21st - 24th

Hydrogen

zero emission

Hydr



Munich Hydrogen Symposium 2024 Empowering the



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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.la **System Studies**

TUESDAY 09:00 - 10:50

T.la Hydrogen Production

COFFEE BREAK

11:20 - 12:40

Keynote 03 Prof. Dr. Jakub Kupecki

T.2a Synthetic Energy Carrier

LUNCH BREAK

T.3a **Power-to-X**

COFFEE BREAK

15:30 - 17:00

13:40 - 15:10

REDEFINE H2E Meeting

Poster Session

CONFERENCE DINNER

WEDNESDAY

09:00 - 10:30

W.la 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

ChemDelta Bavaria

- chemical sites in Germany
- be visited
- Insight into the research in a real environment

09:00 - 17:00

TOUR 2

TUM CAMPUS TOUR

- from the fields of engineering
- Topics range from carbon cycles

21st - 24th

TOUR 1

• The ChemDelta Bavaria is one of the largest

Different companies will

transformation and the application of current

 Visit of several institutes mechanical engineering, chemistry and process From laboratory-scale fundamental research to demonstration plants hydrogen production to technologies for closed

2024

AGENDA

MONDAY

21st

REGISTRATION 09:00 - 11:00

Registration desk open from 9-11 A.M.

WELCOME COFFEE

11:00 - 12:30	OPENING
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11:00 Welcome Speech Prof. Dr. Hartmut Spliethoff / Dr. Sebastian Fendt

11:30 **Keynote 01** How do hydrogen projects become reality? Dr. Alexander Tremel / Deputy Chief Innovation Officer / HIF Global **Keynote 02** 12:00 tba. tba. LUNCH BREAK PANEL DISCUSSION 13:30 - 15:00 **Importance of Hydrogen in Future Energy Systems Chair: Dr. Christian Hackl Prof. Dr. Gerhard Kramer** tba. tba./tba. **Senior Vice President / TUM** Politics Research Dr. Peter von Zumbusch

Senior Vice President / WACKER Industry

tba. tba. / tba. tba.

COFFEE BREAK

M.la 15:30 - 17:10 H2 System Studies

Chair: Prof. Dr. Hartmut Spliethoff

- Social acceptance of green hydrogen in Europe 15:30 Lydia Maketo / TUM
- Emissions along the green hydrogen value chain and their 15:50 regulatory relevance in the EU **Regina Reck / FfE**

Open-source energy system model for evaluation of gigawatt-scale 16:10

- hydrogen production in Brazil Simon Herzog / UnternehmerTUM
- Scotland can meet its 5 GW hydrogen target sooner than 2030! 16:30 Arash Badakhsh / University of Strathclyde
- Macroeconomic Implications of Implementing 40t Fuel-Cell Trucks: 16:50 Simulation Analyses of Roll-Out Scenarios for Austria Katharina Rusch / Energieinstitut (JKU Linz)



AGENDA

TUESDAY



09:00 -10:50

Hydrogen Production

T.la

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 Aydin / 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 Multiphyiscs Modelling for Empowering Solid Oxide Cell Technology Murphy Peksen / TUM

COFFEE BREAK
11:20 - 12:40
T.2a
Synthetic Energy Carrier



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 (Poland)

Chair: Dr. Sebastian Fendt

- 11:50 Hydrogen and syngas retrieval from methanol with electrically heated steam reforming reactors Eduardo Arango Durango / Luleå Unversity of Technology
- 12:10 Particle circulation in a new reactor concept for sorptionenhanced Fischer-Tropsch synthesis Wiebke Asbahr / KIT





AGENDATUESDAY13:40 - 15:10T.3a
Power-to-XChair: Prof. Dr. Jakub Kupecki13:40Power-to-X Technologies for a sustainable future
Sebastian Pichler / MAN Energy Solutions14:00Power-to-X: From cement flue gas to value added products
Alexander Beck / Net Zero Emission Labs14:20Design Parameter Optimization of a Membrane Reactor for
Methanol Synthesis Using a Sophisticated CFD Model

U

22nd

Theresa Hauth / TUM

14:45 A predictive chemical kinetic model for hydrazine decomposition Michal Keslin / Technion - IIT

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.



