

Diplomarbeit / Masters Project

Project Summary: Fluoride and Organic Matter Removal by Ultra- and Nanofiltration

In some tropical areas high levels of inorganic & organic carbon and fluoride co-exist. This poses an exciting treatment challenge for membrane technologies for both retention and fouling. Using natural waters from Tanzania, the retention of those naturally occurring contaminants will be examined in stirred cell systems. A range of analytical tools will be used to examine water quality before and after treatment, characterisation of organic matter, membrane surface characterisation. Data will be analysed and published in a peer reviewed journal which requires high scientific quality of results and analysis thereof. The key research question is to determine how organic matter influences the retention of fluoride by polymeric membranes on a mechanistic level.

The following tasks will be performed;

- Literature review on the topic
- Set-up of a stirred cell system with data acquisition & experimentation
- Calibration of relevant analytical tools
- Critical analysis and scientific write up of results

The project is embedded in a 1-2 year research project that has been carried out in Tanzania using solar powered nanofiltration and an opportunity may exist for interested candidates to apply their experience from this small scale project to pilot work in Tanzania in the future.

Qualifications: Studies in Natural/Environmental Sciences or Chemical/Process Engineering or equivalent (Uni, TH)

Interest and at least preliminary experience in water quality & analytical chemistry, water treatment and specifically membrane technology.

Hands on technical skills, ability to liaise with workshop personnel and laboratory technicians, strong motivation for research, resourcefulness, creative problem solving skills, common sense, communication and ability to interact in a multicultural team.

Willingness to lead or contribute to the writing of a scientific publication.

**Institute/
Department:** Institute for Functional Interfaces (IFG) / Faculty of Chemical Engineering and Process Engineering

c/o KIT Campus North

Start Date: Anytime / To be discussed

**Project Leader &
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