NATIONAL HYDROGEN ASSOCIATION TURKEY

OntarioTech UNIVERSITY

International Association for Hydrogen Energy

CONFERENCE PROGRAM

Bridging Continents by H_2

WHEC-2022

23rd World Hydrogen Energy Conference

Onsite and Online

June 26-30, 2022

Istanbul Congress Center, Istanbul, Turkey

www.whecistanbul.org
info@whecistanbul.org

ORGANIZING COMMITTEE

HONORARY CHAIRS
T. Nejat Veziroglu
John Sheffield

CONFERENCE CHAIR
Ibrahim Dincer

EXECUTIVE ORGANIZING COMMITTEE
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Mehmet Akif Ezan

Track Coordinators
Canan Acar, Coordinator of Track 1. Hydrogen Production: Thermochemical and Photonic Methods
Ankica Kovač, Coordinator of Track 2. Hydrogen Production: Electrolysis
İlgi Karapınar, Coordinator of Track 3. Hydrogen Production: Biological Methods and Biohydrogen
Rami El-Emam, Coordinator of Track 4. Hydrogen Production: Nuclear
Adolfo Iulianelli, Coordinator of Track 5. Hydrogen Separation and Purification
Tayfur Ozturk, Coordinator of Track 6. Hydrogen Storage
Selmiye Alkan Gürsel, Coordinator of Track 7. Fuel Cells: PEMFC
Meng Ni, Coordinator of Track 8. Fuel Cells: SOFC and other types
Yusuf Biçer, Coordinator of Track 9. Integrated Hydrogen Energy Systems
Benedetto Nastasi, Coordinator of Track 10. Power to Gas
Tahir A.H. Ratlamwala, Coordinator of Track 11. Hydrogen Safety
Nader Javani, Coordinator of Track 12. Codes, Standards and Regulations
Adnan Midilli, Coordinator of Track 13. Hydrogen Strategies and Policies
Yılser Devrim, Coordinator of Track 14. Hydrogen Industry, Commercialization and Marketing, Applications
Wei-Hsin Chen, Coordinator of Track 15. Hydrogen Economy, Logistics, Infrastructure
Farrukh Khalid, Coordinator of Track 16. Environmental Impact and Sustainable Development
C. Ozgur Colpan, Coordinator of Track 17. Social Dimensions

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Graduate Student Volunteers
Yağmur Nalbant Atak
Sera Ayten Çetinkaya
Tacettin Dişli
Beyza Dursun
Anıl Erdoğan
Feride Cansu İskenderoğlu
Aykut Korkmaz
Fatih Sorgulu

FORMAT OF THE CONFERENCE

WHEC-2022 will include both inspiring technical programs as well as enjoyable social events. The technical part of the WHEC-2022 will include sessions where plenary, keynote, invited and general speakers will deliver talks on their work and research in hydrogen energy. The conference will also include several specialized sessions and panel discussion sessions. There will also be numerous poster sessions where the poster presenters will have an opportunity to directly discuss their research outcomes with the conference participants. The social events will include a welcome reception, a gala dinner, and an optional tour of historical places. The conference will also include many other opportunities to socialize and connect with participants.

The conference will offer both onsite and online presentations and exhibitions.

The official language of the event is English. All papers must be presented in English. There will not be simultaneous translations.

PRESENTATIONS

Papers are to be presented in “Oral” or “Poster” Sessions.

Speakers are requested report to the session chair 10 minutes before the start of the session. During the Oral Sessions each speaker is allocated for her/his presentation an estimated time of 12 minutes + 2-3 minutes for questions and answers.

All posters will be shown on digital boards. Onsite presenters should be near the digital boards for taking any comments or questions at the break following the session scheduled in the conference program. Both online and onsite presenters should include an e-mail address on the poster. We will ask the participants to ask the questions by e-mail or via the virtual conference platform* to the online presenters. Online participants may post questions to onsite participants via the virtual conference platform. So, we kindly encourage onsite/online poster presenters to visit the virtual conference platform regularly to follow up on the possible questions.

There will be technical assistant in each room in case you have technical issues.

PUBLICATIONS

WHEC-2022 conference proceedings will be available for download right after the conference. The short papers of the authors who presented their papers in the conference will be included. The authors will have a chance to extend their papers and submit extended versions of their papers to special issues in prestigious journals associated with the conference. The selection and invitation process of the special issues will start after the conference ends. The authors will be informed of this process via e-mail.

* https://whecistanbul.org/

WHEC-2022
23rd World Hydrogen Energy Conference

SCIENTIFIC PROGRAM

Sunday – June 26, 2022

14:00 19:00	**CONFERENCE REGISTRATION**

Monday – June 27, 2022

08:30 09:00	**CONFERENCE REGISTRATION**
09:00 09:40	**OPENING CEREMONY** • **Ibrahim Dincer** *Conference Chairman* • **Les Jacobs** *Vice-President, Ontario Tech University, Canada* • **John W. Sheffield** *President, International Association for Hydrogen Energy (IAHE), USA* • **T. Nejat Veziroglu** *Founding President, International Association for Hydrogen Energy (IAHE), USA* • **H.E. Fatih Dönmez** *Minister of Energy and Natural Resources, Turkey*
09:40 10:15	**PLENARY SESSION 1** **Session Chair: *Inci Eroğlu*** **Peter Strasser** *Technical University of Berlin, Germany* **Electrocatalysis of Hydrogen Technologies**
10:15 10:45	**Coffee Break**
	PLENARY SESSION 2 **Session Chair: *Selmiye Alkan Gürsel***
10:45 11:20	**Stuart Hawksworth** *Head of Centre for Energy, HSE, UK & President of International Association for Hydrogen Safety, UK* **Safety of Hydrogen in the Energy System**
11:25 12:00	**Bruce E. Logan** *The Pennsylvania State University, USA* **Green Hydrogen Production using Biomass in Next Generation Microbial Electrolysis Cells and Impaired Water in Novel Water Electrolyzer Systems**
12:00 14:00	**LUNCH**

Monday – June 27, 2022

PARALLEL SESSIONS – 1

	ROOM 1	ROOM 2
	Track 1. Hydrogen Production: Thermochemical and Photonic Methods **Session Chair: *Canan Acar***	**Track 2. Hydrogen Production: Electrolysis** **Session Chair: *Bruce E. Logan***
14:00 **15:30**	**#42** "Experimental Investigation of a Photoelectrochemical Reactor for Hydrogen Production and Wastewater Treatment" *M.E. Demir & I. Dincer* **#58** "Improving Catalytic Activity of Supported Precious Metal Catalysts for Hydrogen Production by Hydrothermal Conversion Processes" *S. Irmak* **#162** "Applying Artificial Intelligence on Steam Gasification of Waste Plastic to Generate Hydrogen" *S. Özmen & P.T. Clough* **#1546** "Catalytic Hydrogen Evolution by Using Different Carbon-based Nanocomposite at Soft Interfaces" *E. Aslan & I. Hatay Patir* **#219** "Performance of Microwave and Conventionally Heated Reactor Systems in Steam Reforming of Ethanol over Nickel Impregnated Mesoporous Carbon" *M. Sariyer, N.A. Sezgi & T. Dogu*	**Invited Speaker** **Joris Proost** *Université Catholique de Louvain, Belgium* **Critical Assessment of the Production Scale Required for Fossil Parity of Green Electrolytic Hydrogen** **#183** "Electrodeposition of a Ni-Mo Alloy Catalyst with Optimized Mo-Content for Hydrogen Evolution Reaction in AEM-Electrolysis" *L. Böhm, K. Thielker, N. Kazamer, F. Wirkert, U. Rost, G. Marginean, U.P. Apfel & M. Brodmann* **#187** "Upscaling High-Performance 3-D Electrodes for Alkaline Water Electrolysis Towards Near-Industrial Conditions" *R. Delmelle, F. Rocha, C. Georgiadis, J. Lambrechts & J. Proost* **#205** "Activity of Electrodeposited Rhodium in Acidic and Basic Water Electrolysis" *R. Bonifacio & M. Mena* **#22** "Qualifying Tests and Economic Analysis of Electrolyzers for Grid Services" *R.S. Reissner, J. Bürkle, S. Crevon, V. Seguin, V. Klemenz, T.M. Mbavarira & C. Imboden*
15:30 **16:00**	**Coffee Break**	

PARALLEL SESSIONS – 1

ROOM 3	ROOM 4	
Track 3. Hydrogen Production: Biological Methods and Biohydrogen **Session Chair: *Ilgi Karapinar***	**Track 5. Hydrogen Separation and Purification** **Session Chair: *Adolfo Iulianelli***	
#6 "Carbon Footprint of Hydrogen Produced from Spent Coffee Grounds" *F.G. Uctug, H. Cay, G. Duman Taç & J. Yanık* **#23** "The Potential of Using Microalgae in Photobioreactors for H_2 Production" *S. Markov* **#24** "A Novel Three-Stage Integrated System (Dark Fermentation, Methanogenesis and Photofermentation): Different Combinations to Maximize H_2 and CH_4 Production" *T.H. Erguder, M.C. Akman, E. Koç, E.G. Tunçay, U. Gündüz & I. Eroglu* **#26** "Investigation of H_2 and CH_4 Production from Yard Wastes via Two-Stage Anaerobic Digestion at Different Pre-Treatment Options and Solids Concentrations" *N.N. Kalaycıoğlu & T.H. Erguder*	**#34** "New Aspects Concerning the Improving of Hydrogen Isotopes Separation by Hydrogen - Water Isotopic Exchange" *G. Ionita, C. Bucur & I. Spiridon* **#259** "Development and Investigation of a Novel Electrochemical Hydrogen Compressor Cell Design Based on Hydraulic Clamping" *U.W. Rost, L. Engelhardt, F.J. Wirkert & M. Brodmann* **#161** "H_2/CO_2 Separation with New Ionic Liquid-based Membranes" *A. Brunetti, F. Galiano, R. Mancuso, L. Guazzelli, M. Mauri, C. Chiappe, R. Simonutti, C.S. Pomelli, G. Barbieri, B. Gabriele & A. Figoli* **#50** "Simulation Modeling of Hydrogen Permeation Across Pure Palladium Membranes" *M. El-Shafie & S. Kambara* **#170** "Gas Separation Properties of Mixed Matrix Membranes Prepared with Graphene Oxide" *S. Canca & S. Deniz*	**EXHIBITION**
Coffee Break		

