European PhD Hydrogen Conference (EPHyC) draft program

Time	8 April 2025
From 14:30	**Ice Breaker Event** Boat trip in the Gulf of Piran and aperitif • 14:30 Bus departure from Trieste city center • 15:15 Arrival at Portorož (Slovenia) • 15:30 Boat departure • 15:30-18:30 Boat trip to the Croatian cost of Savudrija and aperitif • 18:30 Arrival at Piran (Slovenia) and walk tour • 19:00 Estimated bus departure to Trieste • 20:00 Estimated arrival in Trieste

The boat capacity is for 80 people. Additional participants will be placed on the waiting list.
Please confirm your participation by sending an email to: ephyc.conference@gmail.com as soon as possible!

UNIVERSITÀ DEGLI STUDI DI TRIESTE

EPHyC 2025
European PhD Hydrogen Conference

Hydrogen Europe Research

Time	9 April 2025
8:30-9:00	**Conference Registration**
9:00-10:15	**Opening & Keynotes**
10:15-11:00	**Coffee Break**
11:00-12:00	**Sponsor presentation**
12:00-14:00	**PhD presentations*** · **593368** - *Operational variability analysis and performance assessment of PEMEL systems directly coupled with solar sources* (Hydrogen production) · **590742** - *Advanced analytical modelling tool for Type IV composite pressure vessels for hydrogen storage* (Hydrogen storage) · **598107** - *Impact of Operating Cell Temperature on PEM Fuel Cell Degradation Under Real World Heavy-Duty Conditions* (End-use application) · **586709** - *Sustainable Aviation Fuels from Carbon Dioxide with Integrated Catalyst Systems and Hydrogen* (Hydrogen derivatives) · **598049** - *LCOH evaluation for optimized offshore domains* (Policies and economics) · **589274** - *Navigating Legal Pathways for Hydrogen Valleys: A Comparative Analysis of the EU and US* (Regulation and Safety) · **589864** - *Beyond Green: Is Hydrogen Ready to Become a Just Energy Technology? Perspectives from Public* Participation (Social impact)
14:00–15:30	**Lunch & Sponsors Exhibition**
15:30-18:30	**Site visit @Elettra Sincrotrone Trieste**

*The time schedule for all the PhD presentations is 12 min presentation + 3 Q&A

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Time	10 April 2025
8:30-10:30	**PhD presentations***
	Hydrogen Production – Focus on renewable energy sources (Sala Illy)
	· **593936** - *Enhanced Operational Performance of Green Hydrogen Production Powered by Offshore Wind and Integrated Flywheel Energy Storage Technology*
	· **590766** - *Demonstration of 70 kWth-Scale Solar Cavity Receiver for Green Hydrogen Production through High-Temperature Electrolysis*
	· **594101** - *Assessing Green Hydrogen Production Potential from Floating Offshore Wind Farms: Exploring Electrolyzer Technologies to Mitigate Curtailment Effects*
	· **614971** - *Green Hydrogen Production in Arid Regions: A Comparative Life Cycle Assessment of African and European Production Routes*
	· **591584** - *Hydrogen production using fluctuating wind energy*
	· **593909** - *Photoelectrochemical water splitting - cell development and enhancement of efficiency and stability*
	· **593399** - *Synthesis and Characterization of Core-Shell MOFs for Photocatalytic Water Splitting*
	End-use application – Hydrogen integration in sectors (Sala Ressel)
	· **598133** - *Development of a hydrogen-based system for heating and cooling*
	· **594054** - *Experimental study of the influence of oxygen enrichment in hydrogen-enriched natural gas combustion at a semi-industrial scale*
	· **594159** - *Research on Fuel Cell Based Power Generation Systems for Low and Medium Power Mobility Applications: Optimal Control and Design Methodologies*
	· **594253** - *Balance of Plant (BoP) Optimization in Fuel Cell Systems for Automotive Applications*
	· **593867** - *Distributed Optimization for Hydrogen-Powered Ships: Shipboard Microgrid Control Inspired by Energy Markets*
	· **597590** - *Turquoise hydrogen production as an alternative to flaring and venting activities in the oil extraction sector*
	· **594842** - *Liquid Hydrogen for Maritime Gas Turbines: Modelling and Off-Design Performance*
	Transport and Storage – Focus on compression and liquefaction (Sala Svevo)
	· **626969** - *AI-Driven multi objective optimization of hydrogen liquefaction precooling systems*
	· **594143** - *Centrifugal Compressors for Hydrogen Storage and Transportation*
	· **598087** - *Diaphragm compressors for hydrogen refueling stations*
	· **594049** - *EHC-Efficient Hints for Competitiveness of Electrochemical Hydrogen Compressors*
	· **594154** - *Experimental study on high-pressure hydrogen gas storage operation*
	· **625288** - *Identification of insulation system specifications for liquid hydrogen applications*
	· **598139** - *Risks Associated with the Installation of Hull Fixed LH2 Tanks Onboard Ships*
	Hydrogen derivatives – Focus on Ammonia as hydrogen carrier (Sala Saba)
	· **615076** - *Catalytic decomposition of ammonia as hydrogen carrier in membrane reactors*
	· **593328** - *Advanced Nickel-Copper Sulfide Electrocatalysts for Efficient Ammonia Oxidation: A Green Energy Solution*
	· **593996** - *Designing Ni based electrocatalysts for ammonia electrooxidation reaction*
	· **594030** - *Development of Ruthenium-based Catalyst for Ammonia Borane Dehydrogenation*
	· **594038** - *Mild pressure reactivity with H2/N2 of Li-N-H promoter system for catalytic ammonia synthesis*
	· **593922** - *Pd-based Membranes for Hydrogen and Ammonia Technology*
	· **597714** - *Eco-Friendly and Industrially Scalable Synthesis of Ni-BaZrO3 Catalysts for H2 Generation from NH3 Decomposition*

