

Assignment internship Environmental Engineering

Living Lab Biobased Brazil

The Living Lab Biobased Brazil is a transnational Living Lab in the field of Biobased Economy, created in 2014 by a consortium of Dutch Universities of Applied Sciences in collaboration with several Brazilian universities. The Living Lab helps students with internships and graduation projects in Brazil with the focus on Biobased Economy. We also help students finding accommodation, and offer buddy support, Portuguese classes, a bye-bye meeting and an introduction weekend in Brazil

In return the Living Lab expects you contribute to the Living Lab blog. You have to blog about your personal and internship experiences during your stay in Brazil. We also expect you to participate in the mini symposium at the end of each semester.

These events help you to increase your personal network and is focused on your personal development!

Company information

The Universidade Federal de Minas Gerais (UFMG) offers public education to 35,000 students on the two main campus areas and several off-side units, all found in the city of Belo Horizonte. In total the university offers 76 undergraduate, 72 master and 62 PhD programs. Its programs covers all main education areas: social-, human- and basic sciences, among others.

For more information please see the promotional YouTube video:

<https://www.youtube.com/watch?v=fd-fdOe4Szw>

Research project

Life cycle assessment (LCA) of different oxidation processes applied on the treatment of water and wastewater.

General background

Advanced Oxidation Processes (AOPs) have currently been studied and proposed for the treatment of recalcitrant pollutants in chemical industries and wastewater treatment plants. These processes consist of the addition of chemical reagents (H_2O_2 , Fe salts, O_3 , photo-catalysts, TiO_2 , etc.) to wastewater for the generation of oxidative radicals (O^\bullet , HO^\bullet , etc). These radicals will react with compounds present in wastewater. Under ideal conditions, this will lead to complete mineralization of pollutants to CO_2 and H_2O , and toxicity removal. For some of these processes, irradiation (artificial lamp or solar light) is used to enhance radical formation, thus making the treatment more efficient. During this project, the student will perform a Life Cycle Assessment (LCA) of different AOPs that may be applied to specific water/wastewaters using the software Gabi®. This research is important, because it may help deciding which AOP is the best to apply in each situation.

Goal of internship

Perform an LCA of each of the AOPs applied to an specific water/wastewater which has been studied by GruPOA.



Activities

The intern will be part of GruPOA, the research group on advanced oxidation processes which is led by Prof. Camila Costa de Amorim. The research group is part of the Departamento de Engenharia Sanitária e Ambiental (DESA). GruPOA is involved in research of advanced treatment oxidation processes for water and wastewater treatment and environmental impact assessment studies. Prof. Camila Amorim has supervised studies for the treatment of various hazardous pollutants in water and industrial wastewaters through the application of different AOPs.

The project involves:

- Literature review about LCA on AOPs;
- Inventory of each AOP to be evaluated in the LCA;
- Use of the Gabi Software to evaluate each AOP;
- Participation in group meetings.
- Interpretation of results and writing an article with the support of GruPOA and AVANS University.

Final product

The student will write a report that contains an overview of all activities and findings.

Starting date

September 2017. The length of the assignment is approximately 5 months (20 weeks).

The intern will be part of a research team lead by the adviser and supervised by professor and possible PhD-students.

Desirable skills/qualities of the student

Good knowledge of the English (and preferably Portuguese) language is required.

Information of the company:

Contact person concerning this assignment	: Erik Lammers
Phone	: +316 101 83 092
E-mail	: ekf.lammers@avans.nl
Visiting address	: Centre of Expertise Biobased Economy
Street / number, areal code and place	: Lovendijkstraat 63, Breda
Postal address	: 4800 RA
Website	: www.biobasedbrazil.org
Year of foundation	: -
Number of employers	: -
Access by public transport:	: Good

Interested?

Please send your CV and motivation letter to Erik Lammers (Project leader Living Lab Biobased Brazil). For further questions you can contact: +316 101 83 092 or ekf.lammers@avans.nl.