

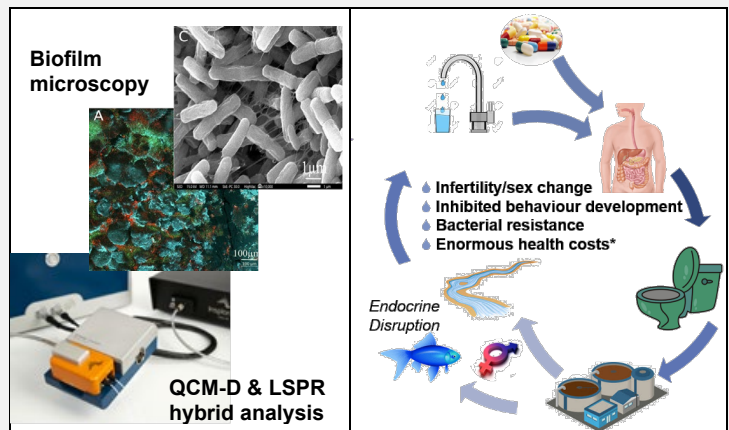
## Masters Project (6 months)

### Micropollutant – fouling interactions in nanofiltration

#### Project summary

This Masters project relates with ongoing research projects in the area of micropollutant removal by nanofiltration, in particular adsorption and breakthrough phenomena at IAMT as well as studying the interactions of micropollutants with microbial biofilms and adsorbed organic matter at ZIWR in BGU. Micropollutants such as steroid hormones are abundant in wastewaters and are only partially removed in water reuse. Micropollutants partition with organic and biological matter affects removal and transport in membrane processes.

The project will include i) establishment of organic- and bio-fouling in crossflow nanofiltration, ii) carry out micropollutant experiments with and without fouling and biofouling in the filtration process as well as in quartz crystal microbalance and localized surface plasmon resonance devices, iii) determine micropollutant concentrations and partitioning through mass balance (in the filtration and QCM-D&LSPR devices); and iv) participate in national and international field work in this German-Israel collaboration. Specific project tasks are;



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- ◆ Literature review on the topic (water reuse, nanofiltration, steroid hormone micropollutants, endocrine disruption, etc.)
- ◆ Determine micropollutant concentrations (ng/L) using (already established) analytical tools
- ◆ Perform membrane fouling characterization (scanning electron microscope, fractionation and deposited mass analysis) after fouling experiments to evaluate the partitioning.
- ◆ Analyze experimental data and write/co-author a joint research publication (in English).

#### Qualifications

The project is the final research project in a masters degree. The candidate will be studying for a Masters in Chemical, Process, Environmental Engineering, or equivalent and is a naturally curious person who is eager to learn more and has a strong interest in research. Basic knowledge in water chemistry, water treatment process, membrane technology are essential. Evidenced writing skills in English language, ability to learn/use Origin Labs software for data analysis and graphing and Endnote for literature management, willingness to lead or contribute to the writing of a scientific publication.

#### KIT/BGU

The project can be hosted by BGU or KIT-IAMT. Interested candidates will be considered for continuation in PhD at either institution. KIT is one of the biggest research institutions worldwide and has access to state-of-the-art research facilities as the research University of the Helmholtz Association.

BGU is a leading research university in the south of Israel. The Zuckerberg Institute of Water Research is the top interdisciplinary water research institute in Israel located in a unique desert environment that offers perfect field study opportunities for this project and access to first class and novel biofouling characterization tools.

#### Contact

**Prof. Dr.-Ing. Andrea I. Schäfer**, Institute for Advanced Membrane Technology (IAMT), +49(0)721 608 26906, [Andrea.Iris.Schaefer@kit.edu](mailto:Andrea.Iris.Schaefer@kit.edu), <https://www.iamt.kit.edu>.

**Prof. Moshe Herzberg**, Zuckerberg Institute of Water Research (ZIWR), +972 (0)50 2029608, [herzberg@bgu.ac.il](mailto:herzberg@bgu.ac.il), <https://scholar.google.com/citations?hl=en&user=nDdBDJQAAAAJ>

#### Applications

Please send applications with CV, publication list and your contribution to the publication (if relevant), academic transcripts, degree certificates, contact details for references to the above contact(s). A valid driver's licence will be required. Funding for a stay abroad can be requested through the BMBF Young Scientists Program.