Monday, 25 August 2025

07:30 - 08:30 **Registration & Check-In**
KG1 Entrance Hall

08:30 - 10:00 **Opening Session**
Room 1010

Submission ID

Key Elements for the Development of the Future Energy System and the Role of Green Hydrogen 320
Prof. Dr. Hans-Martin Henning[1] [1]Fraunhofer Institute for Solar Energy Systems ISE

Welcome Note from the Ministry for the Environment, Climate and Energy Sector of Baden-Württemberg 321
LMR Bernd Reuter[1] [1]Ministry for the Environment, Climate and Energy Sector Germany

Insights into Hydrogen Activities of e-mobil BW 322
Dr. Volker Banhardt[1] [1]Senior Manager Industry Network / H2BW e-mobil BW GmbH

Trinational Hydrogen Initiative 3H2 - What Does it Take to Build a Hydrogen Infrastructure? 323
Dr.-Ing. Oliver Jochum[1] [1]Coordination Trinational Hydrogen Initiative $3H_2$ Klimapartner Südbaden e.V.

10:30 - 12:00 **AEL: Catalysts & Electrodes**
Room 1010

10:30 - 11:00 **Insights into the Impact of Iron Impurities on the Performance and Stability of Nickel-Based Electrodes in Liquid Alkaline Electrolysis** 18
Meital Shviro[1] [1]National Renewable Energy Laboratory

11:00 - 11:20 **Three-Tier Hierarchical Electrodes with Superior Bubble Removal for Alkaline Water Electrolysis** 197
Weihong LI[1] [1]city university of hong kong

11:20 - 11:40 **Ni-Mo nanoparticles supported on MoO2 as highly active electrocatalyst for hydrogen production in alkaline water electrolysis** 44
Anna Katharina Müller[1] [1]Fraunhofer Institute for Manufacturing Technology and Advanced Materials IFAM

11:40 - 12:00 **Raney Ni-Mo catalyst for alkaline water electrolysis: performance and durability** 102
Thu P. A. Phan[1] [1]Technical University of Denmark (DTU)

12:00 - 13:00 **Lunch Break**
Entrance Hall

13:00 - 14:50 **AEMEL: Components**
Room 1098

13:00 - 13:30 **Mass and Charge Transfer Limitations in Alkaline Water Electrolysis: Mathematical Modelling Study on the Type of Electrode Compartments Separators** 189
Karel Bouzek[1] [1]University of Chemistry and Technology, Prague

13:30 - 13:50 **Investigation of redox couples and additives as solid mediators in AEM electrolyser** 272
Clément Lesage[1] [1]CEA

13:50 - 14:10 **Nanostructured Porous Transport Layers via Helium Plasma Engineering for Enhanced Anion Exchange Membrane Water Electrolysis** 31
Mihalis Tsampas[1] [1]DIFFER

14:10 - 14:30 **Efficient Anion Exchange Membrane Water Electrolysis on Amorphous Spray-Pyrolyzed NiFe2O4** 69
Jan Witte[1] [1]Clausthal University of Technology, Institute of Chemical and Electrochemical Process Engineering

14:30 - 14:50 **The Origin of Degradation: Tracking AEMWE Performance via Cyclic Impedance Spectroscopy** 110
Matthias Ranz[1] [1]HyCentA Research GmbH, Austria

13:00 - 14:50 **PEMEL: Catalysts & Electrodes**
Room 1010

13:00 - 13:30 **Substrate effects on performance and durability of sALD coated anodes with ultra low iridium loading for proton exchange membrane water electrolysis** 198
Bas van Dijk[1] [1]TNO Energy and Materials Transition, STIP

13:30 - 13:50 **Three-Dimensionally Nanofabricated Ir Nanoarchitecture Electrode for Highly Efficient and Robust PEMWE** 212
Jong Min Kim[1] [1]Korea Institute of Science and Technology

13:50 - 14:10 **Highly Active and Durable Electrode with Low Iridium Loading in Proton Exchange Membrane Water Electrolysis** 277
Sambal shashank Ambu[1] [1]Universität Stuttgart

14:10 - 14:30 **Scaling PEM electrolyzer manufacturing with 20x less critical raw materials at lower costs** 173
Zahra Nasri[1, 2], Arne Birth[1, 2] [1]elementarhy GmbH, [2]Leibniz Institute of Plasma Science and Technology

