

21st - 24th

OCTOBER 2024

MH2S

Munich Hydrogen Symposium 2024

Empowering the

FUTURE

with HYDROGEN

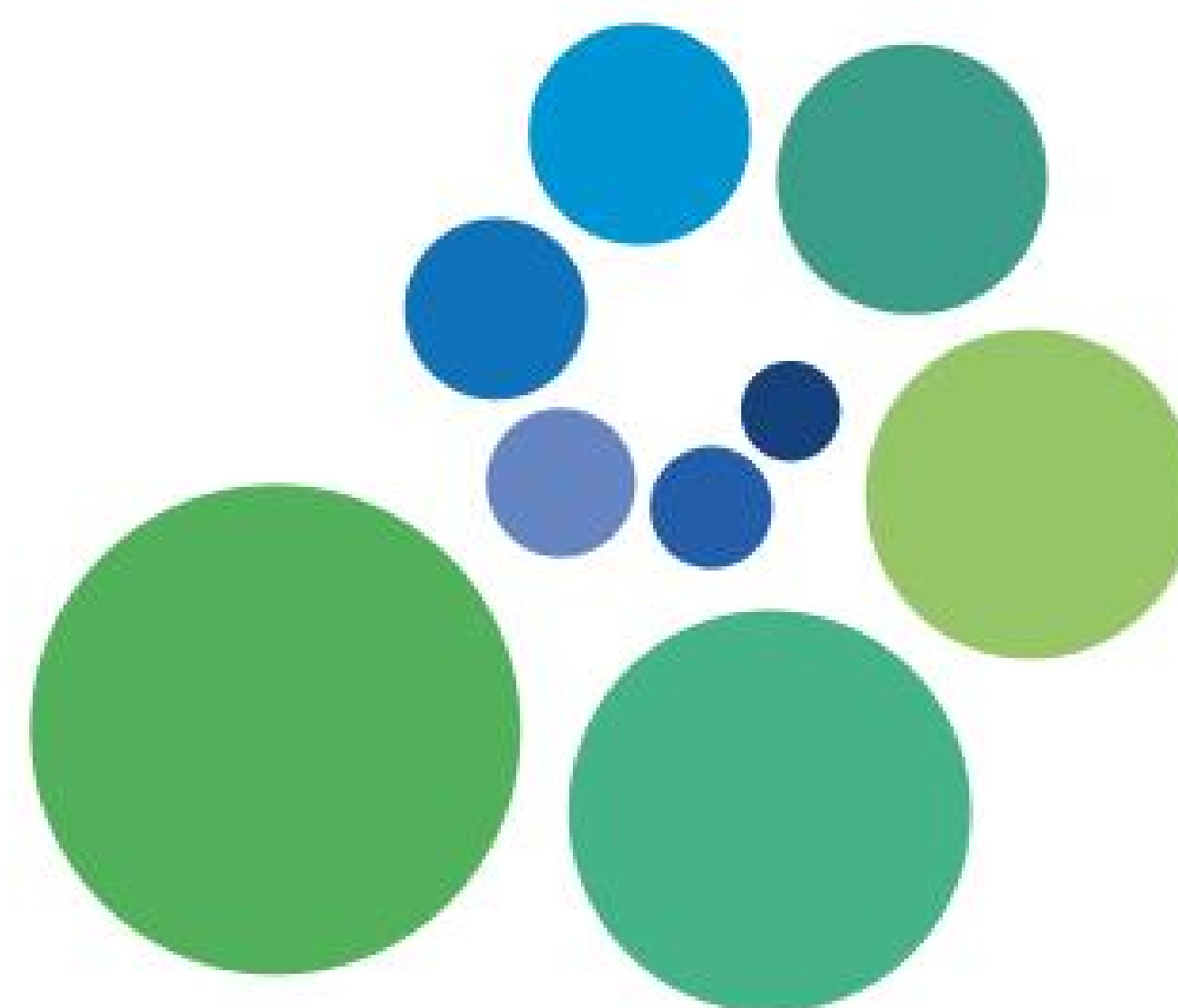
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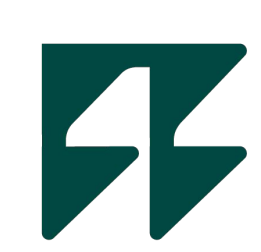


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Technische
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REDEFINE  H2E
INTERNATIONAL FUTURE LAB



Federal Ministry
of Education
and Research

MONDAY

09:00 - 11:00

REGISTRATION

WELCOME COFFEE

11:00 - 12:30

Welcome Speech
Prof. Spliethoff / Dr. Fendt
Keynote 01
Dr. Alexander Tremel
Keynote 02
tba.

