

PhD Position (Doktorarbeit)

Project This PhD project builds on extensive previous research and expertise from within a multidisciplinary research team that spans several continents. We are seeking to address the enormous challenge of there being over 600 million people in sub-Saharan Africa alone that have neither access to clean drinking water nor electricity, which dramatically limits both health and possibilities for human development. We are seeking to design, research, and develop photovoltaic-powered membrane filtration systems that are i) small-scale, ii) robust, iii) reliable, and iv) decentralised, which can ultimately be deployed in the remote areas of developing countries. There are many aspects of this project that require in-depth R&D, including:

- ◆ What are the simplest control strategies to ensure that maximum water quality and quantity are achieved?
- ◆ How can fluctuations in the availability of solar power be taken advantage of to reduce membrane fouling?
- ◆ What are the long-term effects of operating the system from a fluctuating and intermittent energy resource?

The PhD project will be largely experimental and will begin with an identification of a set of research questions based on detailed literature survey. Subsequently, development of a research plan and timetable for the 3 year research project, and set-up of required equipment and development of relevant analytical methods will follow. 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!

Throughout the project, there will be multiple opportunities for cooperation with internal and external partners, supervising bachelor and master students, giving oral presentations at conferences, writing high-impact journal articles, as well as sharing your knowledge via teaching.



Qualifications You will most likely already hold a Masters in Chemical, Process, Environmental 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) is a definite advantage, as well as being comfortable in specifying system components. 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 bridges Membrane Technology group at the Institute for Functional Interfaces (IFG) and the Nanophotonics for Energy group within the Institute of Microstructure Technology (IMT) and Light Technology Institute (LTI). The PhD will be registered in the Faculty of Chemical and Process Engineering.

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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.