

AI-assisted Production of PGM-free electrodes for Anion Exchange Membrane Water Electrolysis

Suitable academic backgrounds: Chemical Engineering, Physics, Data Science, Mechanical Engineering, or similar disciplines.

This **doctoral thesis** uses artificial intelligence (AI) to develop **high-performance, low-cost electrodes** for anion exchange membrane water electrolysis (AEMWE), supporting the large-scale production of green hydrogen. Although AEMWE can employ sustainable, platinum group metal (PGM)-free catalysts, its adoption is currently hindered by low current densities and durability issues. By creating **AI-optimised, PGM-free catalyst-coated membrane electrodes**, the project enables rapid screening and improvement of catalysts, ionomers, and their combinations. The developed electrodes are evaluated in electrochemical cells to achieve higher efficiency and longer service life.

Your responsibilities are:

- **AI-supported development** of production processes for PGM-free electrodes
- Extending service life and improving performance of **electrodes** through material development
- Planning and conducting **experiments** to verify hypotheses
- Supervision of Master's and Bachelor's **students**
- Support for **administration**, teaching and research applications
- Publication of research findings in **scientific journals**

What we offer:

- **University** project assistant **position** (40 hours per week)
- Exciting work in an **emerging field** of research
- **Excellent lab infrastructure** and hands-on-experience in practical applications
- Start date: **March 2026**