LUNCH BREAK

13:30 - 15:00

PANEL DISCUSSION
Importance of Hydrogen in Future
Energy Systems

COFFEE BREAK

15:30 - 17:10

M.1a
System Studies

TUESDAY

09:00 - 10:50

T.1a
Hydrogen Production

COFFEE BREAK

11:20 - 12:40

Keynote 03
Prof. Dr. Jakub Kupecki

T.2a
Synthetic Energy
Carrier

LUNCH BREAK

13:40 - 15:10

T.3a
Power-to-X

COFFEE BREAK

15:30 - 17:00

REDEFINE
H2E
Meeting

Poster
Session

CONFERENCE DINNER

WEDNESDAY

09:00 - 10:30

W.1a
Plasma
Utilization

W.1b
Utilization in
Biotechnology

COFFEE BREAK

11:00 - 12:20

Keynote 04
Prof. Dr. Hubert Gasteiger

W.2a
Research
Projects

W.2b
Alternative
Solid
Feedstocks

LUNCH BREAK

13:20 - 15:10

W.3a
Gasification

W.3b
Energy
Vectores &
Supply Chains

COFFEE BREAK

15:30 - 17:00

W.4a
Innovative Technologies &
Applications

CLOSING & AWARDS

THURSDAY

08:00 - 18:00

TOUR 1

ChemDelta Bavaria

- The ChemDelta Bavaria is one of the largest chemical sites in Germany
- Different companies will be visited
- Insight into the transformation and the application of current research in a real environment

09:00 - 17:00

TOUR 2

TUM CAMPUS TOUR

- Visit of several institutes from the fields of mechanical engineering, chemistry and process engineering
- From laboratory-scale fundamental research to demonstration plants
- Topics range from hydrogen production to technologies for closed carbon cycles

09:00 - 11:00

REGISTRATION

Registration desk open
from 9-11 A.M.

WELCOME COFFEE

11:00 - 12:30

OPENING

- 11:00

Welcome Speech
Prof. Dr. Hartmut Spliethoff / Dr. Sebastian Fendt
- 11:30

Keynote 01
How Do Hydrogen Projects Become Reality?
Dr. Alexander Tremel / Acting Chief Innovation Officer / HIF Global
- 12:00

Keynote 02
tba.
tba.

LUNCH BREAK

13:30 - 15:00

PANEL DISCUSSION

Importance of Hydrogen in Future Energy Systems

Chair: Dr. Christian Hackl		
	tba. tba. / tba. Politics	Prof. Dr. Gerhard Kramer Senior Vice President / TUM Research
Dr. Peter von Zumbusch Senior Vice President / WACKER Industry		tba. tba. / tba. tba.

COFFEE BREAK

15:30 - 17:10

M.1a

H2 System Studies

- Chair: Prof. Dr. Hartmut Spliethoff
- 15:30

Social Acceptance of Green Hydrogen in Europe
Lydia Maketo / TUM
- 15:50

Emissions along the Green Hydrogen Value Chain and Their
Regulatory Relevance in the EU
Regina Reck / FfE
- 16:10

Open-Source Energy System Model for Evaluation of Gigawatt-
Scale Hydrogen Production in Brazil
Simon Herzog / UnternehmerTUM
- 16:30

Scotland Can Meet Its 5 GW Hydrogen Target Sooner than 2030!
Arash Badakhsh / University of Strathclyde
- 16:50

Macroeconomic Implications of Implementing 40t Fuel-Cell Trucks:
Simulation Analyses of Roll-Out Scenarios for Austria
Katharina Rusch / Energieinstitut (JKU Linz)

09:00 -10:50

T.1a

Hydrogen Production

Chair: Dr. Stephan Herrmann

- 09:05

CO2 Recovery and H2 Generation by Perovskite Solar-Assisted Looping

Massimo Santarelli / Politecnico di Torino
- 09:25

Generating Predictive Chemical Kinetic Models for Quaternary Ammonium Degradation in Anion Exchange Membranes

Lilach Naamat / Technion - IIT
- 09:45

Thermal Complications in Direct Ammonia-Fed Solid Oxide Fuel Cells Elaborated by Numerical Modelling

Özgür Aydın / Karadeniz Technical University
- 10:05

Electrochemical Investigation of Ni-GDC Electrodes on Fuel Electrode-Supported Solid Oxide Cells

Benjamin Steinrücken / TUM
- 10:25

Harnessing Physics-Based AI and Multiphysics Modelling for Empowering Solid Oxide Cell Technology

Murphy Peksen / TUM

COFFEE BREAK

11:20 - 12:40

T.2a

Synthetic Energy Carrier

- 11:20

Keynote 03

Advancing Production of E-fuels through Pressurized Co-electrolysis in Solid Oxide Electrochemical Cells