14:30 - 14:50 **From nanoparticles, clusters and single sites - Highly dispersed Pt-entities on mesoporous carbon nanospheres for hydrogen evolution with high mass activity** 316
Anna Fischer[1] [1]University Freiburg

14:50 - 15:20 **Coffee Break**
Entrance Hall

15:20 - 16:50 **Poster Session I**
Prometheus Hall

16:50 - 18:30 **HTEL: Electrodes**
Room 1010

16:50 - 17:20 **Ultrasonic Spraying of Ceria based nano-catalysts for Highly efficient LSGM based Electrolysis Cells; with a Particular Focus on CO2 Electrolysis** 270
Tae Ho Shin[1] [1]korea Institute of Ceramic Engineering & Technology

17:20 - 17:40 **Novel steam electrode architectures for proton conducting ceramic electrolysis cell integrating electrospun fibers** 141
marie-laure fontaine[1] [1]SINTEF

17:40 - 18:00 **Long-term Dynamic and Stationary Steam Electrolysis Operation of a 30-Electrolyte Supported Solid Oxide Cell-based Stack** 153
Alessandro Micero[1] [1]European Institute for Energy Research (EIFER)

18:00 - 18:20 **Versatile recycling processes for solid oxide electrolysis cells** 238
Annie LE GAL LA SALLE[1] [1]Nantes Université, CNRS, Institut des Matériaux de Nantes Jean Rouxel, IMN

20:00 - 22:00 **Beer Garden Evening at Kastaniengarten**

Tuesday, 26 August 2025

08:00 - 08:30 **Welcome & Coffee**
Entrance Hall

08:30 - 10:00 **PEMEL: Durability**
Room 1010

08:30 - 09:00 **Understanding degradation mechanisms of Ir black-based catalysts for accelerated stress test development in proton-exchange membrane water electrolysis** Selina Finger[1, 2] 96
[1]Forschungszentrum Jülich GmbH, Helmholtz Institute Erlangen-Nürnberg for Renewable Energy (IET-2), [2]Department Chemical and Biological Engineering, Friedrich-Alexander-Universität Erlangen-Nürnberg

09:00 - 09:20 **Investigation on degradation phenomena of PEM electrolyzer operating at high current densities** Benjamin Kimmel[1] [1]Deutsches Zentrum für Luft- und Raumfahrt e.V. 180

09:20 - 09:40 **Fluorine-free PEMs: controlling membrane swelling as key to longterm stability and low gas crossover at high performance** Andreas Münchinger[1] [1]Hahn-Schickard-Gesellschaft für angewandte Forschung e.V. 208

09:40 - 10:00 **Microstructural Degradation Diagnostics for PEM Electrolysis: Identifying the Root Cause of Ohmic Losses after Stress Testing** Annik Bernhardt[1, 2] [1]Fraunhofer IMWS, [2]Martin-Luther-Universität 21

10:00 - 10:30 **Coffee Break**
Entrance Hall

10:30 - 12:00 **Alternative Approaches**
Room 1010

10:30 - 11:00 **Hybrid Water and Bromide Electrolysis to Produce Green Hydrogen and High-Value Products** Guilin Ruan[1] [1]Technion - Israel Institute of Technology 29

11:00 - 11:20 **Noble-Metal Free Bifunctional Catalysts for HER and OER for a Novel Rechargeable Galvanic Hydrogen Storage System** Merel Viola Rittel[1] [1]Technical University Berlin 4

11:20 - 11:40 **Optimizing Mesh Electrode Structure for a Novel Microfluidic Water Electrolysis Cell** Aleksandra Gladkova[1] [1]1Clausthal University of Technology EST 138

11:40 - 12:00 **Old but gold: Evaluation of gold as catalyst for low-CRM SO2 electrolysis** Lukas Roessler Escudero[1] [1]Institute of Chemical Engineering and Environmental Tecnology, TU Graz 243

12:00 - 13:00 **Lunch Break**
Entrance Hall

13:00 - 14:50 **HTEL: Stack & System**
Room 1098

13:00 - 13:30 **Steam Electrolysis with Electrolyte Supported Solid Oxide Cells Operated at High Current Density up to the 10,000 h Range: Performance and Degradation Analysis** aline leon[1] 154
[1]European Institute for Energy Research

