

PhD position in in-stream hydrology

Application of new high-spatial and temporal frequency measurements of in-stream chemical transport processes

The Luxembourg Institute of Science and Technology (LIST) is offering a fully paid PhD candidate position in the framework of a newly funded Doctoral Training Unit (DTU) in Water Sciences: Hydro-CSI.

The doctoral programme HYDRO-CSI is funded in the framework of the PRIDE scheme of the Luxembourg National Research Fund (FNR).

The main objective of the DTU is to train a new generation of highly skilled experts with a view to contribute to solving some of the most pressing challenges related to water resources research and management: hydrological system complexity, non-stationarity of boundary conditions, high-frequency monitoring of environmental processes, global change impact assessment. This position is envisaged to start between January 1st 2017 and 1st May 2017 and will extend over a maximum duration of 4 years.

The PhD candidate will be part of the Water Safety and Security Unit at the Department of Environmental Research and Innovation (ERIN) at LIST and will work in the Catchment and Eco-hydrology research group. Furthermore, the PhD candidate will be affiliated with the Vienna University of Technology.

The general theme of the PhD project relates to solute transport in streams, related measurement techniques and the modelling of the solute transport.

Job description:

Understanding and quantifying the travel times and dispersion of solutes moving through stream environments, including the hyporheic zone and/or in-channel dead zones, remains a major challenge in catchment ecohydrology. The PhD candidate is expected to carry out experimental work in several catchments in Luxembourg and Austria (linked to the HOAL infrastructure - <http://www.wasserresources.at/index.php?id=123>). The field work relates to high-resolution data acquisition in several streams with different bed morphologies that influence flow patterns. In a next step, this data will be used by the PhD candidate to model hydrodynamic processes such as dispersion, transient storage, and chemical hold back by dead zones and hyporheic exchange at various flow rates. This information can be combined with the use of thermal infrared imagery for enhanced visualising of the cross channel mixing processes. This data will provide important information that links stream morphologies and flow rates to nutrient dynamics and degradation processes, which is also envisaged. Ultimately, the outcome of this research will contribute to the preservation of water quality in relation to the EU water framework directive.

Moreover, the candidate will be in charge of:

- *making a state-of-the-art analysis relative to the general objectives of the project and the elaboration of the working hypotheses,*

- *designing and implementing short- to long-term laboratory and field experiments in line with the formulated hypotheses,*
- *rigorously processing and analyzing collected data for publication in highly ranked international peer-reviewed journals.*

Eligibility:

- *No restrictions apply as to the nationality of the candidates*
- *Candidates may not have received a doctorate prior to their application to this position*
- *Candidates shall be available for starting their position no later than 1st May 2017*

Qualifications:

- *Master (or similar) degree in Hydrology, Ecohydrology, Environmental or Civil Engineering, and related disciplines*
- *Excellent English skills in speaking, listening, reading and writing*
- *Highly motivated to be part of an international DTU and to perform high quality research in Ecohydrology*
- *Interest in in-stream processes and data acquisition technologies, basic skills in programming (R, Matlab, or similar), ability to carry out field work*
- *Class B driving license*

Place of employment and main place of work:

- ***Primary supervisor at degree awarding institution TU Vienna: Prof. Dr. G. Blöschl***
- ***Primary supervisor (at LIST): Dr. L. Pfister***
- ***Co-supervisors (at LIST): Dr. J. Klaus, Dr. C. Hissler***
- ***Primary work location: Luxembourg Institute of Science and Technology (LIST)***
- ***Duration and location of secondment/s: Regular stays at the TU Vienna will be mandatory (up to 50% of the total duration of the PhD project)***

Application procedure:

The application can be submitted via LIST's job portal: <http://www.list.lu/en/jobs/>. If there are any questions regarding the procedure please contact our HR office (jobs.list.lu). The application must include:

- *A motivation letter oriented towards the preferred position and experience*
- *A current CV, which includes full contact details*
- *Two reference letters or full contact details of the two referees*
- *A copy of master (or similar) degree that allows for the enrolment on a doctorate degree*

Applications will be reviewed until all positions are filled, with the final date of submission being 31st October 2016. An assessment committee will be appointed to review the applications and candidates selected based on Network-wide guidelines, which aim to ensure equal opportunities. Shortlisted candidates will be invited to interview either in person or by Skype.

The main criterion for selection will be the existing skills, knowledge and research career potential of the applicant, match with the project, and fulfilment of the above mentioned qualifications. Candidates from all backgrounds are encouraged to apply.

The LIST is committed with equality of opportunities and gender balance.

All open positions are published and recruitment is performed according to international best practices. All PhD candidates are joining LIST under an employment contract for the full duration of their PhD project.

The HYDRO-CSI DTU subscribes to the principles of research integrity within the framework of the FNR funding scheme (FNR Research Integrity Guidelines). These rules rely on the European Code of Conduct for Research Integrity, the Singapore Statement on Research Integrity and the Montreal Statement on Research Integrity.

PhD candidate mobility will consist in secondments to partner universities, as well as private companies in case of potential for collaboration on applied aspects, technological developments or business opportunities (e.g. in the framework of a Private Public Partnership).