

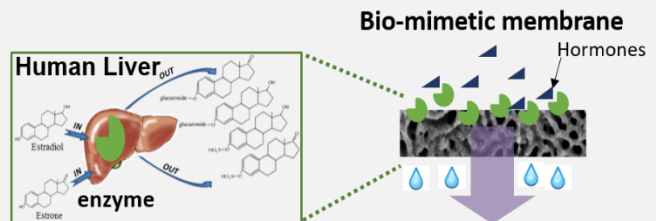
Project

This PhD topic relates with an ongoing project in the area of biocatalytic membrane reactors for the removal of micropollutants in water filtration.

The aim of the project is to investigate the application of a nanobiocatalyst compartmentalized in different membranes in sandwich and nanofiber composite configuration for removal of steroid hormones micropollutants in a continuous flow reactor.

The process is investigated at common operational and water quality parameters as well as micropollutants at nanogram per litre concentration range.

The three main research questions of the project are:



- ◆ Which compartmentalization (entrapment into nanofiber or sandwich configuration) enhances enzyme loading and contact between micropollutant and nanobiocatalyst?
- ◆ What are the limiting factors (e.g. process parameters, nanobiocatalyst size or membrane pore size) of the micropollutants degradation by the nanobiocatalyst compartmentalized in the membrane?
- ◆ What is the degradation efficiency of the biocatalytic membrane in sandwich or nanofiber composite configuration when operated in a continuous flow reactor?

PhD candidates will prepare their own proposal on one or several aspects in the topic area and will have the opportunity to supervise master students, giving oral presentations at conferences, writing high-impact journal articles, as well as sharing your knowledge via (a minimal amount of) teaching. Career development through many team activities is an opportunity to attain leadership skills and prepare for exciting professional opportunities in industry or academia. The preliminary research proposal required for application (with a timetable for the three- to four-year research project) will be further expanded to four main experimental chapters. Execution of the research plan through conducting of experiments, sample and data analysis and write up of results for scientific publication are part of the PhD process – a journey to become an independent researcher!

Qualifications

You will most likely already hold a Masters in Chemical, Process, Bio-Engineering, or equivalent. You are a naturally curious person who is eager to learn more and has a strong interest in research. Experience with membrane filtration systems (of any scale) and biocatalysis is a definite advantage, as well as being comfortable in specifying system components and sound experimental problem solving skills – as well a good common sense. Excellent English language proficiency is essential, basic German language skills of advantage.

KIT

KIT is one of the biggest research institutions worldwide and has access to state-of-the art research facilities resulting from the merger of the National Research Centre of the Helmholtz Association and the former Technical University of Karlsruhe. This project is hosted by the Institute for Advanced Membrane Technology (IAMT). The PhD will be registered in the Faculty of Chemical and Process Engineering.

Contact

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Applications

Please send applications with CV, publication list and your contribution to the publication (if relevant), academic transcripts, degree certificates, contact details for three references and a preliminary research proposal. A valid driver's licence will be required.