Prof. Dr. Jakub Kupecki / Director of the Institute of Power Engineering – National Research Institute

Chair: Dr. Sebastian Fendt

- 11:50

Hydrogen and Syngas Retrieval from Methanol with Electrically Heated Steam Reforming Reactors

Marcelo Dal Belo Takehara / Luleå University of Technology
- 12:10

Particle Circulation in a New Reactor Concept for Sorption-Enhanced Fischer-Tropsch Synthesis

Wiebke Asbahr / KIT

LUNCH BREAK

POSTER EXHIBITION

13:40 - 15:10

T.3a
Power-to-X

Chair: Prof. Dr. Jakub Kupecki

- 13:40

Power-to-X Technologies for a Sustainable Future
Sebastian Pichler / MAN Energy Solutions
- 14:00

Power-to-X: From Cement Flue Gas to Value Added Products
Alexander Beck / Net Zero Emission Labs
- 14:20

Design Parameter Optimization of a Membrane Reactor for Methanol Synthesis Using a Sophisticated CFD Model
Theresa Hauth / TUM
- 14:40

A Predictive Chemical Kinetic Model for Hydrazine Decomposition
Michal Keslin / Technion - IIT

POSTER EXHIBITION

COFFEE BREAK

15:30 - 17:00
Internal Project Meeting
REDEFINE H2E
Team &
Strategic Advisory Board Meeting

15:10 - 17:00
POSTER SESSION
List can be found
at the end of the document

CONFERENCE DINNER

The FACULTY Restaurant & Bar, next to the conference center

09:00 - 10:30

PARALLEL SESSION

W.1a

Plasma Utilization

W.1b

Biotechnology

Chair: Prof. Dr. Kentaro Umeki

09:00

A 50 kW Arc-Heated Plasma Torch for Hydrogen and Carbon Production via Methane Pyrolysis and for the Electrification of High Temperature processes

Hamid Reza Yousefi / PlasmaAir AG

09:20

Plasma Reforming Technologies for Low Carbon Hydrogen Production

Bader Alrasheed / Uni College London

09:40

Green Hydrogen as an Alternative for Sustainable Glass Production

Nerijus Stirūgas / Lithuanian Energy Institute

10:00

Integration of electrically assisted processes coupled with the use of Hydrogen in the Glass-Making Industry

Andrius Tamosiunas / Lithuanian Energy Institute

Chair: Prof. Dr. Volker Sieber

09:00

Hydrogen-Driven Isobutanol Production

Tenuun Bayaraa / TUM Campus Straubing

09:20

Hydrogen-Driven Synthesis of Chemicals in Whole Cells

Ammar Al-Shameri / TUM Campus Straubing

09:40

Hydrogen-Driven Isobutanol Production

Mayla Schulz / TUM Campus Straubing

10:00

Hydrogen-Driven Synthesis of Chemicals in Whole Cells

Dominik Siebert / TUM Campus Straubing

COFFEE BREAK

11:00

Keynote 04

R&D Challenges for Global-Scale Proton Exchange Membrane (Pem) Based Water Electrolysis

Prof. Dr. Hubert Gasteiger / Head of Chair of Technical Electrochemistry / TUM

11:35 - 12:20

PARALLEL SESSION

W.2a

Research Projects

W.2b

Alternative Solid Feedstocks

Chair: Dr. Sebastian Fendt

11:35

H2-Reallabor Burghausen: Transformation of the Chemical Industry Towards a Hydrogen-Based Circular Economy

Christian Hackl / Reallabor gGmbH

11:55

Synergyfuels: Where the Bioeconomy Meets the Hydrogen Economy

Júnior Staudt / TUM Campus Straubing

Chair: tba.

11:35

Waste-to-Methanol: Techno-economic Comparison of Promising Methanol-Production Processes from Municipal Solid Waste

Sebastian Bastek / TUM

11:55

High-Purity Hydrogen Production from Bark via Dual Fluidized Bed Steam Gasification

Veronica Gubin / TU Wien

LUNCH BREAK

13:20 - 15:10

PARALLEL SESSION

W.3a Gasification

Chair: tba.