10:30-11:00	**Coffee break**
11:00-12:45	**PhD presentations***
	Hydrogen Production – Focus on PEMWE (Sala Illy)
	· **598092** - *Comprehensive modeling of Proton Exchange Membrane electrolyzers, including membrane degradation*
	· **598140** - *Degradation mechanism in PEM electrolyzer and fuel cell: a comparative analysis and stress test evaluation*
	· **594107** - *Design and microstructural study of sputterd Ti-based coatings on stainless steel substrates for PEMWE*
	· **597504** - *Development of components for PEM electrolyzers coupled to renewable energies*
	· **594151** - *Impact of Feed Water Impurities on Proton Exchange Membrane Water Electrolyzer Performance and Degradation*
	· **594150** - *Impact of Titanium Felt PTL Wettability on PEM Electrolyser Activation*
	Hydrogen Production – Focus on SOEC (Sala Ressel)
	· **597469** - *Advances in manufacturing and validating SOE stacks*
	· **594152** - *Evaluation of externalities of a Direct Air Capture System for Green Hydrogen production via Solid Oxide Electrolysis*
	· **601830** - *Temperature and Composition mapping in SOC short stack under (Co)Electrolysis conditions*
	· **601304** - *Investigation of the degradation of Ni-YSZ electrode of SOEC when exposed to various salts originating from sea water*
	· **597592** - *Implementation of novel ceramic materials in reversible solid oxide cells (r-SOC)*
	· **594450** - *B site substitution of La0.75Sr0.25CrO3-Î΄: effect on the properties and electrochemical performance of Solid Oxide Cells at high temperatures*
	Hydrogen Derivatives – Focus on Power-to-X (Sala Svevo)
	· **592820** - *Modeling Green Hydrogen Production via Power-to-Gas and Biomass Gasification for Renewable Methane Production Using Aspen Plus*
	· **594170** - *Analysis of a High Temperature Co - Electrolysis System in terms of Mass and Energy Balances*
	· **592563** - *Optimal Sizing of Ammonia Production Plants based on Solid Oxide Electrolyser Cells*
	· **594106** - *Catalytic direct biogas methanation: thermal analysis in a pseudo-adiabatic fixed bed reactor*
	· **597085** - *Economic feasibility and political risk of an e-methanol trade route between Côte d'Ivoire and Germany*
	· **597062** - *Cost structure analysis and implications of e-methanol production using innovative solid sorbent Direct Air Capture and Solid Oxide Electrolysis Cell technologies in arid regions*
	Social and Regulation – Focus on Hydrogen Valleys and hydrogen value chains (Sala Saba)
	· **589124** - *Analysis of hydrogen production pathways and other renewable molecules in hydrogen valleys*
	· **598171** - *Co-locating hydrogen infrastructure: a comparative case study of hydrogen valleys in Europe and hydrogen hubs in Australia*
	· **593135** - *Competition, Cooperation and Coopetition in the Deployment of the Hydrogen Supply Chain*
	· **594218** - *Dynamic modelling of hydrogen value chains for accurate temporal environmental assessment*
	· **595459** - *Hydrogen Valleys: modeling and optimization, including experiments in H2 Tunnel*
	· **598103** - *Regional Cooperation in quality infrastructure services for green hydrogen*
12:45-13:45	**Lunch**

