

## Diplomarbeit / Masters Project

### Project Summary:

### Characterization and testing of photocatalytic membranes for micropollutant degradation in water treatment

Photocatalysis research is currently a hot research topic [1]. The usage of light absorbing materials to enable chemical reactions has sparked the interests of scientists around the world, who are looking for more sustainable solutions. Photocatalysis for the removal of water contaminants is one of the most interesting and promising applications, because water treatment is a big societal challenge for current and future generations.

In this master thesis, the performance of a new generation of photocatalytic process – ‘photocatalytic membranes’ – are evaluated via the commonly-known methods of dye degradation, and then also applied together with advanced analytical techniques developed by the research group around Prof. Schäfer for micropollutants, or ‘endocrine disrupting chemicals’. In the latter case, real micropollutants are used in realistic concentrations (down to ng/L), to make a huge step towards relevant real-world applications.

The master project will be mostly experimental and will include the following specific tasks:

- Literature review on advanced oxidation processes, membrane photocatalysis and micropollutant removal
- Perform photocatalytic degradation of dyes and micropollutants
- Characterize the photocatalytic membranes with appropriate methods
- Analyse data and write/co-author a research publication (in English)

[1] <https://application.wiley-vch.de/util/hottopics/> (accessed 27/2/2018)

### Required Skills:

### Studies in Chemical/Process Engineering or equivalent (Uni, TH, FH)

Basic knowledge in lab work, catalysis, water treatment technologies, membrane technology. Evidenced writing skills in English language, proficiency with Origin Labs software for data analysis and graphing, willingness to lead or contribute to the writing of a scientific publication.

**Institute/Dept:** Membrane Technology Department, Institute for Functional Interfaces (IFG) in collaboration with the Institute for Microstructure Technology (IMT)

**Start Date:** Flexible/negotiable

**Application Procedure:** Please email CV, transcripts and motivation letter with available time period for evaluation.

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