Eawag, the Swiss Federal Institute of Aquatic Science and Technology, is a Swiss-based and internationally networked aquatic research institute within the ETH domain (Swiss Federal Institutes of Technology). It is committed to the ecologically, economically and socially responsible management of water resources and aquatic ecosystems.

The Department of Process Engineering (Eng) has a vacancy for a

PhD Position on aerobic granules applied for the treatment of municipal wastewater

The offered PhD position is part of a joint research project funded by the Swiss National Science Foundation and is a collaboration between EPFL (Prof. Holliger) and Eawag (Prof. Morgenroth, Dr. Derlon). The project aims at better understanding the mechanisms of aerobic granule formation during the treatment of municipal wastewater.

Project summary: Aerobic granular sludge (AGS)-based wastewater treatment is a prom-ising alternative to activated sludge systems. Extensive research with synthetic wastewater containing mainly acetate or propionate has advanced our understanding of AGS systems concerning granule formation, reactor start-up, etc. It provided an excellent basis for the development of conceptual and mathematical models. But the application of AGS for the treatment of municipal wastewaters is still limited. Preliminary research with real domestic wastewater indeed indicated that the knowledge obtained with synthetic wastewater cannot be directly transferred to wastewater with a complex composition of organic matter contain-ing a multitude of compounds in dissolved or particulate form. The presence of organic substrates in the particulate form will influence the physical and microbial structures of the AGS, and in turn the operation of the reactors. The main objective of this PhD work is there-fore **to better understand the influence of the presence of particulate organic sub-strates in the wastewater on the physical and microbial structures of the aerobic granules**. Experiments at laboratory- (10L or 200L) and full-scale (8 m3) will be conducted. Synthetic wastewaters with different compositions (with or without particulate substrates) or real municipal wastewaters will be used for the cultivation of the aerobic granules. Charac-terisations of the physical (density, sludge volume index, morphology, mass fractions, etc.) and microbial (DNA sequencing, FISH, etc) structures of the AGS will be performed and linked to the operating conditions. The PhD student at Eawag is expected to work closely with two PhD students working with Prof. Holliger at EPFL who will focus on the microbial ecology and exopolymeric substances of AGS.

We are looking for an independent and motivated student with a broad background and interest in water treatment, microbiology, and engineering applications. The candidates should hold an MS degree in Environmental Engineering, Microbiology, Environmental Sciences, Civil Engineering, or similar.

The position is available in the Process Engineering department of Eawag in Dübendorf (as soon as possible). The duration of the PhD program at ETH-Zürich is generally three years. For further information on the Process Engineering department, please visit the following website: http://www.eawag.ch/en/department/eng/. For specific information please contact Nicolas Derlon: nicolas.derlon@eawag.ch.

Applications are reviewed until the position is filled. Applications should include a cover letter describing the applicant's motivation for pursuing a PhD, a complete resume, and contact information for three references. Copies of prior publications or theses will also be considered if made available as PDF.

We look forward to receiving your application through this webpage, any other way of ap-plying will not be considered. Please click on the button below, this will take you directly to the application form.

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