



Assignment internship Chemical Engineering student

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 and the Netherlands with the focus on Biobased Economy. We also help students finding accommodation, and offer buddy support, Portuguese/Dutch classes, a bye-bye meeting and an introduction weekend in Brazil or the Netherlands.

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 the Netherlands. 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! For more information please see: <http://www.biobasedbrazil.org/>

University information

Avans University of Applied Sciences was founded on 1 January 2004 following a merger of Hogeschool Brabant and Hogeschool 's-Hertogenbosch. At Avans University of Applied Sciences, around 29,000 students study 54 different courses. 2,400 employees work at 20 schools, 4 support units and 1 Learning and Innovation Centre.

Students, lecturers, professors and education professionals together form a lively network within our educational institution. Knowledge and competency development is the driving force and the connecting factor behind this.

Our varied and modern learning environment enables each student to develop his or her skills and ambitions to their maximum potential.

Our inspiring lecturers are experts in their fields and have a thorough knowledge of learning processes, enabling them to challenge students to push their boundaries and excel. The schools have structured their curricula, teaching and examinations based on our educational vision. We collaborate with a wide range of companies, professions and organizations as part of its teaching and research activities.

For more information please see the promotional YouTube video <https://www.youtube.com/watch?v=5nsPBIE04Q4> :

Research project

Biodiesel production via oil transesterification. Modeling of novel heterogeneous catalyst step using Aspen plus.



Introduction

The use of biofuels instead of fossil fuels as a way to reduce the environmental impact of transport activities is one of the key-areas to reach the worldwide environmental targets. Even though, biodiesel production from 1st generation biomass is a proven technology that is being used in some extent, there are concerns about the change in land use due to the increased demand for soy bean, palm oil, and rapeseed. Moreover, the profitability of the process can be improved by using innovative heterogeneous catalyst to process non-edible vegetable oils and residual oil streams.

Goal of internship

The main purpose of this study is to simulate a catalytic pretreatment step to reduce the amount of free fatty acids (FFA) in the residual oil stream to less than 5%. The software Aspen Plus will be used.

- a) Search toxicological properties of the substances involved in route selected for investigation.
- b) Search kinetic reactions involved in the process.
- c) Search reaction conditions and catalysts for the route chosen.
- d) Study of chemical equilibrium for the reactions involved.
- e) Study of the reaction system, reaction conditions to be developed.
- f) Study of the separation system for currents out of the system.
- g) Process Simulation.

Final product

The student will write a report that contains an overview of all activities and findings. The student will give a final presentation of the results at the research group BBE from Avans University of Applied Sciences.

Starting date

September 2016. The length of the assignment is approximately 5 months (20 weeks). The student who will execute the assignment get a fee of €550,- per month.

The intern will be part of a research team lead by the adviser and supervised by a professors of the Biobased energy group. For more information please see: <https://www.coebbe.nl/>

Desirable skills/qualities of the student

Good knowledge of the English language is required. The background of the student is chemical engineering at undergraduate, graduate or PhD level.

Interested?

Please contact the following person of your home university:

Brazilian University

UFMG
UFV
PUC Minas

Contact person

Daniel Rotsen
Prof. Vladimir Oliveira Di Iorio
Prof. Laura Hamdan de Andrade

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