Electrochemical conversion of carbon dioxide

The increase in energy demand and the environmental impact of fossil fuels has created a scientific challenge to develop sustainable energy technologies. Electrochemical CO₂ conversion represents an attractive process to store renewable energy through the transformation of CO₂ into fuels and commodity chemicals. The electrochemical reduction of CO₂ is a complex process that involves multiple electron and proton transfers and can lead to a wide variety of products including CO, CH₃OH, HCOOH or hydrocarbons.

Projects

Our research group at HZB (Wannsee) focuses on addressing various challenges in electrochemical CO₂ conversion via development of new electrode materials, innovative cell designs, and powerful techniques for in situ spectroscopic study of electrochemical processes. We are presently looking for students to carry out research projects (2–4 months full-time) on topics including:

1. Understanding the influence of semiconducting (non-metallic) electrodes on electrochemical CO₂ reduction
2. Investigation of electrochemical conversion of sorbent-bound CO₂ obtained by direct air capture technologies
3. Synthesis and evaluation of metal-doped nitrides as catalysts for CO₂ electrochemical reduction

Requirements

- Enrollment in a Master’s or Bachelor’s study program in chemistry, chemical engineering, physics, materials science, or related field
- Skill in written and spoken communication in English
- Basic background in electrochemistry, semiconductors, CO₂ capture technologies, or related topic
- Ability to do full-time research in Summer or Autumn 2019 at HZB in Wannsee

About HZB

Helmholtz-Zentrum Berlin is an internationally renowned research center investigating the structure and dynamics of materials related to renewable energy technologies. It comprises two campuses, large-scale research facilities, and numerous research institutes.

The research group “Electrochemical Conversion of CO₂” is led by Dr. Matthew Mayer with laboratories at the HZB Wannsee campus.

Positions are available immediately; flexible start date. To apply, send your CV, a statement of your background and interest (which projects interest you most, and why?), and details of the study program in which you are enrolled, to:

Dr. Matthew Mayer
ee-necc-head@helmholtz-berlin.de
(030) 8062-43230
www.helmholtz-berlin.de/forschung/oe/ee/necc