13:30 - 13:50 **Pressurized Steam Electrolysis using Tubular Proton Ceramic Electrolysis Cells** Einar Vøllestad[1] [1]sintef 78

13:50 - 14:10 **Development of Solid Oxide Electrolysis technology towards industrial applications - scale-up & pressurized operations on cell and stack levels** Claire Ferchaud[1] [1]TNO 306

14:10 - 14:30 **Control strategies for integration of SOECs to satisfy grid integration requirements** Daniele Fortunati[1] [1]German Aerospace Center (DLR) 142

14:30 - 14:50 **Techno-economic analysis of proton conducting ceramic electrolysis** Sookyung Kang[1] 301
[1]fbk

13:00 - 14:50 **Machine Learning**
Room 1010

13:00 - 13:30 **When electrochemistry met AI: Examples in PEM water electrolysis** Violeta Karyofylli[1] 319
[1]Forschungszentrum Jülich GmbH

13:30 - 13:50 **Bubble Detection and Tracking in Electrolyzers using Deep Learning** Douwe Orij[1] 83
[1]Eindhoven University of Technology

13:50 - 14:10 **Data-Driven Design of Advanced AST Protocols for Reliable Lifetime Forecasting in Electrolyzers** Lukas Feierabend[1] [1]Zentrum für BrennstoffzellenTechnik GmbH 325

14:10 - 14:30 **Accelerating Electrocatalyst Development and Electrode Architecture Optimization for Advanced Alkaline Electrolysis** Christodoulos Chatzichristodoulou[1] [1]Technical University of Denmark, DTU Energy 165

14:30 - 14:50 **Advancing Degradation Modeling in PEM Water Electrolysis with Physics-Informed Machine Learning** Janis Woelke[1] [1]Institute of Electric Power Systems, Leibniz University Hannover 294

14:50 - 15:20 **Coffee Break & Mentoring**
Entrance Hall

15:20 - 16:50 **AEMEL: Mixed Topics**
Room 1010

15:20 - 15:50 **Effect of anode wettability on the performance of anion exchange membrane water electrolysis** Hiroshi Ito[1] [1]AIST 229

15:50 - 16:10 **Ionomer interphase layers enable efficient Anion Exchange Membrane (AEM) water electrolyzer operation at low pH** Thilo Reiter[1] [1]Technical University Berlin 265

16:10 - 16:30 **Magnetic Field and Pulsed Power strategies for AEM water electrolysis: Potential and challenges** 91
Anamika Ghosh[1] [1]Postdoctoral researcher at TU Delft

16:30 - 16:50 **Dynamic Operation of an Anion Exchange Membrane Electrolysis System Coupled with Fluctuating Energy Supply** 63
August Gladik[1] [1]Robert Bosch GmbH, Corporate Research

16:50 - 17:10 **Conference Group Photo!**
Just outside the entrance hall of KG1.

16:50 - 18:30 **Poster Session II & Drinks**
Prometheus Hall

Wednesday, 27 August 2025

08:00 - 08:30 **Welcome & Coffee**
Entrance Hall

08:30 - 10:00 **AEL: Bubble Management**
Room 1010

08:30 - 09:00 **Hysata's New Electrolyzer Technology. 'Green Hydrogen. Efficiency Wins'** Gerhard (Gerry) Swiegers[1] [1]University of Wollongong, Australia 231

09:00 - 09:20 **Hydrogen Bubble Evolution and Entropy Analysis in Water Electrolysis** Enno Wagner[1] [1]Frankfurt University of Applied Sciences 87

09:20 - 09:40 **Flow-engineered 3D printed electrodes for enhanced bubble evacuation during alkaline water electrolysis** Xavier Pinon[1] [1]Université catholique de Louvain (UCLouvain), Div. of Materials and Process Engineering 118

09:40 - 10:00 **Use of Acoustic Actuators and Electrodes with Modified Surfaces in the Production of Green Hydrogen** João Pedro Parreira Reis da Silva[1] [1]IN+ Instituto Superior Técnico, Universidade de Lisboa 17

