

### Project

These postdoc projects expand from ongoing research projects in the area of renewable energy powered membrane processes, in particular solar powered hybrid ultra- and nanofiltration at IAMT. The removal of inorganic contaminants such as nitrate, arsenic, selenium, uranium and fluoride is a key priority. The projects explore aspects that range from system adaptation to fluctuations in solar energy that results in a non-steady state operation and variation in contaminant retention to dealing with concentrates by coupling with membrane distillation.

The research will include i) operation of novel continuous electro dialysis system with fluctuating energy, ii) examination of water contaminants in brackish water treatment, iii) design and construct a membrane distillation component for concentrate recovery, iv) resource mass balance, and v) organise and conduct national and international field work. Many aspects of this project require in-depth research and development, including;

- ◆ Feasibility studies on removal of contaminants in a solar powered electro dialysis and/or membrane distillation process
- ◆ Establishment of the most suitable energy management scenario in collaboration with the renewable energy colleagues at KIT-IMT
- ◆ Elucidate the dominant separation mechanisms such that both fundamental understanding and optimized process performance can be achieved in electro dialysis and membrane distillation

Throughout the project, there will be multiple opportunities for cooperation with internal and external partners. The choice of collaboration partners and field trip destinations is open. Significant experience in working with different African countries exists in the team, while mobile Landrover - Trailer units will enable working in geographically closer destinations.

Co-supervising PhD and supervising master students, giving oral presentations at conferences, writing high-impact journal articles, as well as sharing your knowledge via (a minimal amount of) teaching. Career development through many team activities is an opportunity to attain leadership skills and prepare for exciting professional opportunities in industry or academia.



### Qualifications

The ideal candidate will hold a PhD in Chemical, Process, Environmental, Materials Engineering, or equivalent and is a naturally curious 'can do' person, eager to learn more and has a strong interest in research. Experience with membrane filtration is a requirement and electro dialysis or membrane distillation systems (of any scale) a definite advantage. Further requirements are experience in specifying system components, sound experimental problem solving skills, trace ion/water analysis and a solid publication track record – as well a good common sense. Excellent English language proficiency is essential, basic German language skills of advantage. A valid driver's licence is required.

### 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 is hosted by the Institute for Advanced Membrane Technology (IAMT) that was founded in 2020 with new state-of-the-art laboratories.

### Position details

TvOD E13 100% for 3 years (**start date flexible and position open until filled**) or fellowships (e.g. Humboldt/Helmholtz/Marie Curie)

### Contact

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### Applications

Please send applications with cover letter addressing position requirements, 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 on the topic to the above contact(s). It is strongly advised to visit the IAMT website as well as read the numerous publications on the topic.