



“ I wish we will be able to evaluate the feasibility of a membrane reactor for any gas phase reaction and propose a handy tool to help with the design of such a reactor. ”

Hi, Alex ! Can you please tell us a little bit about yourself ?

I graduated in mechanical engineering at RWTH Aachen University in September 2016 with a specialization in chemical engineering and computational fluid dynamics. Having investigated fluid flow and mass transfer in hollow fiber membrane modules, ROME appeared to be a rather fitting project. Beside fluid flow, the model has to further account for reaction and possibly heat transfer.

I enjoy the work environment at AVT, with many research assistants working on countless projects with great motivation. AVT, Aachener Verfahrenstechnik, means Aachen Chemical Engineering and combines 7 chairs of RWTH working on different topics. I am working with chemical process engineering, which focuses on the development and application of membrane technology.

The PhD I am undertaking within the ROME project since last November is more specifically about modelling mass and heat transfer in membrane reactors.

What does your daily job look like, as a research assistant?

It is hard to define one standard day because the most part of it consists in dealing with challenges that come up on the way and that you didn't see coming.

For instance, the implementation of the energy balance in the model looks easy on paper with the basic conservation equations. But if you implement it in the model, you might face problems with convergence and you will have to go on a hunt for the reason which might just be a certain value approaching zero or a mis-

take in your code. It can be exciting and it can be frustrating as well. But if you come up with a solution at the end it is very stimulating.

So my job is more a day by day job, working with students, who help me with the model and also Morten Logemann with the membrane coating.

How do you collaborate with Morten, who is working at the RWTH Aachen University on the membrane development?

Morten and I are not working in the same WP of ROMEO but in Aachen we have a really close collaboration, working in the same office. I think it is very important to keep a global vision of the project activities.

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For example, about the water gas shift reaction, we had to adapt our approach because we saw that we will not be able to produce a membrane selective enough for a hydrogen separation. Now we have adapted the water gas shift reaction, so we will try to find a CO₂ selective membrane. It will be important for the modeling as well, not only for the membrane coating or process development. So, it is important that we, in RWTH, are cooperating together but also with the other partners of the project.

What excites you in ROMEO?

The project is a very interdisciplinary project. We have to coordinate a lot with other partners. The aim is to design not only a functional membrane reactor for several selected

large-scale industrial applications, but also a methodology to evaluate the feasibility of this technology for any other given reaction/separation problem is very ambitious.

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Developing a model is quite demanding because we are aiming for a very general model to be applied to a lot of possible reactions. So it's not just another application.

I like that it is demanding. By that way you can push yourself to achieve something you wouldn't have thought you could! It may prove to be a hard task to fulfill until the very end, but I am sure that with this ambition, we will also have achieved quite more than we expected in the beginning.

What is your objective is the frame of the project? Could you give us a concrete example of a benefit that could be obtained thanks to ROMEO?

Within the methodology development, we aim to develop a model that shall be a helpful tool for a broad range of applications.

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I wish we will be able to evaluate the feasibility of a membrane reactor for any gas phase reaction and propose a handy tool to help with the design of such a reactor.

I know that you are attending ROMEO's progress meeting in Madrid next November. What are your expectations?

We already have regular telephone conferences, which are nice to get everybody heard. But with everybody on the phone it is sometimes hard if you have questions for someone in particular.

I hope this meeting will give chances to coordinate stuff like that, as already done during the previous projects meetings. We will also have a lot more time to discuss and get to know each

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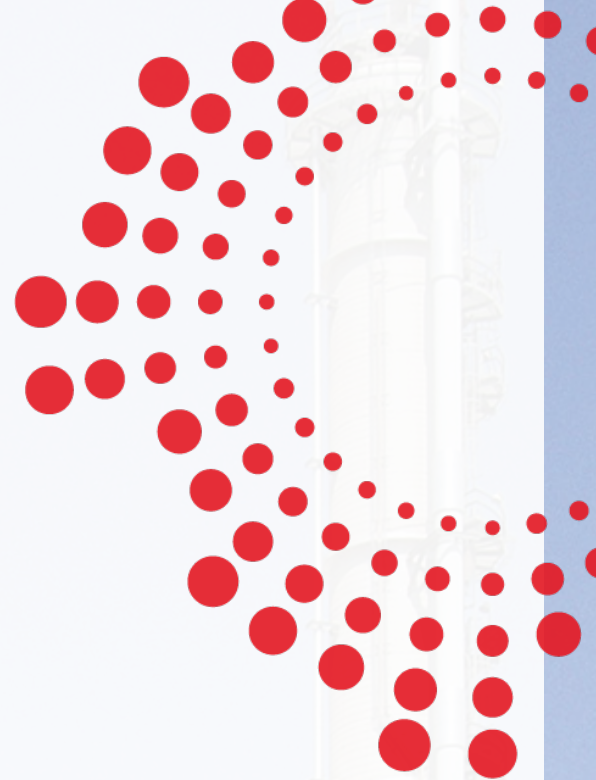
RWTH Aachen University (Chair of Chemical Engineering - AVT.CVT), has extensive experience in the development of membrane integrated processes.

RWTH is responsible for the development of the architecture of the membrane reactor in the ROMEO project and will also model the membrane reactor.

<http://www.avt.rwth-aachen.de/>



Date of interview : June 2017
Publication : August 2017



ROMEEO in brief

Funded by European Commission
(Horizon 2020)

Start date:
14 September 2015

End date:
13 September 2019

Budget:
6 Million €

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H2020-EU.2.1.5
Project Reference: 680395