

Postdoctoral Research Associate (Fixed Term) - Synthetic Chemistry and Photocatalysis (x2)

Applications are invited for two Postdoctoral Research Associates (PDRA) to work in the Reisner group in the Department of Chemistry at the University of Cambridge, UK. Producing renewable solar fuel by Artificial Photosynthesis is recognised as a promising solution to the energy & environmental crisis, but there are critical roadblocks in technology development. We aim to tackle the challenge of solar-driven conversion of the greenhouse gas carbon dioxide into renewable fuels and chemicals with two interdisciplinary projects.

The first project is part of a Biotechnology and Biological Sciences Research Council (BBSRC) funded project on solar-driven reduction of CO₂ to chemicals with bacteria-nanoparticle hybrid systems. This collaborative project will be executed in collaboration with the groups of Prof Julea Butt (University of East Anglia) and Prof Lars Jeuken (University of Leeds). The aim of this project is to develop novel synthetic biology for light-driven CO₂ reduction by non-photosynthetic bacteria (*Shewanella oneidensis* MR-1). Proof-of-principle will be developed for whole-cell photoelectrocatalysts demonstrating bioreduction of CO₂ to carbon-based fuels and chemicals coupled to the selective oxidation of electron donors to value-added products. The bacteria will be tethered to synthetic light-harvesting nanoparticles, allowing proof-of-principle to be demonstrated in light-driven carbon capture. Developing bio-orthogonal chemistry to couple bespoke photocatalysts to the biological surfaces of bacteria and understanding the resulting semi-artificial interface for productive photocatalysis are core objectives of this project.

The second project is part of a European Union (FET OPEN) funded project on 'Soap Film based Artificial Photosynthesis'. This collaborative project will be executed with several laboratories in Europe (Uppsala, Leiden, Utrecht, Amsterdam, Trieste, Torino). The aim of this project is to convert CO₂ into fuel by developing a solar fuel production technology that exploits the surfactant self-assembly properties in soap films. We will develop an artificial photosynthetic membrane in form of a soap film with integrated synthetic light absorbers and catalysts for compartmentalised solar fuel synthesis. This project bridges three mutually exclusive disciplines of surfactant science, photocatalysis and fundamental science of water at the nanoscale, supported by microsystems engineering.

Applicants should have (or be about to obtain) a PhD in Chemistry or a closely related discipline. A strong background in synthetic chemistry, catalysis, mechanistic chemistry and photochemistry and the ability to coordinate activities as part of a larger interdisciplinary team are required for both positions. The applicant should also have experience in handling biological samples for the first position, whereas experience with surfactants and microfluidics is desirable for the second position.

Candidates are encouraged to think outside of her/his formal field of training to fit into a creative, collaborative and dynamic research environment. A strong record of research productivity, as reflected in a substantial publication record in journals of high impact as well as excellent communication, management and English writing skills will be required. The successful candidate will also be expected to help guiding undergraduate and postgraduate students.

More information about the Reisner group, including relevant publications, can be found at <http://www-reisner.ch.cam.ac.uk/>.

To apply online for this vacancy, please visit the Job Opportunities webpage of the University of Cambridge at the following link: <http://www.jobs.cam.ac.uk/job/19404/>
Here, click on the 'Apply' button at the bottom of the page. This will route you to the University's Web Recruitment System, where you will need to register an account (if you have not already) and log in before completing the online application form.

Please ensure that you upload your Curriculum Vitae (CV), a covering letter and include a publications list in the upload section of the online application. If you upload any additional documents that have not been requested, we will not be able to consider these as part of your application.

For queries relating to your application or the application process, please contact Inger Lomax via email on i1262@cam.ac.uk

Please quote reference MA17276 on your application and in any correspondence about this vacancy.

Closing date for applications: 12 December 2018

Fixed-term: The funds for these posts are available for 2 years in the first instance.

