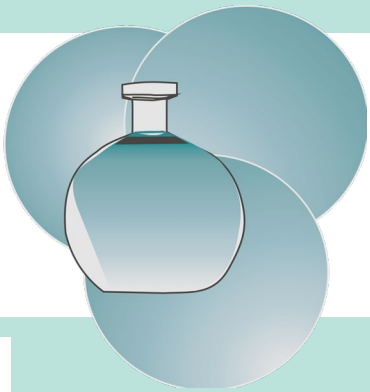
Fakultät für Naturwissenschaften

# Institut für Chemie



**lädt ein**

**gemeinsam mit der Gesellschaft Deutscher Chemiker zum**

GDCh
GESELLSCHAFT DEUTSCHER CHEMIKER

## Vortrag
**von Herrn**

## Prof. Florian Hausen

Institute of Energy Technologies – IET-1
**Forschungszentrum Jülich**
Institute of Physical Chemistry
**RWTH Aachen University**

# "In-situ Atomic Force Microscopy on Functional Layers in Batteries and Electrolyzers"

am: 08. Mai 2025

um: 16:00 Uhr

wo: im Raum 1/232

Gäste sind herzlich willkommen!

TECHNISCHE UNIVERSITÄT
IN DER KULTURHAUPTSTADT EUROPAS
CHEMNITZ

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# Institut für Chemie


## Prof. Florian Hausen

Institute of Energy Technologies – IET-1
**Forschungszentrum Jülich**
Institute of Physical Chemistry
**RWTH Aachen University**


## *In-situ* Atomic Force Microscopy on Functional Layers in Batteries and Electrolyzers


In-situ and in-operando atomic force microscopy are powerful tools to investigate the formation of functional layers in batteries and materials for energy conversion, such as fuel cells or electrolyzers. The solid electrolyte interface (SEI) formation as well as Li intercalation and deposition on silicon and metallic Lithium anode materials for lithium-ion batteries in conventional and ionic liquids have been elucidated by electrochemical atomic force microscopy. Various degrees of heterogeneity are found depending on the exact system under investigation. The valuable mechanical information obtained in addition to the morphology is critically discussed, as well as influences of the substrate and electrolyte.
Furthermore, electrochemical friction force microscopy is employed to investigate the initial degradation in epitaxially grown perovskite catalysts for the oxygen evolution reaction (OER). Friction is sensitive to chemical differences and thus reflects subtle chemical transformations as a function of applied potential. Fundamentals of the technique and first results with respect to dynamic electrocatalysis processes are reported.


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