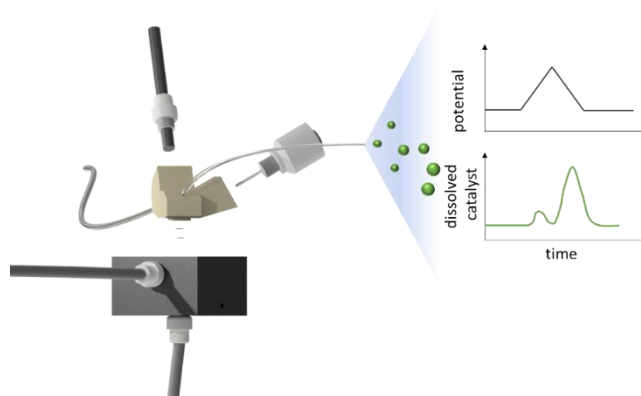


Development of Gas-Diffusion-Electrodes for Metal-Air-Batteries

As our society transitions from fossil fuels to a renewables-based energy economy, our reliance on electrochemical energy conversion and storage technologies is growing. Electrochemical hydrogen production via water electrolysis is suggested to buffer the intermittency of solar and wind energy production. On a smaller scale, energy can be stored in batteries. In this regard, metal-air batteries are gaining more attention – they are small, rechargeable, and not explosive compared to the commonly used lithium-ion batteries.

In this master thesis, you, with our help, will aim to improve catalysts in metal-air batteries using our unique gas-diffusion-electrode (GDE) cell coupled to inductively coupled plasma mass spectrometry (ICP-MS) setups. The focus is on investigating, understanding, and mitigating the catalyst's corrosion processes.



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The Challenge:

With our novel setup, you can imitate the electrochemistry of batteries and detect catalyst dissolution immediately – a huge advantage to understanding the mechanism within the catalyst layer. Your tasks will involve a literature review, development, and execution of a case study.

Who are we?



Electrochemical Energy Conversion group - <https://cherevkolab.com/> at the Electrocatalysis department - <https://www.hi-ern.de/en/research/electrocatalysis>

We aim to advance the understanding of the electrocatalytic reactions and material degradation processes in electrochemical energy conversion technologies. **Our goals** are to use this knowledge to design and develop novel advanced functional materials. In this, we rely on unique coupled techniques and high-throughput methods developed in the group. **Our research interests** span various problems at fundamental electrochemistry and electrochemical engineering interfaces. Current research topics include fuel cells, water electrolysis, photo-electrochemistry, and aqueous batteries.

Your profile: You have hands-on experience in chemical labs, can work independently, and have a problem-solving and a can-do attitude. Also, good English skills are required!

We offer:

- Outstanding work conditions in a lab with cutting-edge technology and young scientists in the green energy research sector
- Freedom to develop and implement your own ideas
- Home Office for the non-experimental parts

Are you interested?

Please send your CV and short cover letter about why you are interested in this position to i.reichmann@fz-juelich.de. We look forward to your application!