13:45-15:45	**PhD presentations***
	Hydrogen Production – Focus on catalyst and membrane (Sala Illy) · **594165** - *Derivation of use case specific production lines for PEMFCs and PEMELs with a focus on catalyst coated membranes* · **593306** - *Electrospun Iridium-Based Nanofibre Catalysts for Oxygen Evolution Reaction: Influence of Calcination and Metal Impurities on Activity–Stability Relation* · **595342** - *Evaluation of catalyst stability using in-line setup of electrochemical flow cell and ICP-MS* · **594444** - *Iridium-based OER electrocatalysts supported on Magneli-phase titanium suboxides for PEM water electrolysis* · **593940** - *Ultra-low loaded iridium catalysts for oxygen evolution reaction in acidic medium* · **593951** - *Mechanical stability of electrolysis membranes* · **614898** - *Advanced Study of Electroless Plating of PdAg Membranes for Hydrogen Separation*
	End-use application – Focus on PEMFC (Sala Ressel) · **593808** - *Adsorption kinetic of phosphoric acid on Polybenzimidazole Electrospun membranes for HTPEMs* · **598021** - *Analysis and optimization of water dynamics in portable passive PEM fuel cells* · **591437** - *Mathematical Modelling of the Effect of Water Transport in the Membrane Electrode Assembly Microstructure of Polymer Electrolyte Fuel Cells: A Parametric Analysis* · **594146** - *Screen printed anodes for proton exchange membrane fuel cell applications* · **598104** - *Coated aluminum bipolar plates for PEM fuel cells applications* · **596428** - *Developing the methodology for determining catalyst surface area and carbon support corrosion in proton-exchange membrane fuel cells* · **593981** - *In-situ Localised Measurements of Oxygen Concentration at the PEMFC's Cathode*
	Transport and Storage: Focus on metal hydrides and cutting-edge technologies (Sala Svevo) · **595018** - *Thermodynamic modelling and investigation of Ti(Fe,Ni)-H system for hydrogen storage* · **597024** - *Numerical Investigation of an Effect of Baffle and Mass Flow Rate on a Shell-and-Tube-Type Metal Hydride Reactor System* · **594130** - *Hydrogen Storage in Porous Media: Abiotic Geochemical Reactions and H2S Generation* · **594603** - *Hydrogen as a heat exchange fluid in a solid hydrogen storage system: test bench design* · **593427** - *Polymers as a binder for metal hydride pellets for hydrogen storage* · **594230** - *Influence of composition and microstructure on a new Refractory High-Entropy Alloy for Solid-State Hydrogen Storage* · **594248** - *The development of a small continuous flow parahydrogen catalyst for cryogenic pellet experiments*
	Regulation and Safety – Risk management and regulatory framework (Sala Saba) · **592576** - *Design and Trial of Test Benches for the Production and Utilization of Hydrogen by Water Electrolysis* · **598194** - *From Certification to Compliance: Navigating RFNBO Regulatory Framework and Legal Challenges for Exporting Hydrogen: The Chilean Case* · **597629** - *Comparison of Quantitative Risk Analysis methodologies for hydrogen refuelling stations* · **589268** - *Fabrication and Potential of Noble Metal-Enhanced Polyvinyl Alcohol Membranes for Hydrogen Leak Detection* · **597855** - *Improving Hydrogen Safety and Simplifying Permitting Procedures: A Study on Hydrogen Refueling Station Approvals in Norway* · **598195** - *New Energy Frontiers: The Role of Regulatory Sandboxes for Green Hydrogen* · **598129** - *The Hydrogen Prism for Maritime: Key Angles for Regulating Hydrogen Fuels in EU Waterborne Transportation*
15:45-16:15	**Coffee break**