PARALLEL SESSIONS – 1

	ROOM 5	ROOM 6
	Track 6. Hydrogen Storage **Session Chair: *Tayfur Öztürk***	**Track 7. Fuel Cells: PEMFC** **Session Chair: *Selmiye Alkan Gürsel***
14:00 15:30	**#77** "Techno-Economic Requirements for Underground Renewable Hydrogen Storage in Porous Media" *J. Michalski* **#119** "Digital Development of an Optimized Heat Management Design for an Integrated Solid-State H_2-Storage Reservoir" *P.S. Krause, J. Warfsmann, E. Wienken, J. Jepsen, T. Klassen & J. Puszkiel* **#120** "Modeling and Process Simulation of a Metal Hydride Tank Coupled with a PEM Electrolyzer" *E.S. Wienken, P.S. Krause, J. Warfsmann, J.B. von Colbe, J. Jepsen, T. Klassen & J.A. Puszkiel* **#122** "High H_2 Uptake on Co(II)- and Ni(II)-Exchanged ZSM-5 and US-Y Having Optimal Heat of Adsorption Values" *N. Sarohan, M.O. Ozbek, Y. Kaya & B. Ipek* **#192** "Development of Novel Polymeric Material Grades and Experimental Methods to be Used in High-Pressure H_2 Gas Atmospheres" *W. Balasooriya, C. Clute, K. Halder, G. Theiler, A. Hausberger & G. Pinter* **#203** "Evaluation of the Bimetallic Pt-Ni and Pt-Co Catalysts on the LOHC Dehydrogenation" *K. Alconada & V.L. Barrio*	**#16** "Compact Fuel Cell System with Diesel Reforming" *R.C. Samsun, M. Prawitz, A. Tschauder, J. Meißner, J. Pasel & R. Peters* **#20** "On the Origin of Fuel-Cell Catalyst-Layer Local Resistances" *A. Chowdhury, S.A. Berlinger J. Petrovick, A. Kusoglu, C.J. Radke & A.Z. Weber* **#45** "Preparation of Electroconductive Thermally Expanded Graphite for PEM Fuel Cells' Polymer Composite Bipolar Plates" *A.M. Darabut & Y. Lobko, Y. Yakovlev, M.G. Rodriguez, K. Veltruska, P. Kuš, J. Nováková, M. Vorokhta, V. Kopecký, M. Procházka, M. Dopita, I. Matolínová, V. Matolín* **#65 "**Dynamic Modeling of a Residential Integrated PEMFC-Based Micro-CHP System" *R. ElKhatib & H. Louahlia* **#44** "Synthesis and Investigation of the Pt-Decorated Polypyrrole Nanotubes in PEM Fuel Cells" *Y. Lobko, Y. Novakova, Y. Yakovlev, D. Kopecký, M. Vorokhta, A.M. Darabut, L.B. Redondo, V. Matolin & I. Matolinova* **#79** "Design and Investigation of a Variable-Nozzle Ejector for a 120 kW PEMFC Stack" *Y. Lu, X. Wang & S. Xu*
15:30 16:00	**Coffee Break**	

Monday – June 27, 2022

PARALLEL SESSIONS – 1

ROOM 7	ROOM 8	Digital Boards – Onsite
Track 4. Hydrogen Production: Nuclear **Session Chair: *Hasan Sadikoglu***	**Track 9. Integrated Hydrogen Energy Systems** **Session Chair: *Yusuf Bicer***	**POSTER PRESENTATIONS – 1**
Invited Speaker **Francesco Ganda** *International Atomic Energy Agency, Austria* **Worldwide Nuclear Hydrogen Development Plans and Hydrogen-Related Services Offered by the IAEA** **#164** "Building the Business Case for Hydrogen Production with Operating Nuclear Power Plants" *A. van Heek, Y. Yuasa & B. Lazerwitz* **#1592** "Nuclear Hydrogen Perspectives in Romania" *I. Iordache, M. Varlam, E. Carcadea & M. Iordache* **#1526** "Multiobjective Optimization of a PWR Nuclear Cogeneration Plant for Hydrogen Production" *T. Tanbay & A. Durmayaz*	**Invited Speaker** **Michaela Kendall** *Adelan, UK* **The UK Hydrogen Strategy and Technology Supply Chains** **#92** "The Role of Hydrogen for the Defossilisation of the German Chemical Industry" *F. Kullmann, P. Markewitz, L. Kotzur & D. Stolten* **#146** "The Role of Hydrogen for a Greenhouse Gas-Neutral Germany by 2045" *T. Schöb, P. Markewitz, D. Franzmann, H. Heinrichs, L. Kotzur, J. Linssen & D.Stolten* **#401** "Optimization of a Stand-Alone PV System for Efficient Hydrogen Production Using an Alkaline Water Electrolyzer" *V.A.M. Lopez, H. Ziar, M. Zeman & O. Isabella* **#286** "Prediction of Hydrogen Combustion Using Data-Driven Approach" *K. Kunihara, R. Waluyo & M. Aziz* **#100** "Tsukuba Green Holonism Town (I)—Building a Carbon-Neutral Community" *K.Morita, I.Sugimoto, H.Mitsuishi & M.Ishida* **#98** "Tsukuba Green Holonism Town (II) - Examining a Preliminary Energy Demand-Supply Outlook" *I. Sugimoto, K. Morita, H. Mitsuishi & M. Ishida*	**#11** "Assessment of Hydrogen Production Systems Based on Biogas Catalytic Reforming with Carbon Capture" *C.C. Cormos, A.M. Cormos, L. Petrescu & S. Dragan* **#174** "Design of Green Hydrogen Production System in Context of Collaborative International Online Learning (COIL)" *E. Ochoa, P. Alarcon, J. Gonzales, A. Malpartida, M. Campos, G. Bancayan, L. Machaca, D. Tafur, I. De-La-Puente, J. Gamarra, H. Bravo, J. Sheffield, S. Bausermanü J. Nahui & J. Ramos-Saravia* **#214** "Green Hydrogen Production for FCEV Trucks at a Remote Open-Pit Copper Mine" *S. F. Bauserman, J. Nahui-Ortiz, J.C.Ramos Saravia, J. Sheffield & M.J. Mereu* **#350** "Optimization of a Premixed charge Hydrogen Engine in Argon Power Cycle" *T. Chiba, T. Tsujimura, M. Kobayashi, Y. Suzuki, D. Swada & C. Zhili* **#1448** "Green Hydrogen Production Using Geothermal Power Generation (1) Project in Mokai, New Zealand" *K. Ando, T. Hisaeda, C. Nagai, N. Sasaki, S. Ichikawa, Y. Mashimo & A. Inagaki* **#1451** "Green Hydrogen Production Using Geothermal Power Generation (2) Project in Oita, Japan" *H. Nagatsugu, K. Shima, T. Ito, M. Kajiki* **#383** "Hydrogen Production Via Steam Reforming of Glycerol over Ce-La-Cu-O Ternary Oxide Catalysts" *A. Latsiou, N.D. Charisiou, A.A. Dabbawala, K. Polychronopoulou & M.A. Goula*
Coffee Break		

PARALLEL SESSIONS – 2

ROOM 1

Track 10. Power-to-Gas
Session Chair: *Can Ozgur Colpan*

16:00 18:00

#111 "Towards Electrifying Cement Production by Electrochemically-Enhanced Dissolution of $CaCo_3$ during Water Electrolysis under a Ph-Gradient" *R. Rouxhet, R. Delmelle & J. Proost*

#125 "Butadiene Production via the Direct Dehydrogenation of N-Butane in Membrane Reactors: A Techno-Economic Analysis" *C. Brencio, M. Maruzzi, G. Manzolini & F. Gallucci*

#188 "Process Implications of Electrifying Ammonia Production" *A. Dechany, V. Galvita, K. van Geem & J. Proost*

#343 "An MINLP-based Optimal Design and Scheduling of a Power to Gas System Integrated Microgrid: A Case Study from Turkey" *H. Akülker & E. Aydın*

#402 "Integrated Planning Tool for Cost and 3D Structural Planning for Offshore Wind Farms for the Generation of H_2" *M. Hayduk, R. Sommer, O. Kühn, F. Beuß, W. Flügge & J. Gulden*

#1616 "Techno-Economic Performance Assessment of a Reactor System Used for Power-to-Methane Plant" *A.C. Ince, C.O. Colpan, A. Keles, M.F. Serincan & U. Pasaogullari*

#207 "Sensitivity Analysis of Independent Parameters for Formation of NO_x Emission in Hydrogen Enriched Compressed Natural Gas Along with Exhaust Gas Recirculation by Support Vector Machine" *A. Rao, Y. Liu & F. Ma*

#229 "CO_2 Methanation over Bimetallic Nickel-Noble Metal Catalysts" *A.I. Tsiotsias, N.D. Charisiou, G.D. Ferrante, C. Italiano, A. Vita, V. Sebastian & M.A. Goula*

ROOM 2

Track 11. Hydrogen Safety
Session Chair: *Alfredo Ortiz Sainz de Aja*

#8 "Computational Investigation of Premixed hydrogen-air Flames Stabilized in Diverging Annular Channel" *A.C. Benim & B. Pfeiffelmann*

#257 "Safety Study and CFD Simulation of Hydrogen Leaks and Dispersion within Semi Enclosed Space of Hydrogen Facility" *D. Prasetyo, A.C. Alvarez, A.F. Rubio & A.G. Jimenez*

#384 "Investigations on the Deflagration-to-Detonation Phenomena by Means of Numerical Simulations with Detailed Chemistry and Automated Meshing" *P.Scienza, M.G. Cojocaru, N. Attal & G. Kumar*

#1475 "The Effect of Crystal Structure and Metal Electrodes on Gas Detection in TiO_2 Nanotubes H_2 Sensors" *L.B. Taşyürek, E. Işık, İ.Işık & N. Kılınç*

#1482 "Determination of Safety Distance and the Structural Damage Vulnerability Resulted from Vapor Cloud Explosion (VCES)" *A. Ismaila, R.Md. Kasmani & A.T. Ramli*

#55 "Mesh-Independent Large-Eddy Simulation with Anisotropic Adaptive Mesh Refinement for Hydrogen Deflagration Prediction in Large-Scale Vented Vessels" *L. Ivan, M. Khalil, C.P.T. Groth & Z. Liang*

#280 "Toward the Continuous Sensing of Leaked Hydrogen by a Quad-Rotor Drone" *T. Suga & K. Matsuura*

#429 "Fretting Wear of Elastomer Materials in Hydrogen" *G. Theiler & A. Hausberger*

19:00 22:00 — **Welcoming Reception** *on Uskudar Valide Sultan Boat*

Monday – June 27, 2022

PARALLEL SESSIONS – 2

ROOM 3

Track 13. Hydrogen Strategies and Policies
Session Chair: *Adnan Midilli*

Invited Speaker
Nafiz Arica
Bahçeşehir University, Turkey
Artificial Intelligence in Sustainable Energy

