

## Plastic Organic Chemistry Research

### Internship or graduation assignment description

Recovery of oil and gas from mixed plastics is a complex process from pyrolysis due to the heterogeneous nature of the plastic composition. It is almost impossible to determine the exact composition of pyrolysis oils, and laboratory testing gives an approximation of the overall makeup of the oil by functional groups and hydrocarbon chain length. Therefore, it would be the role of the intern to research how to best approximate the properties of the oil for recovery and reuse in the system and create a functional database of the plastics to determine key parameters for process units.

In summary, Waste4ME is looking for someone with a knowledge of chemistry (specifically organic), and especially that of polymers and its related studies. You will be researching way to characterise plastic polymers and compounds in way that simplify a complex problem into a relative simplified model. Further, we would be looking for someone that is good with data analysis, and modelling in order to build a database of test data from plastic pyrolysis tests.

### Internship tasks:

- Create a database of DKR350 components in CHEMSEP or similar program in order to predict parameters of oil and gas
- Method to verify theoretical splits of program, via laboratory testing (e.g., distillation of oil from plastic)
- Research approximations that can be made for pyrolysis oil and gas components in determining latent heat, heat capacity, etc.
- Look at material properties of heavy components C10+, how are these best removed from systems (temperature, pressure, phase, etc.)
- Set up testing method for distillation of pyrolysis oil for validation of theoretical model
- Assist with ongoing dechlorination research and development, with specifics to how chlorine interacts with organic and non-organic compounds

### About Waste4ME BV

The company Waste4ME positions itself at the intersection of different industries. Waste4ME is pioneering the plastic recycling industry by giving previously incinerated plastic waste a second life. Our company turns a global environmental problem into low-carbon products and valuable petrochemical products. Our solution also allows implementing sustainable waste disposal techniques and bridge intermittent energy supply in remote locations. WER unit (waste reducer energy generator) is a mobile waste management tool based on pyrolysis technology. It is designed for tackling waste, where recycling is not feasible and where waste disposal is an issue. Thanks to its mobile nature, WER allows to avoid transport costs, electricity cost, gas boiler cost and gas for a boiler.

### Working at Waste4ME

As you gain knowledge and experience in different sectors you can grow within the company. Our team mentality is straightforward and product oriented. You have the freedom to plan your work and set your own milestones in line with the company goals. Additionally, if you want to suggest a different topic and you think you can add value: make a proposal including milestones and catch our attention. We are a growing company and are looking for people with ideas and the mentality to execute selected ideas.

### Position requirements

For the position are we looking for the following background:

- HBO level or equivalent educational background/experience in a relevant field
- Good math skills
- Ability to work with many variables at once
- Interest for understanding the organization's objectives
- Working in English

### Good to have

For the practical execution of the work and filling in with the team do we have additional wishes that can give you a higher probability of being selected.

- Knowledge about chemistry or waste industry
- Familiar with topics related to the petrochemical industry and renewable energies
- Has heard about the pyrolysis technology

### Reimbursement

Reimbursement is € 400 per month (excluding expenses) depending on candidate's qualifications.

### Working Hours

40 hours per week (Negotiable)

### Contact

If you are interested, send your application with cv and motivation or even better with your first idea how to approach to Valentin Contin on [v.contin@waste4me.com](mailto:v.contin@waste4me.com) or by phone on 0614321871.