Report on the BES-sponsored Workshop: "Biophotoelectrochemical Systems: Solar Energy Conversion and Fundamental Investigations"

The University of Cambridge and the Technical University of Munich co-organized the "Biophotoelectrochemical Systems: Solar Energy Conversion and Fundamental Investigations" workshop from March 29th to 31st, 2023, at the School of Divinity, St John's College, Cambridge. The organizing committee members were Jenny Zhang (University of Cambridge), Erwin Reisner (University of Cambridge), and Nicolas Plumeré (Technical University Munich).

The workshop featured 19 oral presentations from a diverse range of speakers, including renowned experts from the United States, Europe, and Asia. The interactive forum enabled the international biophotoelectrochemistry community to share lessons learned from whole cell and protein (photo)electrochemistry, provide feedback for both published and unpublished results, and map out how to push the field forward.

Further information on the detailed program can be found at: https://ebt.cs.tum.de/wp-content/uploads/sites/41/2023/03/Program-BioPEC-Workshop-2023-Cambridge.pdf

Topics included the latest developments in protein-film and biofilm photoelectrochemistry, semi-artificial photosynthesis, biophotovoltaics, biological production of solar fuels and chemicals, new materials and characterization tools, insights into degradation pathways, and engineering challenges. The presentations were followed by lively discussions, which were the main focus of the workshop.

After being postponed several times due to COVID travel restrictions, we were thrilled to meet physically with over 110 participants (33% students, 33% postdocs, 33% principle investigators, 1% other) including a generation of students eager to experience and contribute for the first time to the scientific exchange. The low registration fee of only £70 made it accessible to early career researchers, thanks to sponsorship funds.

Fifty participants presented posters in two sessions, with four sponsored poster prizes awarded. Chemical Science sponsored two early career researcher poster prizes, each receiving £100 RSC book vouchers:

- Imogen Robertson, Leiden University: “Developing Lipid-Functionalised Carbon Dots to Facilitate Transmembrane Electron Transfer”
- Kevin Beaver, University of Utah: “Nitric oxide as a signaling molecule for biofilm formation and dispersal in mediated electron transfer microbial electrochemical systems”.

MDPI Materials sponsored two poster prizes each receiving £250 in prize money to:

- Huijie Zhang, Leiden University, for her contribution: “Development of Multiheme Cytochromes and Carbon Dots Biohybrids for Solar Chemicals and Fuels Generation”.
- Yoshua Moore, Technical University of Munich, for his contribution: “Understanding Mass Transport at Individual and Connected Pores of 3D Electrodes to Access their Pore Size Distribution”.

We believe that the workshop was a resounding success, facilitating collaborations among international experts, and encouraging the integration of different biophotoelectrochemical approaches towards solving global energy problems. We hope to see this discussion forum become a regular event every two or three years and urge the biophotoelectrochemistry community to maintain this momentum.

We would like to express our gratitude to our sponsors and all participants who made this conference possible.