#95 "Hydrogen Roadmap Assessment for Colombia Under an Internationally Comparative Framework" *P. Riveros-Melo, J. Sanchez. C.M. Cobo-Angel & C. Barraza-Botet*

#104 "Creating a Global Hydrogen Economy: Review of International Strategies, Targets, and Policies with a Focus on Japan, Germany, South Korea and California" *V. Vijayakumar, L. Fulton, M. Shams & D. Sperling*

#113 "Sustainability Analysis of Hydrogen Production Processes" *A. Mio, E. Barbera, A. M. Pavan, A. Bertucco & M. Fermeglia*

#226 "Blue H_2 Perspective in Energy Transition of Colombia" *S.D. Cardozo, B.C. Vanegas, F.B. Londoño, N. Sánchez & M. Cobo*

#228 "Colombia's Green Hydrogen: Solar and Wind Power Capacity Scenarios "*D. Rodriguez, N.M. Castillo, N. Sánchez & M. Cobo*

#194 "Assessing Renewable Hydrogen Production Capacity on a Regional Basis" *G. Puig-Samper, F. Campos-Carriedo, D. Iribarren & J. Dufour*

ROOM 4

Track 16. Environmental Impact and Sustainable Development
Session Chair: *Fehmi Görkem Üçtuğ*

#21 "Desulfurization Performance of SBA 15 Supported Calcium Based Mixed Metal Oxide Sorbents" *A. Kanca, Z. Koseoglu Ebem & O.N. Ata*

#115 "Hydrogen Certification of Origin in Colombia" *J.C. Moreno, M. Cobo & N. Sanchez*

#137 "Prospects of Renewable Hydrogen in Transport" *A. Ajanovic, R.J. Haas & M. Sayer*

#266 "Sustainability Assessment of a Proton-Exchange Membrane Fuel Cell Stack as a Basis for the Development of Eco-Design Guidelines" *M. Mori, D. Iribarren, J. Cren, E. Monnier, R. Stropnik, A. Lotric, M. Sekavcnik, D. Cortes, L. Gimenez, L. Rey, G. Puig-Samper, F. Campos-Carriedo, E. Bargiacchi, J. Dufour & E. Cor*

#59 "A Parametric Numerical Analysis of Laminar Hydrogen Diffusion Flames" *A. Korucu & A.C. Benim*

#36 "Life Cycle GHG Emissions of a Gasoline and Fuel Cell Vehicle with Various Hydrogen Production Pathways" *S. Ghandehariun, S. Sadeghi & A.M. Ghandehariun*

#151 "Hydrogen Production from Olive Oil Mill Wastewater through Steam Reforming in Multifunctional Reactors" *C. Rocha, M.A. Soria & L.M. Madeira*

#315 "LCA and Criticality Analysis of Water Electrolysis Technologies" *J.C. Koj, A. Taubitz, O. Zelt, W. Kuckshinrichs & K. Görner*

EXHIBITION

Welcoming Reception *on Uskudar Valide Sultan Boat*

PARALLEL SESSIONS – 2

	ROOM 5	ROOM 6
	Track 6. Hydrogen Storage **Session Chair: *Mohamed Hamed***	**Track 7. Fuel Cells: PEMFC** **Session Chair: *Thomas Von Unwerth***
16:00 **18:00**	**Invited Speaker** **S.A. Sherif** *University of Florida, USA* **Liquid Hydrogen Storage in Microgravity** **#134** "Hydrogen - Heat Storage System Based on Metal Hydride and Phase Change Material" *J. Barale, G. Capurso, T. Stühff, F. Nastro, B. Neumann, J.B. von Colbe, P. Rizzi, C. Luetto, H. Stühff & M. Baricco* **#399** "Performance Analysis of a Solar Tower Power Plant Integrated with Hydrogen Energy Storage System" *M.H. Mirbagheri, E. Baniasadi & H. Genceli* **#155** "Modeling the Kinetic Behavior of the Li-RHC System for Hydrogen Storage Under Desorption Conditions" *A. Neves, J. Puszkiel, J.M.B. von Colbe, T. Klassen & J. Jepsen* **#149** "Effects of Initial and Boundary Conditions on Hydrogen Refueling Performances" *H. Luo, R. Chahine, P. Bénard & J. Xiao* **#171** "Hydrogen Production from the Catalytic Dehydrogenation of Hydrazine Borane Over Pd-Ni-B Catalyst" *M.R. Gürlük & G. Özkan* **#181** "Efficient Hydrolytic Dehydrogenation of Ethylene Diamine Bisborane over Pd-Ni-Zr-B Catalyst in the Ethylene Diamine Media" *H.B. Murathan, G. Özkan & G. Özkan*	**#147** "Modeling of an Assisted Cold Start of a PEMFC Coupled with a Metal Hydride Reactor" *T. Gießgen & T. Jahnke* **#190** "Topology Optimization of Radial Flow Field in Circular PEM Fuel Cells" *F. Razmara, L.F. Nogueira de Sá, J. Alves Nogueira, T. Lopes J. Romano Meneghini & E.C. Nelli Silva* **#288** "Effects of Catalyst Loading on the Performance Improvement of PEMFCs Applying a Magnetic Field" *W. Yang, J. Kim & Y. Kim* **#341** "Comparative Study on the Effect of Selected Dispersion Technologies for Fuel Cell Ink Preparation on the Overall PEMFC" *A.S. Amin, F. Özcan & D. Segets* **#1524** "Small Drone Conversion to Long Endurance Hydrogen Fuel Cell Powered Drone" *S. Zafar, S. Ali & P. Dawson* **#320** "Experimental Study of Modified Polybenzimidazole/ Phosphonated Polyvinyl Alcohol Blend Membrane for Fuel Cell Operations" *A. Çalı, A. Şahin & İ. Ar* **#96** "Multi-Objective Optimization of a Turbine Impeller for Fuel Cell Vehicles", *H. Mao, Y. Zhang & S. Xu* **#110** "Development and Testing of a Proton Exchange Membrane Fuel Cell Stack Envisioning Unmanned Aerial Vehicle Applications" *D.F.M. Santos, R.B. Ferreira, D.S. Falcão & A.M.F.R. Pinto*
19:00 **22:00**	**Welcoming Reception** *on Uskudar Valide Sultan Boat*	

Monday – June 27, 2022

PARALLEL SESSIONS – 2

ROOM 7	ROOM 8	Digital Boards – Onsite
Track 15. Hydrogen Economy, Logistics, Infrastructure **Session Chair: *Ilgaz Korkmaz***	**Track 9. Integrated Hydrogen Energy Systems** **Session Chair: *Enrico Sciubba***	**POSTER PRESENTATIONS – 2**
#17 "Assessment of the Socio-Economic Costs and Benefits of Increased Use of Biomethane and Hydrogen in Europe" *J. Michalski, M. Altmann, U. Bünger & J. Zerhusen* **#132** "Analysis of Economic Efficiency on International Hydrogen Supply Chains to Japan" *Y. Ishimoto, M. Hashimoto & E. Ohira* **#135** "On the Future Role of Hydrogen as Storage for Electricity" *R. Haas, M. Sayer & A. Ajanovic* **#62** "The Hydrogen Scientific Aspects in Romania" *I. Iordache, M. Varlam, E. Carcadea, D. Schitea & M. Iordache* **#117** "Economical Preparation and Characterization of Dual-Ions Conducting Fuel Cell" *Y.T. Lu, W.C. Huang, S.H. Wang & H.Y. Chang* **#101** "Mucilage in The Marmara Sea Versus Black Sea's H_2S; Hydrogen Energy Production Opportunities" *E. Atay & S. Apak* **#112** "Fabrication of Platinum-Cobalt Nanowires by Centrifugal Electrospinning Method as Electrocatalysts for PEMFC" *C.Y. Wu & M.H. Chang* **This session is sponsored by Sabanci Group**	**#9** "Development of Innovative Hydrogen Combustion Systems for Industrial Gas Turbines" *N. Tekin, A. Horikawa, M. Ashikaga & H. Funke* **#289** "Performance Analysis on the Novel PEMFC Assisted Ground Source Heat Pump System" *J. Kim & Y. Kim* **#1620** "Solar Assisted Hydrogen Production via PV/T Assisted Small Scale Transcritical Power Cycle with Direct Steam Generation" *G. Soyturk, O. Kizilkan, M.A. Ezan & C.O. Colpan* **#352** "Modeling and Design Optimization of Carbon-Free Hybrid Energy Systems with Thermal and Hydrogen Storage" *J. Bryan, A. Meek, S. Dana, M.S.I. Sakir & H. Wang* **#33** "Optimal Tracking of Grid Operated Load Demand with Hydrogen based Storage System Using Model Based Predictive Control" *M.B. Abdelghany, M. Sheshzad, V. Mariani, D. Liuzza, L. Glielmo* **#46** "Green Hydrogen Production from Geothermal Power Plants: Kizildere (Denizli-Turkey) Geothermal Power Plant Case Study" *R. Sengun & F.S. Tut Haklidir* **#89** "The Ultra-Efficient FC-ICE Hybrid Cycle with Thermochemical Recovery of The Waste Heat - Finite-Time and Finite-Speed Thermodynamics Analysis" *D. Diskin & L. Tartakovsky*	**#391** "External Effects on the High Frequency EIS Response of a PEM Electrolysis Cell" *I. Franzetti, A.L. Chan, A. Pushkarev & S. Metz* **#1462** "A Comparative Lifecycle Assessment (LCA) for Green and Grey Hydrogen Production in the South African Context" *O. Mbaba & H. Von Blottnitz* **#90** "From Batch Reactor to Continuous Flow Microchannel Reactor for Dehydrogenation of Perhydro-Dibenzyltoluene: A Preliminary Study" *A. Ali, A. Krishnan R & H.J. Lee* **#28** "LabVIEW Modeling and Simulation of a Stand-Alone Photovoltaic/Wind System with Hybrid Storage H_2-Battery" *H. Azoug & H. Belmili* **#376** "Effect of Starting Raw Material in Mechanical Alloying of TiFe Hydrogen Storage Alloy" *K. Tsuchikawa, S. Zholdayakova & H.H. Uchida* **#1488** "Reaction Process of Ammonia Production from Iron Nitride and Carbonated Water" *H. Eba, T. Liu & K. Fukami* **#1518** "Influence of Different Additives in the Hydrolysis of Sodium Borohydride" *L. Gómez-Coma, D. Silva, A. Ortiz, A.M.F.R. Pinto & I. Ortiz*
Welcoming Reception *on Uskudar Valide Sultan Boat*		

