



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

Mareike Sonder, M.Sc.
Adenauerring 20b
Building 50.40
76131 Karlsruhe

Tel: +49 721 608-48935

E-

Mail: mareike.sonder@kit.edu

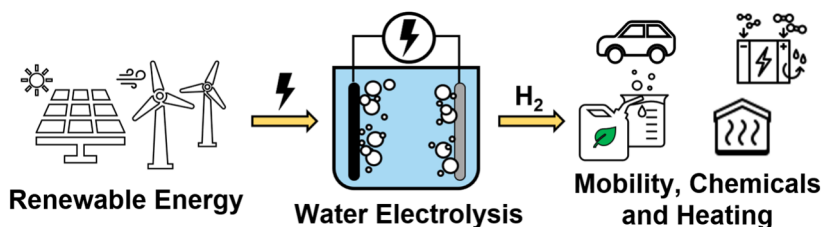
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Become part of the energy transition!

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 applied to a membrane and pressed together with electrodes to form a membrane electrode assembly (MEA). The performance of the MEA depends heavily on the type of coating, the drying and the pressing process. Therefore, the influences of the work steps will first be systematically investigated and the manufacturing process optimised.

Subsequently, the manufactured MEAs with the new catalysts will be characterised electrochemically under real operating conditions in order to evaluate the performance and potential of these materials in PEM water electrolysis.



Tasks:

- Literature research on PEM electrolysis
- Testing and optimizing a manufacturing process suitable for laboratory use, including coating, pressing and assembly
- Electrochemical characterization of the manufactured membrane electrode assemblies with novel catalysts

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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.