10:00 - 10:30 **Coffee Break**

10:30 - 12:00 **Industrial Developments I**
Room 1010

10:30 - 11:00 **Challenges and Successes of an Industrial Start-up to Global Electrolyzer Company** Christopher Capuano[1] [1]Nel Hydrogen US 158

11:00 - 11:20 **Novel Ru-based catalyst and precious metals circularity to mitigate Iridium bottleneck in the PEM electrolyser capacity ramp-up** Matej Bulic[1] [1]Heraeus Precious Metals GmbH & Co. KG 267

11:20 - 11:40 **Development of Performance Evaluation Technology for Large-scale Water Electrolyzer** Hirokazu Kojima[1] [1]National Institute of Advanced industrial Science and Technology 261

11:40 - 12:00 **On the efficiency of large PEM water electrolysis stacks** Pierre Millet[1] [1]Research Engineer 288

10:30 - 12:00 **PEMEL: Fluidics & High Pressure**
Room 1098

10:30 - 11:00 **High-pressure Operando X-ray Tomography for Studying Oxygen Transport within the Proton Exchange Membrane Water Electrolyzers** Iryna Zenyuk[1] [1]University of California Irvine 28

11:00 - 11:20 **Sub-Nernstian Response of Proton Exchange Membrane Water Electrolyser Cell Voltage at Elevated Pressure** Katende Jonathan Kabamba[1] [1]HySA/Catalysis University of Cape Town 155

11:20 - 11:40 **Volume of Fluid Modeling of Oxygen Transport in Porous Transport Layers and Channels of PEM Water Electrolyzers** 222
Gergely Schmidt[1] [1]Institute of Fluid Mechanics and Environmental Physics in Civil Engineering, Leibniz University Hannover

11:40 - 12:00 **Pre-aging study on Porous Transport Layer in a segmented Along the Channel PEM electrolysis cell** 10
Alessandra Pellegrino[1] [1]Università degli Studi di Palermo

12:00 - 13:00 **Lunch Break**
Entrance Hall

12:15 - 17:30 **Technical Excursion 1 (TE1)**
Excursion into the Future of Energy: Power-to-Gas (Reallabor H2-Wyhlen)

12:45 - 17:30 **Social Tour 4 (ST4)**
Hike to the mystical Kybfelsen peak

13:50 - 15:00 **Social Tour 3 (ST3)**
Beer brewery tour at Brauerei Ganter, Group 1

13:50 - 16:00 **Social Tour 1A (ST1A)**
Freiburg City Tour - culture, history and sights (English)

14:00 - 18:00 **Technical Excursion 2 (TE2)**
Bicycle tour to ASF: Use and production of hydrogen at the waste management of Freiburg (ASF)

14:50 - 16:30 **Social Tour 2 (ST2)**
Freiburg City Tour with the Drag Queen Betty BBQ (German)

15:50 - 17:00 **Social Tour 3 (ST3)**
Beer brewery tour at Brauerei Ganter, Group 2

15:50 - 18:00 **Social Tour 1B (ST1B)**
Freiburg City Tour - culture, history and sights (English)

19:00 - 02:00 **Conference Dinner**
Ballhaus Freiburg
From midnight to 2:00 AM, drinks are self-paid.

Thursday, 28 August 2025

08:00 - 08:30 **Welcome & Coffee**
Entrance Hall

08:30 - 10:00 **PEMEL: Components**
Room 1010

08:30 - 09:00 **Aquivion® membranes with low equivalent weight for improved PEM water electrolysis** Fausta Giacobello[1] [1]CNR - ITAE 271

09:00 - 09:20 **Engineering of Nafion™ based Composite Membranes Containing Gas Recombination Catalyst and Radical Scavenger** Lorenz Gubler[1] [1]Paul Scherrer Institut 77

09:20 - 09:40 **Influence of the ionomer content in supported and unsupported IrO2 electrodes for PEM water electrolysis: from ink properties to in-situ performance along the channel** Anahí Romero[1] [1]Fraunhofer-Institute for Solar Energy Systems ISE 46

09:40 - 10:00 **Carbon-coated bipolar plates in proton-exchange membrane (PEM) water electrolyzers** Albert Pettersson[1] [1]Alleima EMEA AB, Storgatan 2, 811 81 Sandviken, Sweden, albert.pettersson@alleima.com 103