Tuesday – June 28, 2022

08:30 09:00	**CONFERENCE REGISTRATION**
	PLENARY SESSION 3 **Session Chair:** ***Ilgi Karapınar***
09:00 09:35	**Kazunari Domen** *The University of Tokyo & Shinshu University, Japan* **Photocatalytic Water Splitting for Large Scale Solar Hydrogen Production**
09:40 10:15	**Ibrahim Dincer** *Conference Chairman* **Overview Talk: "Clean Hydrogen for Clean Future"**
10:15 10:45	**Coffee Break**

PARALLEL SESSIONS – 3

	ROOM 1	ROOM 2
	Panel Discussion Session **Hydrogen for Sustainable Development**	**Track 1. Hydrogen Production: Thermochemical and Photonic Methods** **Session Chair:** ***Canan Acar***
10:45 **12:15**	Women in Green Hydrogen **Moderator** **Ilgi Karapinar** *Dokuz Eylul University, Turkey* **Panelists** **Dilara Gülcin Caglayan** *Aurora Energy Research Ltd, Germany* **Inci Eroglu** *Middle East Technical University, Turkey* **Selmiye Alkan Gürsel** *Sabanci University, Turkey* **Sara Shahmohammadi** *Canada Renewable Hydrogen Alliance (CRENHA/ IRENHA) (Co-founder), Canada* **Mary-Rose de Valladares** *ATOME Energy, PLC, UK* This panel, supported by Women in Green Hydrogen (WiGH), will focus on the importance of hydrogen on sustainable development.	**#130** "Photocatalytic Glycerol Reforming on Gold - Copper Nano Metallic TiO_2" *R. Yildirim & P. Ozdemir* **#424** "Photonic Reactors for Hydrogen Production and Wastewater Treatment in Underground and Underwater Applications" *D. Erdemir & I.Dincer* **#138** "Novel Design Concept for Thermolysis Reactor in the Thermochemical Copper-Chlorine Cycle of Hydrogen Production" *E. Armoudli & O.A. Jianu* **#381** "Combined Autothermal and Sorption-Enhanced Reforming of Olive Mill Wastewater for the Production of Hydrogen: Thermally Neutral Conditions Analysis" *P. Cerqueira, M.A. Soria & L.M. Madeira* **#84** "Mechanistic Kinetic Modeling Framework for the Conversion of Waste Crude Glycerol to Value-added Hydrogen-Rich Gas" *A. Odoom, M. Fabrik, A. Salama & H. Ibrahim* **This session is sponsored by Koç University TÜPRAŞ Energy Center (KUTEM)**
12:15 **14:00**	**LUNCH**	

PARALLEL SESSIONS – 3

ROOM 3	ROOM 4	
Track 2. Hydrogen Production: Electrolysis **Session Chair:** ***Kazunari Domen***	**Track 3. Hydrogen Production: Biological Methods and Biohydrogen** **Session Chair:** ***Serpil Özmıhçı***	
Invited Speaker **S. Vasudevan** *CSIR-Central Electrochemical Research Institute, India* **Hydrogen Production by Electrolysis to Clean Reality** **#109** "Analysis of Experimental Application of Permanent Neodymium Magnets in Alkaline Electrolyzer for Green Hydrogen Production" *M. Paranos & A. Kovač* **#157** "SOEC as Enabler of Highly Efficient Hydrogen & E-Fuel Production" *J. Rechberger, J. Macherhammer, M. Rothbart, R. von Helmolt & M. Hauth* **#250** "Powder Metallurgy: An Efficient and Scalable Production Process of Electrodes for the Gigawatt Electrolysis Industry" *T. Rauscher, C. Bernäcker, J. Albers, M. Anders, T. Büttner, S. Loos, T. Weißgärber & L. Röntzsch* **#156** "Activity of Binary Non-Precious Metal Oxide-Based Electrode for Oxygen Evolution Reaction in Acid" *K. Matsuzawa, S. Hirayama, Y. Kohara & A. Ishihara*	**#358** "Valorization of Green Market Waste for Biohydrogen Production" *I. Hacıoğlu, S. Ozmıhçı, I. Karapınar, M. Küs, A. Keleş & I. Kargül* **#410** "Adaptation of *Caldicellulosiruptor Bescii* to Unpretreated Cattle Manure: A Novel Approach for Hyperthermophilic Biohydrogen Production" *B. Tunca & Y.D. Yilmazel* **#437** "Bioelectrochemical Hydrogen Production from Dark Fermentation Effluents in Hyperthermophilic Microbial Electrolysis Cells" *A. Kas, B. Tunca & Y.D. Yilmazel* **#114** "Green Hydrogen Production from the Non-Centrifugal Sugar Industry" *N. Sanchez, D. Rodríguez-Fontalvo, N.M. Cantillo, R.Y. Ruiz-Pardo & M. Cobo* **#136** "A Preliminary Techno-Economic Analysis of Photobiological Hydrogen Production" *S. Genç & H. Koku*	**EXHIBITION**
LUNCH		

Tuesday – June 28, 2022

PARALLEL SESSIONS – 3

	ROOM 5	ROOM 6
	Track 5. Hydrogen Separation and Purification **Session Chair: *Adolfo Iulianelli***	**Track 6. Hydrogen Storage** **Session Chair: *Hossam Kishawy***
10:45 12:15	Invited Speaker **Wei-Hsin Chen** *National Cheng Kung University, Taiwan* **Operation and System Optimization for Hydrogen Production and Separation**	Keynote Speaker **Hirohisa Uchida** *Tokai University / KSP Inc., Japan* **Hydrogen Storage by Hydrogen Storage Alloys – Fundamentals and Application**
	#268 "Towards a Better Sustainability of Electroless Pore-Plated Membranes: Life Cycle Assessments on Fabrication Strategies" *D. Alique, P. Leo, D. Martinez-Diaz, R. Sanz & J.A. Calles* **#312** "Electrochemical Hydrogen Separation from Reformate Gas Using Polybenzimidazole/ MOF Composite Membranes" *G.N. Bulanık Durmuş, E.O. Eren, Y. Devrim, C.O. Colpan & N. Ozkan* **#333** "Development of Bimetallic Electrocatalysts for High-Temperature Electrochemical Hydrogen Purification" *I.B. Bal, G.N. Bulanık Durmuş & Y. Devrim* **#426** "Development of Pd-Based Dense Metallic Membrane with Sulfur Resistant MOF Coated for Hydrogen Separation" *S. Kalkan & G. Gumuslu Gur*	**#247** "Mathematical Modelling of Electrochemical Hydrogen Compressor: Temperature Influence Simulation Analysis" *D. Marciuš, D. Brezak & A. Kovač* **#271** "A Multicriteria Analysis Decision for Priorization of Liquid Organic Hydrogen Carriers" *M. Almansa-Ortegon, J.C. Osorio & D.F. Manotas-Duque* **#1463** "Influence of Hydrogen on Flexible Pipe Service" *C. Gabet & S. Kjenner* **This session is sponsored by Koç University TÜPRAŞ Energy Center (KUTEM)**
12:15 14:00	**LUNCH**	

PARALLEL SESSIONS – 3

ROOM 7	ROOM 8	Digital Boards – Onsite
Track 7. Fuel Cells: PEMFC **Session Chair: *Frano Barbir***	**Track 8. Fuel Cells: SOFC and other types** **Session Chair: *Tahir A.H. Ratlamwala***	**POSTER PRESENTATIONS – 3**
#386 "Use of Two-Phase Cooling for the Fuel Cell System" *T. Bogdanske, A. Sklarow & J. Gulden* **#418** "Air Supply Module for Pressurizing Fuel Cells in Airborne Applications" *D. Frank, J. Schröter, C. Bauer & C. Willich* **#423** "The Optimisation of Graphene-Based Microporous Layers for Polymer Electrolyte Fuel Cells" *F.C. Lee, M. Ismail, D.B. Ingham, K.J. Hughes, L. Ma, A. El-Kharouf & M. Pourkashanian* **#222** "Investigation on Airflow Performance of Open Cathode Proton Exchange Membrane Fuel Cell" *E. Pinar & G. Şefkat* **#405** "Two-Dimensional Simulation of Cold Start Process for PEMFC Stack with Various Current Loading Modes" *J. Liu & T. Zhang*	**#366** "Accelerated Stress Testing of Solid Oxide Fuel Cells via Ex-Situ Chemical Redox Cycling of Ni-CGO Fuel Electrodes" *M.D. Pietra, A. Monforti Ferrario, D. Pumiglia, L.D. Seta & S. McPhail* **#1609 "**A New Method for Manufacturing Anode Supported Solid Oxide Fuel Cells with AFL" *O.Y. Akduman, M.S. Uyanik, E. Kabakci & A.M. Soydan* **#1621** "Experimental and Exergy Analyses of Internal Reforming Solid Oxide Fuel Cell Fed with Reformate Gas" *A. Erdogan, F. Capotondo, A. Hagen & C.O. Colpan* **#1501** "Development of LSF-LSM Composite Cathodes for IT-SOFC" *R.B. Dizaj, F. Kilic & T. Ozturk* **#107** "Numerical Investigation of Ni Migration in SOC Fuel Electrode Using Phase Field Model and Lattice Boltzmann Model" *Y. Wang, S. Zhao, Z. Guo, Q. Du, K. Jiao, B. Zu & M. Ni* **#273** "Combinatorial Development of LSF/RP-LSF/ ScSZ Composite Cathode for Intermediate Temperature Solid Oxide Fuel Cells" *F. Kilic & T. Ozturk*	**#1453** "Analysis of the First Step of Hydrogen Release of Ammonia Borane for PCA with Different Heating Rates" *R. Hinojosa-Nava, E.V. Mejía-Uriarte & R.Y. Sato-Berrú* **#359** "Heat Source Free CO_2 Methanation Over Hydrogen Storage Alloy" *K. Sawahara, R. Gemma & H. Kawanami* **#1536** "Influence of Biogas Composition to Catalytic Methanation Process" *J. Kulas, L. Polák & A. Doucek* **#124** "Experimental Dynamic Load Cycling and Current Density Measurements of a Parallel Serpentine PEMFC Design", *B. Toharias, C. Suárez, A. Iranzo, A. Chesalkin, J. Pino & F. Rosa* **#1454** "A Study on Corrosion Durability Improvement of CrAl Coated Metal Bipolar Plate for PEMFC by 3D Laser Cladding Method" *H.E. Kang, J.H. Choi, H.W. Min, D.J. Kim & Y.S. Yoon* **#406** "Methanation of CO_2 over $LaNi_5$/V Layered Film" *S. Kaneta, H. Baba, S. Yamada & R. Gemma*
LUNCH		

