



Bachelor / Master thesis

Investigation of novel catalysts for PEM water electrolysis

Field of Science

- ☐ Batteries
- ☒ Fuel Cells and Electrolysers
- ☒ Electrocatalysis

Focus

- ☒ Experimental
- ☒ Electrochemical characterisation
- ☒ Material analysis
- ☒ Development of setups
- ☐ Simulation
- ☒ Literature research

Studies

- ☒ Electrical Engineering
- ☒ Mechanical Engineering
- ☒ Chemical Engineering
- ☐ Physics
- ☒ Chemistry
- ☒ Industrial Engineering

Starting Date

directly / upon agreement

Contact person

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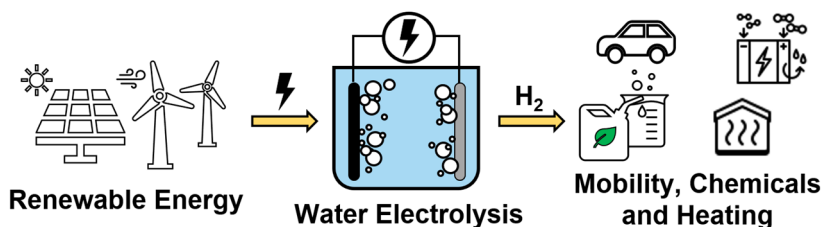
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Become part of the energy transition!

Polymer electrolyte membrane electrolysis (PEMWE) for the production of green hydrogen is of particular interest for the energy transition. At present, expensive and rare precious metal catalysts are used, which is why intensive research is being conducted into more efficient and cost-effective alternatives. As part of this student thesis, novel catalysts are to be tested for their suitability for PEMWE.

In the application, the catalysts are first deposited onto a membrane and then laminated with electrodes to form a membrane-electrode assembly (MEA). Within the scope of this work, such MEAs with novel catalysts will be fabricated and subsequently electrochemically characterized under realistic operating conditions on a laboratory scale. The aim is to evaluate the performance, long-term stability, and potential of these materials for use in PEM water electrolysis.



Tasks:

- Literature research on PEM electrolysis
- Optimizing a MEA manufacturing process suitable for laboratory use
- Electrochemical characterization of the manufactured membrane electrode assemblies with novel catalysts

About IAM-ET:

We offer excellent supervision, flexible working hours and the opportunity to work in an interdisciplinary team on a cutting-edge topic. The IAM-ET offers a constantly growing team with expertise in the field of battery, fuel cell and electrocatalysis research at Campus South. Independent work and the motivation to work on current research topics are required. For further information, please contact Mareike Sonder. If you are interested, please send a current CV and a transcript of records to mareike.sonder@kit.edu.