

Postdoc position

Solar-driven degradation of water-borne micropollutants via novel photocatalytic polymer membranes with active porphyrin surface layer (SOLEMBA)

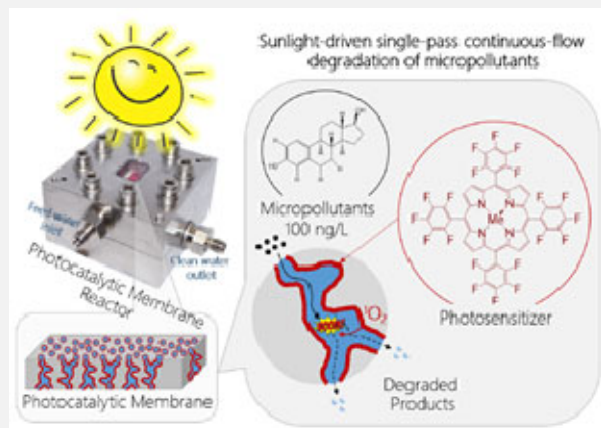
Project

This Postdoc position builds on ongoing research projects in the area of Photocatalytic Membrane Reactors (PMR) for the removal of micropollutants during water treatment and reuse. The main aim of this project is to fabricate a photocatalytic membranes and investigate these systematically using common operational and water quality parameters for the removal of steroid hormones in the nanogram per litre concentration range.

The research is carried out at IAMT in collaboration with KIT-IMT (Turshatov/Richards) where the membranes will be fabricated. Extensive opportunity for international collaboration and up-scale exists. The project is developed with the following objectives, i) design and set-up of an photocatalytic membrane filtration system, ii) develop a suitable membrane with good photocatalytic properties in collaboration with IMT, iii) study the effectiveness of membrane for the removal of micropollutants initially in synthetic and later in real waters.

This research will investigate the following research questions;

- ◆ What is the most suitable substrate for porphyrin coating in material and morphology?
- ◆ What limits the degradation efficiency in a flow through reactor?
- ◆ What are the mechanisms involved in micropollutant removal in PMRs?



Further, the postdoc will be responsible for process development and up-scale, setup and control of this membrane filtration system in the laboratory working with workshops and suppliers on such engineering tasks. At postdoctoral level the preparation of research proposals and publications, participation in team responsibilities and activities as well as the supervision of students is a key requirement. Management of the DFG funded project involves contributions to reports, budget control and participation in project meetings. Throughout the project, there will be additional opportunities for cooperation with internal and external partners, team events, as well as contributing to (a minimal amount of) teaching.

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 photocatalytic membrane systems (of any scale) a definite advantage. Further requirements are experience in specifying system components, sound experimental problem solving skills, micropollutant/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) and funded by DFG in collaboration with Dr Turshatov & Prof Bryce Richards at IMT. IAMT has a very strong focus on ongoing career development & leadership.

Position details

TvOD E13 100% for 3 years (start date from 1 June 2022 with some flexibility)

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.

Closing date: 31 July 2022