

Internship proposal for summer 2024 – UiO Energy and Environment

Green hydrogen from air

Supervisor: Prof. Sabrina Sartori

Number of available projects: 1

Preferred project period: Summer 2023

Outline of project work

In the frame of the low-carbon economy, green hydrogen produced by water splitting using solar power is one of the most promising energy carrier. There is, however, a geographic mismatch between renewable energy sources distribution and freshwater availability, where areas rich in renewable energy are commonly short in water supply for daily life, let alone electrolysis. To overcome this limitation, we are developing a novel solid state photoelectrochemical (PEC) cell able to directly produce hydrogen from the atmosphere. We would like you to analyze the performances of the device with us.

This work will be supervised by Prof. Sabrina Sartori, the PhD working on the project, and other members of the FAIR project.

The objective of the work for the summer student is to:

- Support the design and performance of the PEC device
- Perform photoelectrochemical and faradaic efficiency measurements in order to study the main limiting factors in terms of reaction kinetics, ionic transport phenomena etc.
- Test the device under realistic conditions of selected geographical areas, monitoring at the same time the solar conditions, and humidity levels

Students must be:

- Master students in Materials Science, Renewable Energy, Chemistry, Engineering, Physics. Outstanding Bachelor students can also be considered.
- Have some experimental experience in a chemistry/physics/engineering laboratory
- Interest in data collection and analysis

The application must include:

- A short motivation letter
- CV
- Transcripts from University