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16:15-18:00	**PhD presentations***
	Hydrogen Production – Focus on modelling and optimization (Sala Illy) · **596726** - *CFD Methodology for Membrane Water Transport in PEM Water Electrolysis* · **619477** - *Development of a numerical model for PEM electrolysers for the development of a simulation-based Digital Twin* · **594088** - *Developing Simulation Models to Assess Degradation of Solid Oxide Electrolysis Cells for Different Modes of Operation* · **598154** - *Modeling a Ca(OH)2/H2 co-production reactor: ion transport and performance of membrane* · **598120** - *Modelling and Techno-Economic Analysis of Multi-Module Solid Oxide Electrolysis Systems for Power-to-Ammonia Applications* · **616830** - *Comparative Analysis of Functionalized MXene Materials for Optimized Hydrogen Production*
	End-use application – Hydrogen utilization in PEMFC challenges (Sala Ressel) · **592787** - *Effect of Ship Load Cycles on the durability of LT-PEMFCs for Maritime Applications* · **590163** - *Fuel Cell Degradation in Sea Air - Experimental Study on the Impact of Saline Air Contamination on Proton Exchange Membrane Fuel Cells* · **598192** - *Use of PEM Fuel Cell Stack as power supply in French Guiana: mitigation of poisoning from coastal tropical environments* · **591707** - *Characterization and Modelling of PEM Fuel Cells for Applications Applicability and Optimised Implementation* · **596473** - *Polarization Mechanisms and Degradation Dynamics in HT-PEM Fuel Cells Under Humidity Cycling Conditions* · **594077**- *Developing Sensing Mechanisms for Over-humidification Detection in Polymer Electrolyte Fuel Cells*
	Transport and Storage – Focus on material behavior for hydrogen storage (Sala Svevo) · **593887** - *TiVCr-based High Entropy Alloys for solid-state hydrogen storage* · **594479** - *Optimizing TiFe-X (X=Co, Cu, Cr, Al) alloys for sustainable hydrogen storage: enhancing performance and reducing environmental impact with recycled metals* · **598012** - *Comparative Evaluation of Solid and Shell Elements-Based FE Models for Analyzing the Mechanical Behavior of Type-IV Composite Pressure Vessels* · **594117** - *Investigating Hydrogen Storage Challenges at Cryogenic Temperatures: Hydrogen Embrittlement* · **585972**- *In-Situ Measurement and Detection of Diffusible Hydrogen in Ferritic and Austenitic Stainless Steels*
	Social impact and others – Social and sustainability assessment (Sala Saba) · **597616** - *Addressing Gaps in Sustainability Assessment of Hydrogen Energy Systems in Mobility* · **591285** - *Technological Neutrality: A Safeguard for Diversifying Renewable Hydrogen Production* · **597614** - *Towards an enhanced assessment approach for safe and sustainable-by-design hydrogen-related products* · **594224** - *Economic and social assessment of manufacturing and end-of-life phase of PEMFC for ecodesign purposes* · **598098** - *Discovering the key social values leading to acceptance of Hydrogen in rural farming communities* · **594019** - *Assessing the social acceptance of green hydrogen energy technologies in Spain*
18:00-20:45	**Conference Dinner @Immaginario Scientifico (walking distance from conference area)**