Tuesday – June 28, 2022

PARALLEL SESSIONS – 4

	ROOM 1	ROOM 2
	COMPANY OVERVIEW PRESENTATIONS **Session Chair: *Tayfur Öztürk***	**Track 1. Hydrogen Production: Thermochemical and Photonic Methods** **Session Chair: *Cevat Sarıoğlu***
14:00 **15:30**	**Yasushi Yamaki** *AGC Chemicals Europe, Ltd., Netherlands* AGC – Advancing Membrane Technology for Green Hydrogen **Mary-Rose de Valladares** *ATOME Energy, PLC, UK* ATOME: Pure-Play Hydrogen Producer **Aziz Kılıç** *BCS Enerji Mühendislik, Turkey* Hydrogen Burner and Combustion Systems **Sara Shahmohammadi** *Canada Renewable Hydrogen Alliance (CRENHA/IRENHA)* Democratization of Renewable Hydrogen through an International Renewable Hydrogen Alliance **Camel Makhloufi** *Eit Innoenergy – European Green Hydrogen Acceleration Center, France* A Value Chain Approach for a Sustainable Green Hydrogen Economy **Kahraman Çoban** *Enerjisa Üretim A.Ş., Turkey* Hydrogen Activities of Enerjisa Üretim A.Ş.	Invited Speaker **Saim Özkar** *Middle East Technical University, Turkey* **Noble Metal Nanocatalysts for Hydrogen Generation from the Hydrolysis of Ammonia Borane** **#158** "Chemical Kinetics of two-step Thermochemical Decomposition of H_2S over Nickel Sulfide" *A. Al-Blooshi, A. Al-Hajaj, M.A. Zahra, G. Palmisano & K. Al-Ali* **#1512** "Photocatalysis vs Photovoltaics: Why Not Make It a Symbiosis?" *P. Hazemann, C. Brochier, L. Peruchon & E. Puzenat* **#29** "Ammonia Decomposition over Ru-Coated Metal Structured Catalysts for CO_x-Free Hydrogen Production" *K.Y. Koo, H.B. Im, D. Song & U. Jung*
15:30 **16:00**	**Coffee Break**	

PARALLEL SESSIONS – 4

ROOM 3	ROOM 4	
Track 2. Hydrogen Production: Electrolysis **Session Chair: *Mohamad Ramadan***	**Track 3. Hydrogen Production: Biological Methods and Biohydrogen** **Session Chair: *Harun Koku***	
#19 "The Use of Nanostructured Nickel-Molybdenum Oxide as an Efficient and Low Cost Electrocatalyst for the Hydrogen Evolution Reaction in the Acidic Medium" *M. Rammal & S. Omanovic* **#70** "Modeling of H_2O and CO_2 Electrolysis in a Molten Carbonate Electrolyzer" *D. Monzer & C. Bouallou* **#218** "Electrochemical Performance of 3-D Printed Electrode Geometries in View of Enhanced Gas Evacuation during Alkaline Water Electrolysis" *F. Rocha, N. Wauthy, R. Delmelle, C. Georgiadis & J. Proost* **#231** "Electrocatalytic Ammonia Oxidation Coupled with Hydrogen Production - Moving Towards a Carbon Neutral Water Treatment Cycle" *E. Latvytė, L. Wu, M. Zhu, P. Vale & J. Graves* **#167** "A Novel Hydrogen Economy Based on Electrochemical Cells Integrated with Fossil Fuel Assets and Wastewater Resources" *L.A. Jolaoso, J. Asadi & P. Kazempoor* **#224** "Experimental Research on 100-bar High Pressure Differential Proton Exchange Membrane Electrolyzer" *J. Dang, F. Yang & Y. Jiang*	**#264** "Optimization of Biohydrogen Production Yields with Locally Isolated Thermophilic Bacteria from Hot Springs" *I. Akacin, S. Ersoy, T. Keskin Gundogdu & M. Gungormusler* **#154** "Comparison of Wild Type and Uptake Hydrogenase Deficient Mutant Strains of Rhodobacter Capsulatus for Hydrogen and PHB Production" *E. Tarlan, E. Hoşafcı, T.H. Erguder & H. Koku* **#52** "A Thermosiphon Based Photobioreactor for Photofermentative Hydrogen Production" *B.A. Cho, C. Bosman, S. Bradshaw & R.W.M. Pott* **#254** "Focusing on a New Biohydrogen Production Strategy Using Chlamydomonas *Reinhardtii* Mutants" *C. Yarkent, I. Oral, D. Senyay Oncel & S.S. Oncel*	**EXHIBITION**
Coffee Break		

PARALLEL SESSIONS – 4

	ROOM 5	ROOM 6
	Track 8. Fuel Cells: SOFC and other types **Session Chair: *Yusuf Biçer***	**Track 6. Hydrogen Storage** **Session Chair: *Jose R.S. Moreira***
14:00 **15:30**	**#173** "Efficient Regenerative Hydrogen/ Vanadium Fuel Cell Using Trichome-Like Electrodes for Enhanced Vanadium Electrolyte Utilization and Its System Integration" *B.K. Chakrabarti, Y.S. Hajimolana, M. Ouygang, J. Rubio-Garcia, A.K. Singh, Y. Xia, N.P. Brandon & V. Yufit* **#294** "Identification of Oxygen Ion Conductivity of Two Layers Yttria Stabilized Zirconia Matrix Impregnated by Lithium/Potassium Electrolyte for Molten Carbonate Fuel Cells" *J. Milewski* **#1572** "Development of Novel Membrane Structures via Radiation Induced Grafting and Electrospinning Technique for Anion Exchange Membrane Fuel Cells" *A.C. Kirlioglu, N. Rajabalizadeh, S. Alkan Gursel & B. Yarar Kaplan* **#7** Development of Highly Durable and Dense GDC Buffer Layer for Anode-Supported Planar SOFC" *A. Hussain, M.Z. Khan, R.H. Song, D.W. Joh, J.E. Hong, S.B. Lee & T.H. Lim* **#1581** "Development of Bromine Resistant Anode Catalyst for Hydrogen Oxidation and Reduction Reactions in Hydrogen Bromine Flow Batteries" *B. Kirtoklu & B. Ficicilar* **#1511** "Effect Partial Substitution of Lanthanum on the Thermal Properties of $La_{0.7-x}Ln_xCa_{0.3}MnO_3$ (Ln= Pr or Sm) Perovskites" *J.R. Hernandez, A.M.T. Huerta, S.B.B. Sibaja, M.A.D. Crespo, D.P. Ramirez, W. de la Cruz & F.G. Galicia*	**#416** "Compatibility of Polymers and Composites with Hydrogen in Transport and Storage Equipment" *X. Lefebvre, M.H. Klopffer & C.C. Lopez* **#441** "Numerical and Experimental Evidence of Defects Creation in EPDM After Hydrogen Decompression" *Q. Gardavaud, M. Melnichuk, F. Thiébaud & D. Perreux* **#1459** "Numerical Simulation on Pressure Reduction Phenomenon with Large-Scale Liquefied Hydrogen Tank" *K. Tani, T. Himeno, T. Watanabe, H. Kobayashi, S. Unno, S. Kamiya, Y. Nakashima, O. Muragishi & K. Kanbe* **#369** "Development and Implementation of Metal Hydride Materials and Technologies in South Africa" *M. Lototskyy, M.W. Davids, V. Linkov & S. Pasupathi* **#221** "High Surface Area Zeolitic Imidazolate Frameworks for Hydrogen Storage at Room Temperature" *S. Pinjari, T. Bera, R.M. Badhe & E. Kjeang* **#263** "Experimental Proof of Concept of a Novel High-Density, Low-Pressure Hydrogen Storage System Utilizing Thermochemical Heat Storage" *M. Lutz, M. Linder & I. Bürger*
15:30 **16:00**	**Coffee Break**	

Tuesday – June 28, 2022

PARALLEL SESSIONS – 4

ROOM 7	ROOM 8	Digital Boards – Onsite
Track 7. Fuel Cells: PEMFC **Session Chair:** ***Aysel Kantürk Figen***	**Track 9. Integrated Hydrogen Energy Systems** **Session Chair:** ***Tahir A.H. Ratlamwala***	**POSTER PRESENTATIONS – 4**
#297 "Effect of Chitosan on the Corrosion Inhibition for Aluminium Alloy in H_2SO_4 Medium" *G.A. Arwati, E.H. Majlan, L.K. Shyuan, K. Ariffin, T. Husaini, S. Alva, W. Muhammad & N.A.M. Radzuan* **#1489** "Investigating the Water Flooding Effects on the Performance of Low-Temperature Proton Exchange Membrane Fuel Cells" *A.N. Desai, S. Mohanty, V. Ramadesigan, S. Singh & M. Shaneeth* **#1457** "Numerical Investigation on the Effects of Inhomogeneous Gas Diffusion Layer and Impact of Interfacial Contact Resistance on Performance of Polymer Electrolyte Fuel Cells" *U. Shinde, P. Padavu & P.K. Koorata* **#1461** "Performance Evolution of PEM Fuel Cells with Straight and Wavy Parallel Flow Channels of Various Wavelengths Using CFD Simulation" *R. Kaiser, G.M. Jeon & J.C. Park* **#1471** "Highly Dispersed PtCo Nanoparticles on Self-Assembled Hierarchically Ordered Mesoporous Carbon Support for Polymer Electrolyte Membrane Fuel Cells" *Y. Yang, Z. Wang, L. Shen & C. Yan* **#230** "Effect of Platinum Particle Gradient Distribution in Low Platinum Loading Cathode Catalyst Layer On MEA Performance" *R. Lin & S. Liu*	**#108** "Design and Optimization of Green Hydrogen-based Hybrid Energy System" *C. Ceylan & Y. Devrim* **#1479** "Performance Assessment of a Calcium-Iron Bromide Cycle Based Multigeneration System" *F. Sorgulu & I. Dincer* **#1604** "Mathematical Modeling and Dynamic Simulation of a PV-based Hydrogen Generation and Storage System" *G. Soyturk, O. Kizilkan, M.A. Ezan & C.O. Colpan* **#176** "Numerical Investigation of Thermal Performance of Hydrogen-Fueled Micro-Combustor with Trapezoidal Rib" *A. Lachraf & M.S. Ameur* **#1607 "**Thermodynamic Analysis of a New Compressed Air Energy Storage-based Combined Plant for Multigeneration with Hydrogen Generation" *M. Koc, Y.E. Yuksel & M. Ozturk* **#1522** "Thermodynamic Analysis of a New Geothermal Energy Based Integrated Plant for Compressed Hydrogen Production" *F. Yilmaz & M. Ozturk*	**#1464** "Superhydrophobic Fluorinated Carbon for Improved Microporous Layers in Polymer Electrolyte Fuel Cells" *E.M. Can, K. Sasaki & S. M. Lyth* **#325** "Optimization of Low-Grade CGO Transport Properties for SOFC Applications" *E. Gomes, D. Ramasamy, A.A.L. Ferreira & J.C.C. Abrantes* **#326** "Electrical Conductivity of Y-Doped CGO Based Materials Sintered by Hot Press" *D. Ramasamy, E. Gomes, A.A.L. Ferreira & J.C.C. Abrantes* **#172** "Vertically Integrated Projects as A Transformative Pedagogy for Green Hydrogen Study Abroad Programs" *S.F. Bauserman, J.N. Ortiz, J.C.Ramos-Saravia, J.W. Sheffield & M.J. Mereu* **#1498** Evaluation of Ethanol Microfluidic Device at Low Electrocatalysis Loading, "*A.M. Lázaro, J.L. García, L.G. Arriaga & A. Arenillas* **#321** "Intelligent Monitoring of Hydrogen/Vanadium Redox Flow Battery" *C.Y. Lee, C.H. Chen, C.L. Hsieh, Y.C. Chen & S.Y. Chen*
Coffee Break		