10:00 - 10:30 **Coffee Break**
Entrance Hall

10:30 - 12:00 **AEL: Components**
Room 1010

10:30 - 11:00 **Alkaline water electrolysis: reliable and cheap, but outdated and inflexible?** Thijs de Groot[1] [1]Eindhoven University of Technology 317

11:00 - 11:20 **An experimentally validated analytical model for optimising the natural electrolyte recirculation in an alkaline water electrolyser** Gilles Deiters[1, 2, 3] [1]TU Delft, [2]Faculty of Mechanical Engineering (ME), [3]Large-Scale Energy Storage 137

11:20 - 11:40 **Investigation of stray current induced local degradation in alkaline water electrolysis cells** Simon Appelhaus[1] [1]Clausthal University of Technology 95

11:40 - 12:00 **1000 V alkaline water electrolysis system** Vesa Ruuskanen[1] [1]Lappeenranta-Lahti University of Technology LUT 94

10:30 - 12:00 **Open Topics**
Room 1098

10:30 - 11:00 **Fibernex: Porous Electrodes for Water Alkaline Electrolysis** Andrea Russo[1] [1]Technical University of Denmark 326

11:00 - 11:20 **Electrolysis and Ionic Conductivity in Superheated, Subcritical, and Supercritical Water** Gavin John Irvine[1] [1]University of St Andrews 269

11:20 - 11:40 **The Distribution of Relaxation Times as a tool to decouple processes in proton exchange membrane water electrolyzers** Artem Pushkarev[1] [1]North-West University, HySA Infrastructure Center of Competence 157

Modelling Shunt and Reverse Current in Bipolar Electrolyzers Bryan Enrique Acosta Angulo[1] [1]Technische Universiteit Eindhoven 41

12:00 - 13:00 **Lunch Break**
Entrance Hall

13:00 - 14:50 **Gas Crossover**
Room 1098

13:00 - 13:30 **Review on Gas Crossover in Low Temperature Water Electrolysis** Patrick Trinke[1] [1]Leibniz University Hannover, Institute of Electric Power Systems, Appelstraße 9a 291

13:30 - 13:50 **Minimizing Gas Crossover in Alkaline Water Electrolysis with Anisotropic Diaphragm Films** Florian Gellrich[1] [1]Stiesdal Hydrogen A/S 121

13:50 - 14:10 **Quantifying Hydrogen Crossover Rates in PEM Water Electrolyzers Operating at High Differential Pressures** Rangachary Mukundan[1] [1]Lawrence Berkeley National Laboratory 203

14:10 - 14:30 **Hydrogen Oxidation on the Anode of PEMWE as a Hidden Faradaic Inefficiency Term** Anna T.S. Freiberg[1] [1]Helmholtz-Institute Erlangen-Nürnberg (HI ERN) 276

14:30 - 14:50 **System-Wide Dynamic Modelling and Control of PEM Water Electrolysis Systems** Marius Fredriksen[1] [1]Norwegian University of Science and Technology 79

13:00 - 14:50 **Industrial Developments 2**
Room 1010

13:00 - 13:30 **Break-through Performance of ADvanced ELEctrodes for Alkaline Electrolysers (ADELE) - a Scalable Solution for Hydrogen Production** Olivier Bucheli[1] [1]Adele Hydrogen SAS 268

13:30 - 13:50 **Electrochemical Characterisation of Raney Nickel Electrodes for Alkaline Water Electrolysis: From Laboratory to Industrial Scale** Rainer Küngas[1] [1]Stargate Hydrogen Solutions OÜ 86

13:50 - 14:10 **New Pathways to Affordable Hydrogen: Exploring Unconventional Cost-Reduction Strategies for Alkaline Water Electrolysis** Edward Rauls[1] [1]WEW GmbH 240

14:10 - 14:30 **Recent Developments in SOEC Activities and Power-to-X Applications at Topsoe** Peter Blennow[1] [1]Topsoe A/S 228

14:30 - 14:50 **The technical challenges of renewable Hydrogen production and design solutions** 9

Sören Dresp[1] [1]Sungrow Hydrogen

14:50 - 15:20 **Coffee Break**

15:20 - 16:10 **Closing Session**
Room 1010

Friday, 29 August 2025

08:30 - 15:00	**Lab Tours (optional Drinks and Snacks at ionysis)**