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Time	11 April 2025
8:30-10:30	**PhD presentations***
	Hydrogen Production – Alternative sources and cutting-edge equipment (Sala Illy) · **594166** - *Development of microwave reactors for high temperature catalytic reaction* · **614909** - *Development of Pd-Ag alloy membranes for high-purity H2 generation* · **594108** - *Transition metal carbides as catalysts for sustainable production of syngas via pyrolysis-dry reforming of waste plastics* · **594751** - *Long term operation of an SO2 Depolarised Electrolyser for Hydrogen Production* · **591326** - *Sensitivity-driven design and optimization of chemical reactors* · **598094** - *Development of Resilient Biocatalysts for Hydrogen Production: Engineering [FeFe]-Hydrogenases to Enhance Oxygen Tolerance* · **591786** - *Variable hydrogen production from methanol for large transport applications*
	End-use application – Focus on SOFC and others (Sala Ressel) · **592564** - *Analysis of SOFC operating with bio-syngas: evaluation of the impacts* · **593937** - *Electrochemical modeling of fuel utilization in Solid Oxide Fuel Cell* · **594127** - *Hydrothermal method for the selective separation of the Solid Oxide Materials for the Recycling Process* · **594179** - *Modified PVA based membranes as Solid Electrolytes for Fuel Cells Applications* · **593820** - *New Cermet Materials for High-Temperature Solid Oxide Multi-Fuel Cells* · **594111** - *Exploring the Waste Energy Recovery Potential of Solid Oxide Fuel Cell Systems Operating on Hydrogen Carriers* · **593861** - *Ceria-reduced graphene oxide as a co-catalyst for oxygen reduction in low platinum loading acidic fuel cells*
	Focus on distribution and long-term storage (Sala Svevo) · **598201** - *Hydrogen distribution with the help of an interoperable refueling interface* · **594039** - *Monitoring of Hydrogen Gas Grids: Losses and Uncertainty* · **594110** - *Investigating Short- and Long-Term Hydrogen Permeation Behavior in X65 Steel Under Varying Temperature Conditions* · **600076** - *Autonomous renewable energy system with seasonal hydrogen storage: sizing and resilience evaluation* · **594134** - *Capturing the strategic value of long-duration energy storage in energy system optimization models* · **597974** - *Hydrogen Underground Storage in in Saline Aquifer – Evaluation of Influencing Parameters in a Regional Context*
	Policies and economics – Focus on Hydrogen Techno-Economic analysis (Sala Saba) · **585197** - *Utilization of waste heat and oxygen to increase the profitability of electrolyzers in cost-optimized energy systems* · **594102** - *Techno-Economic Assessment of Electrolytic Hydrogen Production via Offshore Wind in the North Sea* · **594133** - *Offshore or onshore hydrogen production in the Dutch North Sea Region? Costs and operational considerations* · **594028** - *Optimizing Green Hydrogen Economics: The Role of Financial Metrics, Scale, and Carbon Contracts for Difference* · **593433** - *Competitive green hydrogen production and the potential impact on energy poverty* · **597995** - *Optimising Sector Coupling Systems with Power-to-X: Insights into Techno-Economic and Stakeholder Dynamics* · **585950** - *Evaluation of Different Hedging Strategies for electricity procurement risks of a Power-to-methanol plant with stochastic modeling*

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10:30-11:00	**Coffee break**
11:00-12:30	**PhD presentations***
	Hydrogen Production – Focus on ALKWE (Sala Illy) · **593943** - *Application of ceramic-based electrodes to practical scale electrolyser systems* · **595569** - *Electrochemical Characterisation of Raney Nickel Electrodes for Alkaline Water Electrolysis: From Laboratory to Industrial Scale* · **614827** - *Mechanistic investigations over multi-metallic transition-metal borides for alkaline water electrolysis* · **597854** - *Renewable water treatment using electrodialysis for hydrogen production*
	Hydrogen Production – Focus on AEMWE (Sala Ressel) · **597320** - *Use of poly(vinyl alcohol-co-diallyl dimethylammonium chloride) in an Anion Exchange Membrane for Water Electrolysis (AEMWE)* · **594097** - *Practicing Safer Electrolysis: Hydrogen Crossover in High-Pressure AEM Systems* · **598119** - *NiFe oxide-based electrocatalysts for low-grade water splitting via Anion Exchange Membrane (AEM) water electrolysis* · **594091** - *Durability of Plasma Sprayed NiFeMo anode for AEMWE*
	Social impact – Strategic Pathways for Production, Expansion, and Societal Integration (Sala Svevo) · **593019** - *Detailed Spatial Analysis for Capacity Expansion Planning of Hydrogen Supply Chain : A roadmap to net-zero energy in 2050* · **593809** - *Assessing the environmental impacts of hydrogen production using a proton-conducting ceramic electrolysis system* · **589570** - *Exploring Renewable Hydrogen Acceptance and Public Participation* · **596568** - *Green Hydrogen and Stakeholder Engagement: Strategies for Value Creation and Social Acceptance* · **593868** - *Cost-Effective Hydrogen Export Strategies: A Case Study of Sweden*
	Policies and economics – Focus on challenges and value creation (Sala Saba) · **594131** - *Cooperation versus subsidizing: how sharing investment can increase hydrogen uptake among regional industries* · **584676** - *Green Hydrogen Landscape in North African Countries: Strengths, Challenges, and Future Prospects* · **592813** - *Policy Analysis for Power-to-X Fuels in Germany using a Semi-quantitative Network Analysis: A Focus on Perceived Policy Coherence* · **596780** - *Technological Innovations in Green Hydrogen Production: Advancing Electrolysis Efficiency and Cost-Effectiveness* · **594243** - *Towards Sustainable Hydrogen Production: Integrating Electrified and Convective Steam Reforming, and Carbon Capture and Storage*
12:30-13:30	**Conference Closing**