PARALLEL SESSIONS – 5

ROOM 1

COMPANY OVERVIEW PRESENTATIONS

Session Chair: ***Nadia Steiner***

16:00 18:00

Ian Clifford
FuelPositive Corporation, Canada
Disrupting the Hydrogen Economy with FuelPositives Containerized Green Ammonia Systems: Prioritizing Farmers and Food security

Meltem Küs
GKE Energy, Turkey
Overview of Hydrogen Studies at the GKE R&D Center

Camilla Røhme
IFE, Institute for Energy Technology, Norway
Overview of R&D Activities on Hydrogen at IFE

Hüseyin Devrim
TEKSIS Ileri Teknolojiler, Turkey
The Current Status and Vision of TEKSIS in Hydrogen Energy Technologies

Leila Asdal Danielsen
Hystar, Norway
Game-Changing PEM Electrolysers for Large-Scale Hydrogen Production

Ekain Fernandez
TECNALIA, Spain
R&D activities on Hydrogen at TECNALIA

Naveed Akhtar
Hy-Hybrid Energy Scotland, United Kingdom
Hy-Hybrid Energy: Green Hydrogen & Zero-Emission Mobility

ROOM 2

Track 1. Hydrogen Production: Thermochemical and Photonic Methods

Session Chair: ***Saim Özkar***

Invited Speaker

Yun Hang Hu
Michigan Technological University, USA
Thermo-Photo Catalytical Hydrogen Production

#1561 "The Effect of Thermal Oxidation Time in Air and Argon Atmosphere on PEC Efficiency of Hematite (Fe_2O_3) Photoanode" *F.B. Yilmaz & C. Sarioglu*

#1584 "Production of Hydrogen-Rich Synthesis Gas by Gasification of Waste Materials in a Rotary Kiln Reactor" *A. Bubalo, D. Maljković & D. Vouk*

#272 "Stationary Methanol Steam Reforming to Hydrogen Fuel for Fuel-cell Filling Stations" *A.A. Tountas, G.A. Ozin & M.M. Sain*

#83 "Modeling Catalyst Poisoning During Methane Reforming for the Production of Hydrogen" *M. Fabrik, A. Salama & H. Ibrahim*

#396 "Sodium Formate Formation Vi in-SiTu Catalytic Hydrogen Production for Decarbonization" *O. Coskuner, U.B. Demirci & A. Kantürk Figen*

19:00 22:30 — **Banquet** *ITU Vakfi Sosyal Tesisleri (Macka)*

Tuesday – June 28, 2022

PARALLEL SESSIONS – 5

ROOM 3

Track 2. Hydrogen Production: Electrolysis

Session Chair: ***Miro Zeman***

#382 "High-Pressure PEM Water Electrolysis Based on Hydraulic Single Cell Compression" *F.J. Wirkert, U.W. Rost, J.Y. Roth & M. Brodmann*

#251 "Investigation of Electrolyte Forced Flow for Alkaline Water Electrolysis Using Computational Fluid Dynamics" *C. Georgiadis, F. Rocha, J. Lambrechts & J. Proost*

#209 "Membrane Electrode Assemblies for PEMWE Based on Glass Fibre Reinforced PFSA/ssPS Composite Membranes" *M. Cieluch, D. Düerkop, N. Kazamer, F. Wirkert, U. Rost, M. Brodmann & A. Schmiemann*

#308 "Ir-Decorated Pt Nanoparticles as a Bifunctional Catalyst for Oxygen Evolution and Reduction Reactions" *L.B. Redondo, V. Matolín & Y. Lobko*

#307 "A Numerical Energy and Exergy Analysis of the Effect of Phase Change Materials on a Photovoltaic Thermal Collector for Hydrogen Production in North Cyprus" *A. Sultan, M. Abid & M. Dagbasi*

#1449 "A High-Performance Electrolysis Cell Promises More Cost-Competitive Renewable Hydrogen" *A. Hodges, A.L. Hoang, G. Tsekouras, K. Wagner, C.Y. Lee, P. Tiwari, G.F. Swiegers & G.G. Wallace*

#1487 "Improving Hydrogen Evolution Catalytic Activity of 2D Carbon Allotrope Biphenylene with B, N, P Doping: Density Functional Theory Investigations" *M. Singh, A.Shukla & B. Charkroborty*

ROOM 4

Track 14. Hydrogen Industry, Commercialization and Marketing, Applications

Session Chair: ***Mustafa Kaan Baltacıoğlu***

#12 "Analysis of the Hydrogen Purity at Hydrogen Refueling Stations" *H. Janßen, M. Kröner, A. Dyck, M. Wark & C. Agert*

#285 "Chiyoda's Approach for Hydrogen Supply Chain Business with "SPERA Hydrogen™" System" *O. Ikeda, M. Sara, M. Nagai & T. Morimoto*

#328 "Demonstrating the Liquefied Hydrogen Seaborne Supply Chain to Japan and Development of Future Commercialization" *T. Hasegawa, Y. Taira, N. Maruyama, N. Ueda, Y. Yoshino, K. Yoshimura, M. Nishimura & E. Harada*

#365 "Modified WSGG Gas Radiation Model for any Mixture of H_2/CH_4 Fuel for High-Temperature Industrial Furnaces" *B.L. Creurer & F. Ammouri*

#118 "Solenco Power: Hydrogen for The Decarbonization of The Energy Sector" *H. Vandenborre & F. López*

#140 "Corrosion Phenomenon in Dense Membrane Made of Palladium Based Alloy" *H. Alsyouri, F. Al-Hadeethi & S. Dwairi*

#80 "Injection of Hydrogen into High Pressure Natural Gas Grids: Investigation the Impact on Materials and Equipment at Relevant Environment" *V. Gil, J. Sánchez-Laínez, A. Cerezo-Alarcón, M.D.S. de Gracia, E. Fernandez & V. Madina*

#200 "Air Carbon Recycling for Aviation Fuel Technology" *V. Gil, K. Tadanaga, H. Gröger, S. Wuttke, J. Gurauskis, P. Camargo, R. Giudici, F. Bonino & J. Hadermann*

EXHIBITION

Banquet *ITU Vakfi Sosyal Tesisleri (Macka)*

PARALLEL SESSIONS – 5

	ROOM 5	ROOM 6
	Track 5. Hydrogen Separation and Purification **Session Chair: *Dogan Erdemir***	**Track 6. Hydrogen Storage** **Session Chair: *İpek Torun Bahar***
16:00 **18:00**	**#1502** "Development of Hydrogen Purification Membrane based on Pd-Mn-Ag Ternary System" *M.M. Kose, F. Piskin & T. Ozturk* **#236** "Mixed Matrix Membranes for Hydrogen Recovery from Industrial Waste Streams" *G. Moral, A. Ortiz, D. Gorri & I. Ortiz* **#1505** "Energy Analysis of a Membrane Reactor-based Hydrogen Production System" *Y.N. Atak, C.O. Colpan & A. Iulianelli* **#1559** "Parametric Investigation on the Purification Characteristics of $La_{0.9}Ce_{0.1}Ni_5$ Under Various Absorption/Desorption Conditions" *A. Kumar & P. Muthukumar* **#1566** "Investigation of Low-Temperature Polymer Electrolyte Membrane for Electrochemical Hydrogen Compressor" *A.C. Turkmen, C.E. Meydan, K. Agtoprak, H. Acidereli R.G. Akay, M.E. Kibar & C. Celik* **#1612** "Parameter Optimization of a PBI Membrane-Based High Temperature-Electrochemical Hydrogen Compressor Fed with H_2 and CO Mixture" *C. Kuzu, C.O. Colpan, G.N. Bulanık Durmuş & Y. Devrim* **#1580** "Evaluation of the Effect of Temperature, Air Exposure and Gas Mixture on Pd_{82}-Ag_{15}-Y_3 for Hydrogen Separation" *O. Jazani, M. Adejumo & S. Liguori* **#1583** "Overview of Electrochemical Hydrogen Purifier Performance Diagnostics" *A.S. Pavasovic, I. Pivac & F. Barbir*	**#290** "Studies on Hydrogen Storage Performance of Catalyzed MgH_2" *S.K. Verma, M.A. Shaz & T.P. Yadav* **#317** "HYSTORIES Project: Technical Developments and Deployment Outlooks for Pure Hydrogen Storage in Depleted Fields and Aquifers" *A. Réveillère, J. Michalski, B. Löder, C. Vincent, M. Wagner, J. Simón & K. Luboń* **#332** "The Effect of Fiber Bandwidth on Stress Distribution and Layer Thickness Change at the Dome Part of Hydrogen Storage Vessel" *İ. Yılmaz, E. Pınar & O.V. Akgün* **#1466** "Metal Hydride Composite Materials for Thermo-Chemical Hydrogen Compression" *M. Lau, O. Ehrensberger & F. Heubner* **#145** "Investigation of Temperature and Pressure Effect on the Hydrogen Sorption Kinetics in the Interface of Mg/MgH_2 by Molecular Dynamics" *M.F. Kapçı & Z. Wu, B. Bal* **#282** "Numerical Simulation and Parametric Analysis of the Wall Strain Distribution of Vertically Placed Metal Hydride Based Hydrogen Storage Container" *S. Cao, X. Yin, F. Yang, L. Jiang, Y. Wu, Z. Wu & Z. Zhang* **#1508** "Boron-Hydrogen Materials Towards Decarbonisation" *S. Kurtuluş, B. Coskuner Filiz, H. Civelek Yörüklü, K. Açıkalın, H.E. Figen, U.B. Demirci & A. Kantürk Figen* **#301** "Application of Mischmetal Based Low Pressure Metal Hydrides for Solar Energy Storage" *K. Sarath Babu & E. Anil Kumar*
19:00 **22:30**	**Banquet** *ITU Vakfi Sosyal Tesisleri (Macka)*	

