

European PhD Hydrogen Conference (EPHyC) draft program

Time	8 April 2025
From 14:30	<p data-bbox="1144 480 1375 504">Ice Breaker Event</p> <p data-bbox="999 517 1518 544">Boat trip in the Gulf of Piran and aperitif</p> <ul data-bbox="495 560 1256 826" style="list-style-type: none">• 14.15 Meeting at Piazza Oberdan (Trieste city center)• 14:30 Bus departure• 15:15 Arrival at Portorož (Slovenia)• 15:30 Boat departure• 15:30-18:30 Boat trip to the Croatian coast of Savudrija and aperitif• 18:30 Arrival at Piran (Slovenia) and walk tour• 20:00 Estimated bus departure to Trieste• 21:00 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!

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	<p>PhD presentations*</p> <ul style="list-style-type: none"> · 593368 - <i>Operational variability analysis and performance assessment of PEMEL systems directly coupled with solar sources</i> (Hydrogen production) · 590742 - <i>Advanced analytical modelling tool for Type IV composite pressure vessels for hydrogen storage</i> (Hydrogen storage) · 598107 - <i>Impact of Operating Cell Temperature on PEM Fuel Cell Degradation Under Real World Heavy-Duty Conditions</i> (End-use application) · 586709 - <i>Sustainable Aviation Fuels from Carbon Dioxide with Integrated Catalyst Systems and Hydrogen</i> (Hydrogen derivatives) · 598049 - <i>LCOH evaluation for optimized offshore domains</i> (Policies and economics) · 589274 - <i>Navigating Legal Pathways for Hydrogen Valleys: A Comparative Analysis of the EU and US</i> (Regulation and Safety) · 589864 - <i>Beyond Green: Is Hydrogen Ready to Become a Just Energy Technology? Perspectives from Public Participation</i> (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



Time	10 April 2025
8:30-10:30	PhD presentations*
	<p><u>Hydrogen Production – Focus on renewable energy sources (Sala Illy)</u></p> <ul style="list-style-type: none"> · 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
	<p><u>End-use application – Hydrogen integration in sectors (Sala Ressel)</u></p> <ul style="list-style-type: none"> · 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
	<p><u>Transport and Storage – Focus on compression and liquefaction (Sala Svevo)</u></p> <ul style="list-style-type: none"> · 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
	<p><u>Policies and economics – Focus on Hydrogen Techno-Economic analysis (Sala Saba)</u></p> <ul style="list-style-type: none"> · 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



10:30-11:00	Coffee break
11:00-12:45	PhD presentations*
	<p><u>Hydrogen Production – Focus on PEMWE (Sala Illy)</u></p> <ul style="list-style-type: none"> · 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 sputtered 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
	<p><u>Hydrogen Production – Focus on SOEC (Sala Ressel)</u></p> <ul style="list-style-type: none"> · 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 SOEC 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 $La_{0.75}Sr_{0.25}CrO_{3-\delta}$: effect on the properties and electrochemical performance of Solid Oxide Cells at high temperatures
	<p><u>Hydrogen Derivatives – Focus on Power-to-X (Sala Svevo)</u></p> <ul style="list-style-type: none"> · 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
12:45-13:45	Lunch
	<p><u>Social and Regulation – Focus on Hydrogen Valleys and hydrogen value chains (Sala Saba)</u></p> <ul style="list-style-type: none"> · 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



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
- 594179 - Modified PVA based membranes as Solid Electrolytes for Fuel Cells Applications
- 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

13:45-15:45

15:45-16:15

Coffee break



16:15-18:00	PhD presentations*
	<p>Hydrogen Production – Focus on modelling and optimization (Sala Illy)</p> <ul style="list-style-type: none"> · 596726 - CFD Methodology for Membrane Water Transport in PEM Water Electrolysis · 619477 - Development of a numerical model for PEM electrolyzers 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
	<p>End-use application – Hydrogen utilization in PEMFC challenges (Sala Ressel)</p> <ul style="list-style-type: none"> · 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
	<p>Transport and Storage – Focus on material behavior for hydrogen storage (Sala Svevo)</p> <ul style="list-style-type: none"> · 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
18:00-20:45	Conference Dinner @Immaginario Scientifico (walking distance from conference area)
	<p>Social impact and others – Social and sustainability assessment (Sala Saba)</p> <ul style="list-style-type: none"> · 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

Time	11 April 2025
8:30-10:30	PhD presentations*
	<p><u>Hydrogen Production – Alternative sources and cutting-edge equipment (Sala Illy)</u></p> <ul style="list-style-type: none"> · 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
	<p><u>End-use application – Focus on SOFC and others (Sala Ressel)</u></p> <ul style="list-style-type: none"> · 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 · 598021 - Analysis and optimization of water dynamics in portable passive PEM fuel cells · 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
	<p><u>Focus on distribution and long-term storage (Sala Svevo)</u></p> <ul style="list-style-type: none"> · 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
	<p><u>Hydrogen derivatives – Focus on Ammonia as hydrogen carrier (Sala Saba)</u></p> <ul style="list-style-type: none"> · 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
11:00-12:30	PhD presentations*
	<p><u>Hydrogen Production – Focus on ALKWE (Sala Illy)</u></p> <ul style="list-style-type: none"> · 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
	<p><u>Hydrogen Production – Focus on AEMWE (Sala Ressel)</u></p> <ul style="list-style-type: none"> · 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
11:00-12:30	<p><u>Social impact – Strategic Pathways for Production, Expansion, and Societal Integration (Sala Svevo)</u></p> <ul style="list-style-type: none"> · 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
	<p><u>Policies and economics – Focus on challenges and value creation (Sala Saba)</u></p> <ul style="list-style-type: none"> · 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