# Masters Project

Project Summary	**Hydrogel biocatalytic membrane for water purification**
	Biocatalysis combined with membrane filtration is a growing research area in water treatment as the water contaminants can be degraded by the enzyme while filtrating water. The design of a biocatalytic membrane able to keep the enzymatic activity of the enzyme free in solution is still an ongoing challenge. In this case, the use of biocompatible hydrogel coating to encapsulate the enzyme within the membrane is a promising strategy to improve the stability of the enzyme and keep the enzymatic activity during filtration.

The aim of this project is to carry out a range of experiments to evaluate the enzymatic activity of the biocatalytic membrane, where the enzyme is entrapped in a hydrogel coating for the removal of micropollutants steroid hormones from water.

The following specific task will be performed as part of the project:

- Literature review on the topic (biocatalytic membranes with a focus on micropollutants removal; encapsulation of enzymes within hydrogel coatings, degradation mechanism of steroid hormones by the enzyme)

- Develop the hydrogel coating on the UF membrane and encapsulate the enzyme;

- Perform experiments with a dead end stirred cell to evaluate the enzymatic activity of the membrane and degradation of the hormones in filtration;

- Analyse experimental data and write/co-author a research publication (in English) if the provided results are promising

- Take part in group activities, oral presentation in group meeting and writing of reports
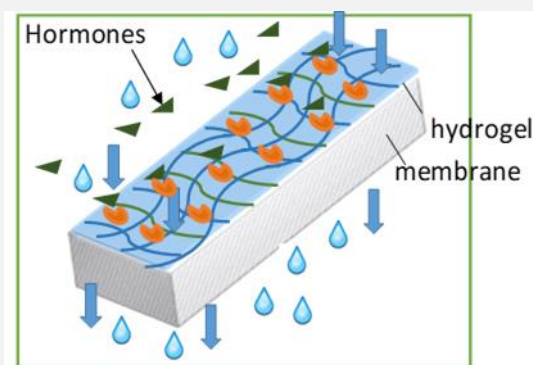
Required Skills	**Studies in Chemical/Process Engineering or equivalent (Uni, TH)**
	Basic knowledge in polymer chemistry, biocatalysis, membrane technology. Evidenced writing skills in English language, ability to use Excel and to learn/use Origin Labs software for data analysis and graphing, willingness to lead or contribute to the writing of a scientific publication.
Institute/ Department	Institute for Advanced Membrane Technology (IAMT)
	Bldg 352, Campus North, Hermann-von-Helmholtz-Platz 1, 76344 Eggenstein-Leopoldshafen
Start Date	Flexible/negotiable
Application Procedure	Please email CV, transcripts and motivation letter with available time period for evaluation.
Project Advisor(s)	Dr. Alessandra Imbrogno: alessandra.imbrogno@kit.edu
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