Tuesday – June 28, 2022

PARALLEL SESSIONS – 5

ROOM 7	ROOM 8	Digital Boards – Onsite
Track 7. Fuel Cells: PEMFC **Session Chair: *Selmiye Alkan Gürsel***	**Track 9. Integrated Hydrogen Energy Systems** **Session Chair: *Hossam Gaber***	**POSTER PRESENTATIONS – 5**
Keynote Speaker **Xianguo Li** *University of Waterloo, Canada* **The Degradation and Durability of Hydrogen PEM Fuel Cells** **#371** "Influence of Operating Parameters on the Cold Start of Polymer Electrolyte Fuel Cell Systems for Transportation and Aerospace Applications" *G. Montaner Rios, J. Schirmer & C. Gentner* **#1493** "Microwave-Assisted Synthesis of Porous Carbon from Peanut Shells" *H. Doğan, T. Meşeli, G Genç & G. Elden* **#1494** "Facile Synthesis for Porous Carbon from Biomass Sugarcane Bagasse" *T. Meşeli, H. Doğan, G. Elden & G Genç* **#1510** "Highly Porous Pt-CeO_2-C Thin Film Catalyst Prepared by Magnetron Co-Sputtering for Proton Exchange Membrane Fuel Cells" *X. Xie, Y. Yakovlev, P. Kúš, J. Nováková, K. Veltruská, Y. Lobko, V. Matolín, I. Khalakhan & I. Matolínová* **#1551** "Numerical Analysis of Liquid Water Permeation Process Through the Deformed Gas Diffusion Layer of PEM Fuel Cell" *Y. Liu, Y. Du, M. Wick & S. Pischinger*	**#293** "Improved Reactor Design for A Metal Hydride Refrigeration System in Hydrogen Powertrains" *A. Wimmer, S. Feierfeil, I. Burger & M.Linder* **#309** "Thermodynamic Analysis of an Integrated System with Solar Methane Cracking and Co-Electrolysis of CO_2/H_2O for Methanol and Electricity Production" *A. Banu & Y. Bicer* **#1443** "An Application and Evaluation of Blending Biogas and Hydrogen into the Natural Gas for Combustion Applications" *M. Ozturk & I. Dincer* **#175** "Fuel Cell-Battery Hybridization for an Unmanned Surface Vehicle Powerplant" *D.T. Guzman, L. Vargas, E.M. Lopez, F. Isorna, V. Garcia, A. Gimenez, M. Martinez, L. Domenech, F. Sánchez & J. Renau* **#1456** "Comparative Analysis of a Multi-Generation System Using Different Conventional and Nano-based Working Fluids" *T.A.H. Ratlamwala, H. Javed, S. Naseem & K. Kamal* **#69** "Design of A New Hydrogen Driven Integrated Powering System for Ferry Applications" *A.E. Karaca & I. Dincer* **#47** "Thermal Balance in Fuel Cell Vehicles with Liquid Hydrogen Utilisation" *A. Unitsky, I. Kavalcuk, I. Skitsunova, V. Yanchuk & S. Artyushevskiy* **#201** "Novel TEG Heat Exchanger in Cu-Cl Cycle of Hydrogen Production" *A. Mohammadi, E. Armoudli & O.A. Jianu*	**#310** "Proton-Conducting Solid Oxide Fuel Cells with NLSCF Cathode" *S.W. Lee, W.Y. Huang, Y.C. Huang & C.J. Tseng* **#238** "Characteristic and Performance of $Ce_{0.6}Mn_{0.3}Fe_{0.1}O_2$ for Solid Oxide Fuel Cells Anode Electrode" *K.Y. Chao, D. Mohantya, I.M. Hung & T.N. Lin* **#177** "Technical and Economic Assessment of a Solar Hydrogen Production Plant in a Peruvian Mining Company" *E. Ochoa, P. Alarcon, J. Gonzales, A. Malpartida, M. Campos, G. Bancayan, L. Machaca, D. Tafur, I. De-La-Puente, J. Gamarra, H. Bravo, J. Sheffield, S. Bauserman, J. Nahui & J. Ramos-Saravia* **#1611** "Towards Ethical Energy Storage Materials – Cobalt Free Cathode Active Material LKMNO" *K. Charzewska, O. Surma, G. Moskal, A. Węgrzyn & M. Molenda* **#1444** "A Comparative Life Cycle Assessment of Hydrogen Production Using the Spectrum of Hydrogen Colors" *H. Karasu & I. Dincer* **#295** "Formability and Performance Testing of Stainless-Steel Bipolar Plate for Air-Breathing PEMFC" *C.Y. Chen, N.H. Wu & K.J. Huang*
Banquet *ITU Vakfi Sosyal Tesisleri (Macka)*		

Wednesday – June 29, 2022

PARALLEL SESSIONS – 6

	ROOM 1	ROOM 2
	TUTORIAL SESSION **Virtual & Physical Platform for Fuel Cell System Development**	**Track 1. Hydrogen Production: Thermochemical and Photonic Methods** **Session Chair: *Sibel Irmak***
09:00 **10:15**	**Organizers** **Simon Clark, Mike Gerhardt & Yash Raka** *SINTEF SINTEF Industry / Sustainable Energy Technology, Trondheim* **Nadia Yousfi Steiner & Daniel Hissel** *UBFC, Univ. Bourgogne Franche-Comté, FEMTO-ST, FCLAB, CNRS, Belfort, France* **Part1** **Electrochemical Modelling Theory Basics** Nadia Yousfi Steiner **Part2** **Introduction to Open Modelica and VFCS Library** Yash Raka & Mari Juel **Part3** **VFCS Battery and FC Model** Yash Raka & Mari Juel **Part4** **VFCS Range extender Model** Yash Raka & Mari Juel For more information, please visit https://whecistanbul.org/tutorial-session/	**#1545** "Shape Dependent Electrocatalytic Hydrogen Evolution by Copper-Antimony Sulfide" *E. Aslan, F. Ozel & I. Hatay Patir* **#415** "A Thermodynamic Evaluation of Boron Based Thermochemical Hydrogen Production Cycle" *O. Oruc & I. Dincer* **#85** "Application of DFT and Machine Learning to Predict Optimum Operating Conditions for Methane Pyrolysis Using Molten Metals for Carbon-Free Hydrogen Production" *L. Ugwu, H. Ibrahim & Y. Morgan* **#1537** "Ni-Based Catalysts for CO_2 Reforming of Glycerol to H_2" *O. Selcuk & A.K. Avci* **#202** "Thermodynamic Analysis of Biogas-to-Methanol Conversion with CH_4 Recycling Using ASPEN HYSYS" *P. Rosha & H. Ibrahim*
10:15 **10:45**	**Coffee Break**	

PARALLEL SESSIONS – 6

ROOM 3	ROOM 4	
Track 3. Hydrogen Production: Biological Methods and Biohydrogen **Session Chair: *Tuba Hande Erguder***	**Track 8. Fuel Cells: SOFC and other types** **Session Chair: *Orhan Cakir***	
#1635 "Synthesis and Characterization of a Novel Nickel-Ruthenium Based Catalyst for Biogas Steam Reforming to Generate Hydrogen in Conventional and Membrane Reformers" *A. Iulianelli, C. Italiano, A. Brunetti & A. Vita* **#1529** "Batch Dark Fermentative Biohydrogen Production from Fig (Ficus Carica): The Effect of C/N Ratio" *W. Abibu, M. Kaya, Y. Karadas & I. Karapınar* **#374** "Assessment of Biohydrogen Production Routes from Organic Solid Waste: The Case of Cartagena, Colombia" *C. Lizarazo, W. Hurtado, O. Vanegas, O. Pupo-Roncallo & L. Corredor*	**#1503** "A New Class of Amourphous/ Nanocrystalline (La,Sr)CoO_3 Based Cathodes for IT-SOFCs" *D. Sari, Z.C. Torunoglu, B. Yasar, Y. Eren & T. Ozturk* **#1467** "A Highly Stable Cobalt Spinel-GDC Nanocomposite Cathode for Intermediate-Temperature Solid Oxide Fuel Cells" *S.B. Lee, S.U. Rehman, M.H. Hassan, H.S. Kim, R.H. Song, J.E. Hong, S.J. Park & S.B. Lee* **#1452** "Theoretical and Experimental Analyses of Ethanol-Fueled SOFC Micro-Cogenerator" *A.Coralli, S.A. Venancio & P.E.V. de Miranda* **#1499** "Effect of a Reduction of the Catalyst Loading on the Performance of a Mini Passive Direct Methanol Fuel Cell" *C.S. Moreira, A.M.F.R. Pinto & V.B. Oliveira*	**EXHIBITION**
Coffee Break		

PARALLEL SESSIONS – 6

	ROOM 5	ROOM 6
	Track 14. Hydrogen Industry, Commercialization and Marketing, Applications **Session Chair: *Huseyin Devrim***	**Track 6. Hydrogen Storage** **Session Chair: *Maurizio Fermeglia***
09:00 10:15	**#1442** "Use of Hydrogen for Green Steel Production" *P. Duarte, S. Maggiolino, J. Martinez & E Malfa* **#388** "Real-World Energy Measurements and Local Hydrogen Cost as Input Parameters for Regional Vehicle Fleet Optimization" *R. von Helmolt, M. Rothbart, H. Beck, F. Bindges & L. Lerminiaux* **#442** "Fraunhofer Hydrogen Labs: Unique test infrastructure for the entire hydrogen value chain" *V. Köhler, K. Schalk, M. Kühnel, J. Höflinger & S. Schmidt* **#387** "Hydrogen-Methane Mixture Storage in Depleted Reservoirs: An Option for Converting Decommissioned Offshore Platforms" *A.C. Uggenti, G. Rech, R. Gerboni, A. Carpignano, A. Aliberti, A. Tortora & G. Ballocco*	**#303** "Study of the Effect of Zr_3Fe Addition on Hydrogen Storage Behavior of Ti_2CrV Alloys" *D.B. Monsalve, J. Huot & A.D.M. Amariz* **#378** "Introduction of SPERA Hydrogen System™ for Massive Hydrogen Storage and Transportation" *Y. Okada, K. Imagawa, H. Kawai, T. Mikuriya, F. Yagi & N. Kaji* **#361** "Thermodynamic Analysis of a Metal Hydride Based Hydrogen Compressor Using $La_{1-x}Ce_xNi_5$ Hydrides" *D. Dashbabu & E.A. Kumar*
10:15 10:45	**Coffee Break**	

