

Prototyping a spectrometer to measure near-surface thermo-chemistry in plasma catalyst

Motivation & Background

The distributed production of green ammonia through plasma catalysis is a promising pathway to achieve energy transition and industrial decarbonization. A key factor in advancing this technology is understanding the complex gas-plasma-surface interactions, which result in synergy effects that can enhance the process efficiency. Gaining insight into these interactions is essential to optimize catalyst performance and reactor conditions.

In-situ diagnostics play a crucial role in unraveling these processes by measuring the near-surface thermo-chemistry of the gas phase and enabling the identification of potential interaction mechanisms. Thus, advancement of quantitative non-intrusive optical diagnostics for plasma-catalyst surfaces is an urgent need. These diagnostics must be carefully designed and tested to ensure they capture quantitative data without disturbing the plasma-catalyst processes.

This project aims to develop a prototype spectrometer for near-surface gas-phase Raman/Rayleigh measurements in a plasma-catalytic reactor. Please feel free to reach out for more details!

Assignments

- Familiarization with the Raman/Rayleigh spectroscopy
- Design and implementation of the spectrometer
- Testing and experiments
- Evaluation of measurement data
- Presentation of the results

Focus Areas

Experiment

Konstruktion

Modellierung

Datenanalyse



Datum

20.1.2025

Start From

Now

Kontakt

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