AGENDA WEDNESDAY

23rd

R 2024

09:00 - 10:30 PARALLEL SESSION W.1a W.1b	
Plasma Utilization	Biotechnology
Chair: Prof. Dr. Kentaro Umeki	Chair: Prof. Dr. Volker Sieber
09:00 A 50 kW Arc-Heated Plasma Torch for Hydrogen and Carbon Production via Methane Pyrolysis and for the Electrification of High Temperature	09:00 Hydrogen-driven isobutanol production Tenuun Bayaraa / TUM Campus Straubing
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 Stirügas / 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

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	Chair: tba.
11:35 H2-Reallabor Burghausen: Transformation of the chemi industry towards a hydroger	ical n-based Solid Waste

Christian Hackl / Reallabor gGmbH 11:55 SynergyFuels: where the bioeconomy meets the hydrogen economy Júnior Staudt / TUM Campus Straubing

Sebastian Bastek / TUM 11:55 **High-Purity Hydrogen Production from Bark via Dual Fluidized Bed Steam** Gasification Veronica Gubin / TU Wien

LUNCH BREAK



AGENDA WEDNESDAY

23rd

R 2024

3:20 - 15:10 PARALLEL SESSION	
W.3a Gasification	W.3b Energy Vectores and Supply Chains
Chair: tba. 13:20 Entrained flow gasification of circular raw materials in the Swedish chemical industry Frederik Weiland / RISE	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

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

14:00

Numerical simulations of plasmaassisted biomass gasification in a vertical entrained flow gasifier **Robert Lewtak / Institute of Power** Engineering

14:20

Characterizing Solid Fuel Particle Behavior in Thermal Plasma Flows: Insights from CFD Simulations

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

Aleksandra Kiedrzynska / Institute of **Power Engineering**

Straubing

COFFEE BREAK

15:30 - 17:00 **W.4a Innovative Technologies and Applications**

Chair: Prof. Dr. Johannes Völkl

- Techno- economic and profitability assessment of stand-alone 15:30 photoelectrochemical hydrogen generation technology Chun Ting Yang / Fraunhofer CSP
- **Optimal RES-Electrolyser Coupling- A Flexible Technoeconomic** 16:10 **Assesment Tool**
 - Nikolaos Skordoulias / NTUA

Utilization of Oxygen from water electrolysis for applications in the 15:50 chemical industry Farnaz Badavi / University of Applied Science Rosenheim Reflecting the potential role of REDEFINE technologies in future 16:30 low-emission energy system Iryna Doronina / TUM

CLOSING & AWARDS



AGENDA THURSDAY

24th

Technical Tours Please note: The registration for the technical tour can be made via Converia

ChemDelta Bavaria

08:00 Meeting point in Garching in

TUM Campus Tour

09:30 Meeting point in Garching in front of conference centre

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 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

Burghausen

16:00 Transfer back to Garching (arrivial 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

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

- Insight into the transformation and the application of current research in a real environment
- plants

 Topics range from hydrogen production to technologies for closed carbon cycles



AGENDA POSTER

Poster Exhibition Tuesday from 9 - 17 P.M.

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 NiAlOx 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

Long-term optimization of an ideal chemical park considering various transformation paths to climate-neutrality

Maximilian Kerschbaum

CFD Modeling of Plasma-Assisted Entrained Flow Gasification Sebastian Willhelm

Sewage sludge treatment – substantial potential for phosphorous recovery and renewable synthesis of base chemicals Simon Meillinger

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

Stephan Mohr

Simulative comparison of Power-and-Biomass-to-Liquid pathways to produce sustainable aviation fuel from straw residues

Vincent Eyberg

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