13:20

Entrained Flow Gasification of Circular Raw Materials in the Swedish Chemical Industry
Frederik Weiland / RISE

13:40

Kinetics of Biomass Devolatilization with Thermal Plasma
Kentaro Umeki / Luleå University of Technology

14:00

Numerical Simulations of Plasma-Assisted Biomass Gasification in a Vertical Entrained Flow Gasifier
Robert Lewtak / Institute of Power Engineering – NRI

14:20

Characterizing Solid Fuel Particle Behavior in Thermal Plasma Flows: Insights from CFD Simulations
Aleksandra Kiedrzyńska / Institute of Power Engineering – NRI

W.3b

Energy Vectors and Supply Chains

Chair: Prof. Dr. P.V. Aravind

13:20

Dimethyl Ether as a Potential Vector for Large-Scale Hydrogen Import: Leveraging LNG Terminals for Hydrogen Import
Patrick Preuster / University of Applied Science Rosenheim

13:40

Hydrogen and Ptx Fuel Logistics for Optimized Sustainable Aviation Fuel Production for Bavaria
Leonard Moser / Bauhaus Luftfahrt

14:00

A Concept for Data-Driven Decision Support in Renewable Hydrogen Supply Chains
Julian Stang / TUM

14:20

Circular Economy Strategies for Green Electrolyzer Supply Chains
Sarah Hasslacher / TUM Campus Straubing

COFFEE BREAK

15:30 - 17:00

W.4a

Innovative Technologies and Applications

Chair: Prof. Dr. Johannes Völkl

15:30

Techno- Economic and Profitability Assessment of Stand-Alone Photoelectrochemical Hydrogen Generation Technology
Chun Ting Yang / Fraunhofer CSP

16:10

Optimal RES-Electrolyser Coupling- A Flexible Technoeconomic Assessment Tool
Nikolaos Skordoulis / NTUA

15:50

Utilization of Oxygen from Water Electrolysis for Applications in the Chemical Industry
Farnaz Badavi / University of Applied Science Rosenheim

16:30

Reflecting the Potential Role of Redefine Technologies in Future Low-Emission Energy System
Iryna Doronina / TUM

CLOSING & AWARDS

Technical Tours

Please note:

The registration for the technical tour can be made via [Converia](#)

ChemDelta Bavaria

08:00

Meeting point in Garching in front of conference centre

08:15

Transfer to Gendorf

10:00 - 12:00

Visit of Westlake Vinnolit in Gendorf

12:00 - 14:00

Lunch break and transfer to Burghausen

14:00 - 16:00

Visit of WACKER Chemie in Burghausen

16:00

Transfer back to Garching (arrival before 18:00)

- The ChemDelta Bavaria is one of the largest chemical sites in Germany and only a short bus ride away from the conference venue
- Different companies will be visited
- Insight into the transformation and the application of current research in a real environment

TUM Campus Tour

09:30

Meeting point in Garching in front of conference centre

10:00 - 11:30

Max Planck IPP, nuclear fusion reactor

12:00 - 12:30

Chair of Energy Systems (Lab tour SOC)

12:30 - 13:30

Lunch break and networking

14:00 - 14:30

Chair of Energy Systems (Demo plants)

15:00 - 16:00

Chair of Technical Electrochemistry (Lab tour PEM)

- Tour includes several institutes from the fields of mechanical engineering, chemistry and process engineering
- It covers everything from laboratory-scale fundamental research to demonstration plants
- Topics range from hydrogen production to technologies for closed carbon cycles

Novel Definition of Renewable Energy and Sustainable Hydrogen Potential

Alina Kerschbaum

Optimization of Manifold Design to Minimize Thermal Gradients within a Solid Oxide Fuel Cell (SOFC) Stack

Chen Lin

Few layer MoS₂ as a catalyst for the hydrodeoxygenation of fatty acids to alkanes

Fuli Deng

Investigations on Ce-doping of NiAlO_x Catalysts for CO₂ Methanation

Heike Plendl

Investigating the Influence of Thermal Plasma on Biomass Particles

Johannes Waßmuth

Experimental Comparison of Plasma-Assisted Entrained Flow Gasification and Conventional Entrained Flow Gasification in a Pilot-Scale Gasifier

Jonas Brandstetter

Dynamic Operation and Optimization of a Containerized Pilot Plant for CO₂-Based Methanol Production

Lukas Anthofer

Investigating Pyrolysis for Sustainable Waste-to-X Solutions

Lukas Martetschläger

Biomass-to-Liquid Opportunities: Sustainable Aviation Fuel from Queensland's Sugar Industry

Marcel Dossow

Structural Optimization of an ideal Chemical Park towards CO₂ Neutrality

Maximilian Kerschbaum

CFD Modeling of Plasma-Assisted Entrained Flow Gasification

Sebastian Willhelm

Waste-to-X: Two-Step Process for Thermochemical Recycling of Municipal Solid Waste and its Characterization

Simon Meillinger

Development and Design of a Pressurized Test Rig for Reversible Solid-Oxide Short Stacks

Sören Ohmstedt

Electrolysis vs. Battery: Flexibility dynamics in Europe's energy system amid varying renewable expansion rates

Stephan Mohr

Development of a Dynamic Carbon Capture and Utilization Pilot Plant

Svenja Knösch

Power-to-X: Process Modeling and Assessment of Pathways to Produce Sustainable Aviation Fuel

Vincent Eyberg