

VACANCY PhD researcher

Context

In the WATCH project, funded by the Flanders, four research groups from Ghent University, KULeuven University and Vito, will pool their scientific infrastructure and expertise together to improve chemical understanding of plastic waste conversion for the production of key chemicals such as short olefins, waxes, aromatics, styrene and diols.

The aim is to develop, demonstrate and compare three technologies for the conversion of plastic waste to liquid energy carriers and chemicals via (catalytic) pyrolysis. The first and second technology comprise a conventional fluidized or spouted bed reactor, whereas the third technology involves a new, disruptive reactor concept making use of rotating beds.

In the integrated approach of the problem, besides kinetic modeling and reactor engineering, focus will be given on the optimal feedstock selection to optimize individual yields of desired product(s) depending on the feed (thermosetting versus thermo-softening polymer). Plastic waste feeds of choice will be those streams that are currently not (mechanically) recycled but incinerated and/or dumped to landfill: mixed PE/PP/PS, multilayer packaging, waste PS, and polyurethane flexible and rigid foam.

Next to the development of the reactor technologies, efforts will be made on the further catalytic upgrade of pyrolysis oil fraction, purification and separation of valuable compounds by advanced membrane separation processes, possibly in combination with liquid-liquid extraction. Ideally process intensification makes it possible to construct a plant on truck. A life cycle analysis (LCA) will be conducted to assess both technologies and downstream processing in function of sustainable process design.

The PhD vacancy fits into the role of one of the research groups of the Centre for Sustainable Chemistry of Ghent University (<https://www.ugent.be/csc/en/members>) in the project: the Sustainable Systems Engineering group (STEN, <https://www.ugent.be/bw/gct/en/research/envoc/research2>), lead by Prof. Jo Dewulf. The main role is to work on feedstock screening, even more important is the work on Process optimization in function of sustainable process design.

Profile of the candidate

- You have a MSc in (Chemical or Environmental) Engineering or equivalent, or you obtain the degree by mid 2019.
- You are familiar with or have interest in life cycle and sustainability assessment methods.
- You are familiar with chemical processes.
- You are fluent in English.
- You are science-driven, sustainability-driven, quality-oriented, conscientious, creative and cooperative.
- You have the ambition to obtain a PhD degree.

Job offer

A fulltime (100%) PhD position at Ghent University for a period of 48 months is available.

The start date of the position is foreseen second half 2019.

A competitive salary will be offered according to the salary scales of the institution. The project offers access to a unique network of research institutes and industry.

How to apply?

Please send your CV and a motivation letter to jo.dewulf@ugent.be until **June 10th, 2019**.

A pre-selection will be made from the submitted applications. Pre-selected candidates will be interviewed June 2019.

For more information, please contact Prof. Jo Dewulf (Jo.Dewulf@ugent.be) or Dr. Stijn De Keukeleire (Stijn.Dekeukeleire@UGent.be).