Your responsibilities:

- Support with establishment and maintenance of a spatially distributed lysimeter and soil moisture sensor network along canopy gradients
- Evaluation of soil hydraulic properties, soil water dynamics, nitrogen leakage, and derivation of root water uptake profiles
- Application of statistical modelling to investigate spatial patterns of soil water dynamics, preferential flow, and root water uptake
- Derivation of organizing principles and upscaling rules suitable for process model application
- Strong cooperation with related projects on above- and belowground vegetation processes as well as hydrological modelling
- Work on a scientific qualification project: doctorate
- Writing and publishing scientific papers in peer-reviewed journals
- Presenting results at national and international conferences

Your profile

- M.Sc. degree in hydrology, environmental sciences with focus on hydrology, soil science or similar fields is necessary; candidates expected to earn their degree by September 2021 are welcome to apply
- Solid knowledge of soil hydrology and soil science as well as basic knowledge of data analysis is expected
- Experience with field measurements of soil water states and fluxes, laboratory measurements of soil hydraulic properties, and programming would be desirable but is not mandatory
- Excellent English communication skills, both written and spoken, are desirable
- Enthusiasm to play an active role in the interdisciplinary research team of AquaDiva
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FRIEDRICH-SCHILLER-UNIVERSITÄT JENA

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