

# Colloquium Thermo- and Fluid Dynamics

## Active Bubble Detachment for Electrolyzers

**Prof. Dr. Claus-Dieter Ohl**  
Otto von Guericke University Magdeburg  
Germany

The electrolysis of water is the fundamental process of green hydrogen production. The production rate of H<sub>2</sub> in electrolyzers is limited by the bubble coverage of the electrodes. Conventional electrolyzers utilize a shear flow to enhance the removal of bubbles that otherwise would only be detached by buoyancy upon reaching a sufficiently large radius. In this talk I present an active method for re-moving bubbles from electrodes, namely by vibrating the electrode surface. Upon resonant vibrations of the electrode surface, a rapid migration of the bubbles is observed that resembles Chladni-figures. The observations are explained with acoustic forces generated by the vibration of the plate. The open problem of transition of a pinned bubble to a hoovering bubble is approached experimentally with miniature electrodes on single bubbles growing and detaching.

If time allows I'll present some recent work from our lab on high-speed jetting of bubbles in liquids and near to layered soft material.

*Prof. Dieter Ohl has been a professor at Otto von Guericke University Magdeburg and head of the Soft Matter Chair at the Department of Physics since 2017.*

*The Soft Matter working group investigates a broad spectrum of issues related to fluids and soft solid.*



Image credit: CDO\_2020\_Duennhaupt

Date: Montag , 17 February 2025

Time: 16:15 - 17:15 h

Place: ETH Zurich, LEE E 101

Host: Prof. Outi Supponen