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| <input checked="" type="checkbox"/> Master's thesis   | <input checked="" type="checkbox"/> experimental |

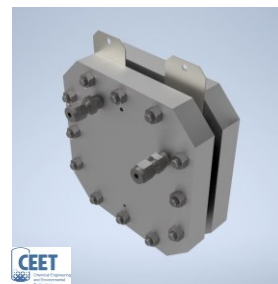
## Theoretical and Experimental Investigation of a PEM Water Electrolysis Cell

Hydrogen as an environmentally friendly energy carrier is attracting more and more interest as fuel suitable for low-emission power generation. Proton exchange membrane water electrolysis (PEMWE) is a highly efficient technology for the generation of renewable (green) hydrogen. The lifetime of this new technology is limited by the degradation of the materials used and the associated continuous deterioration of cell performance.

The aim of this thesis is to study the **component specific degradation** and to evaluate **their direct impact in long-term studies** of PEM water electrolysis.

### The student's tasks include:

- Theoretical prediction of the measurement outcomes
- Performance of cell measurements at varying operating conditions (temperature, current density, voltage)
- Development of a degradation model to study the material behaviour (e.g., corrosion)



3D model of a PEMWE single cell

In the Fuel Cell & Hydrogen Working Group at CEET, you can become part of a team of experienced researchers, PhD students with expertise in materials preparation, electrochemistry, and cell characterization, as well as other motivated master students. The research group has access to a fully equipped laboratory with the necessary infrastructure for the planned experimental work.

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