Wednesday – June 29, 2022

PARALLEL SESSIONS – 6

ROOM 7	ROOM 8	Digital Boards – Onsite
Track 7. Fuel Cells: PEMFC **Session Chair: *Remzi Can Samsun***	**Track 15. Hydrogen Economy, Logistics, Infrastructure** **Session Chair: *Robin White***	**POSTER PRESENTATIONS – 6**
Invited Speaker **Frano Barbir** *University of Split, Croatia* **Common Misconceptions about Hydrogen and How to Debunk Them** **#27** "Thermal Management of Edge-Cooled 1 kW Portable Proton Exchange Membrane Fuel Cell Stack" *I. Tolj, Ž. Penga & F. Barbir* **#143** "Optimizing Fuel Cell Membranes Through Thickness and Cation Doping", *X. Luo, A. Katzenberg, A.R. Crothers, V. Ehlinger, A.Z. Weber, R.L. Borup & A. Kusoglu* **#385** "Synthesis and Characterization of Cationic Membranes with Poly(Indene) Sulphonated Polyelectrolyte for Fuel Cell Application" *H.C.M.M. Thomaz, J.V.M.R. de Souza, A.F. Ferreira & F.J.B. Brum*	**#191** "Life Cycle Costing Approaches of Fuel Cell and Hydrogen Systems: A Literature Review" *Y. Ishimoto, C. Wulf & W. Kuckshinrichs* **#243** "Modeling for the Development of Heavy-Duty Refueling Protocols" *A. Charolais, F. Ammouri, E. Vyazmina, A. Grab, A. Ruiz, A. Kvasnicka, C. Spitta, R. Tawk, Q. Nouvelot, N. Benvenuti & T. Guewouo* **#185** "Optimization of a Hydrogen Supply Chain: A Case Study for Italy" *R. Luise, A. Brisse, P. Quaglia & C. Azzaro-Pantel* **#225** "The Techno-Economic Evaluation of Hydrogen Production Cost Towards Anion Exchange Membrane Electrolyzer" *B. Yang, R. Zhang & C. Zhang* **#241** "Syngas Production via Chemical Looping Dry Reforming of Methane Using Iron-based Oxygen Carriers" *P.C. Tsou, R.Y. Chein & W.H. Chen*	**#1507** "Graphite Based-Polymer Composite Bipolar Plates for PEM Fuel Cells" *M. G. Rodriguez, A.M. Darabut, Y. Lobko, Y. Yakovlev, I. Matolínová & V. Matolín* **#1530** "Experimental Validation of a 2-D Multi-Layer Model for Fuel Cell Diagnosis Using Magneto-Tomography" *A. Plait & F. Dubas* **#1569** "Development of Hydrogen Range Extender for a Specialized Multipurpose Vehicle" *L. Polak, A. Doucek & S. Kříž* **#1623** "Optimization of Characterization Routines for Carbon Blacks Used in Energy Related Applications" *F. Ozcan, A.S. Amin & D. Segets* **#1587** "Experimental Study on Hydrogen Enriched Natural Gas Combustion in Industrial Burner" *S. Bryne, Q. Ullah & D. Patel* **#327** "Optimization of Low-Grade Tetragonal Zirconia by Praseodymium Oxide Additions" *A.A.L. Ferreira, D. Ramasamy, E. Gomes & J.C.C. Abrantes* **#1460** "Machine Learning as a Tool for Interpreting Variables in Hydrogen Sorption Data" *M.I.M. Kusdhany & S.M. Lyth*
Coffee Break		

Wednesday – June 29, 2022

PARALLEL SESSIONS – 7

	ROOM 1	ROOM 2
	Workshop on Development of Solar & Hydrogen-based Integrated Energy Systems **Session Chair: *C. Ozgur Colpan***	**Track 1. Hydrogen Production: Thermochemical and Photonic Methods** **Session Chair: *Nader Javani***
10:45 12:15	**Miro Zeman** *Delft University of Technology, Netherlands* Energy System Based on Renewables for Built Environment: Role of Hydrogen **Doria Marciuš** *University of Zagreb, Croatia* H_2 Lab: Croatia **Onder Kizilkan** *Isparta University of Applied Sciences, Turkey* Dynamic Modeling and Simulation of Solar and Hydrogen Energy-Based Electricity and Hot Water Generation System for Off-Grid Applications **Alfredo Ortiz Sainz de Aja** *Universidad de Cantabria, Spain* R&D on Hydrogen Technologies at the Advance Separation Processes Research Group **Leila Abdolmaleki** *Ryerson University, Canada* Green Hydrogen Production Integrated with Photovoltaic Panels **Rafik Elkhatib** *Université de Caen Normandie* Dynamic Modeling of a Residential Integrated PEMFC-Based Micro-CHP System	**#284** "Experimental Investigation of a Fe_2O_3 Carbothermic Reduction Cycle for Hydrogen Production" *L.M.V. Cardona, B. Narváez-Romo, M. Mourão & J.R. Simões-Moreira* **#1548** "Application of Different Catalysts in Biomass Gasification in Updraft/Downdraft Fixed Bed Reactors" *O. Tezer, N. Karabag, A. Ongen & A. Ayol* **#311** "Utilization of Al_2O_3 and MgO as Structural Promoters of Fe into 2 and 3 Steps Chemical Looping Hydrogen Process: Pure and Green H_2 Production" *M. Damizia, B. Caprariis, M.P. Bracciale, F. Anania, L. D'Alvia, Z. Del-Prete & P. De-Filippis* **#400** "Hydrogen and Methane Production from Anaerobically Digested Water Plant by Hydrothermal Gasification" *F.G. Bodur, T. Güngören-Madenoglu, G. Ozdemir, N. Kabay & L. Ballice* **#319** "Glycerol Steam Reforming for the Production of Hydrogen over Remarkably Active and Stable Perovskite Supported Ni Catalysts" *I. Luisetto, A.I. Tsiotsias, N.D. Charisiou, A. Beka, K. Polychronopoulou & M.A. Goula*
12:15 14:00	**LUNCH**	

PARALLEL SESSIONS – 7

ROOM 3	ROOM 4	
Track 2. Hydrogen Production: Electrolysis **Session Chair: *Stuart Hawksworth***	**Track 13. Hydrogen Strategies and Policies** **Session Chair: *Adnan Midilli***	
#1576 "A New Experimental Investigation on Hydrogen Production of NaCl, KCl and $CaCl_2$ Solutions Through Chloralkali Reactor" *M. Erden & M. Karakilcik* **#1578** "Flow Channel Effect on Performance of PEM Water Electrolysis" *S.K. Kim & S.Y. Jung* **#1598** "On the Potential of Coupling Solar Chimney and Wind Energy to Produce Hydrogen as Green-to-Green System" *M. Ramadan, A. Haddad, M. Alkhedher* **#1509** "Anion Exchange Membrane (AEM) Water Electrolysers: Current Status and Future Perspective" *C. Karakaya, I. Vincent, I. Velasco & E. Fernandez* **#344** "Green Hydrogen for Ammonia Production- A Case for the Netherlands" *G. Pagani, C. Acar & Y. Hajimolana* **#1594** "Effect of Molybdenum Oxide Addition to Metal-Supported Zeolite Catalyst for Reverse Water Gas Shift Reaction" *M.R. Harada, A. Okemoto, N. Hiyoshi, Y. Hasegawa & K. Sato*	**#304** "From Fossil Fuel Energy to Hydrogen Energy: Transformation of Fossil Fuel Energy Economies into Hydrogen Economies Through Social Entrepreneurship" *J.E.G. Baquero & D. Bellon Monsalve* **#392** "Hydrogen Potential as Vector for a Biomass-Based Decarbonisation of Transport in Brazil" *S.T. Coelho, A. Stuchi, D. Perecin, K.L. Mascarenhas & J. Meneghini* **#1478** "Argentine Activities in the Field of Hydrogen" *J.C. Bolcich* **#1535** "Could Green Hydrogen and Its Derivative Improve Energy Systems in North Africa, Case of Morocco, Egypt and Tunisia" *A. Lahnaoui, W. Kuckshinrichs* **#1599** "Green Ammonia to Advance the Energy Transition in China: An Analysis from a Complex System Engineering Perspective" *H. Zhao, L.M. Kamp, Z. Lukszo* **#329** "Ways to Improve the Competitiveness of China's Hydrogen Energy Industry" *X. Meng, A. Gu, M. Chen, X. Wu, J. Zhou, B. Liu & Z Mao*	**EXHIBITION**
LUNCH		

Wednesday – June 29, 2022

PARALLEL SESSIONS – 7

	ROOM 5	ROOM 6	ROOM 7
	Track 14. Hydrogen Industry, Commercialization and Marketing, Applications **Session Chair: *Dilara Gülçin Çağlayan***	**Track 6. Hydrogen Storage** **Session Chair: *Maurizio Fermeglia***	**Track 7. Fuel Cells: PEMFC** **Session Chair: *Johannes Gulden***
10:45 12:15	**#1513** "A CFD Study on Hydrogen Addition to The Methane-Air Mixtures" *E. Colak & I. Karagul* **#1483** "Extension of Lean Limit Using Hydrogen Addition for Gasoline Direct Injection Engine and Emission Reduction" *J. Stanley, L.J. Martin & E.G. Varuvel* **#1490** "Hydrogen as Future Energy carrier for Mobility" *T. von Unwerth* **#1496** "Progress and Perspectives in Using Hydrogen-Enriched Biogas from Waste to Engine in Agriculture" *S.M. Ayad, C. Belchior, I. Tougri, R. Amoah & I. Bryant* **#1468** "Analysis of Hydrogen Combustion as Fuel to Preheat Air in Power Generation Plants in Micromix Injection Technology" *G. Jiménez, E. Cantillo, R. Howard, L. Corredor, A. González-Quiroga & V. J. Pugliese*	**#1614** "Investigation of Infrastructure Study and Operation Planning of Underground Hydrogen Storage Area" *H. Karakılçık* **#390** "Performance of Benzyltoluene as Pure Hydrocarbon Liquid Organic Hydrogen Carrier (LOHC) in Storage Cycles" *T. Ruede, P. Preuster, M. Wolf & P. Wasserscheid* **#1533** "Development of the NEC/12H-NEC LOHC System at Canadian Nuclear Laboratories" *L. Stolberg, B. Ibeh, H. Li, D. Ryland & S. Suppiah* **#1565** "Numerical Optimization of Multistage Magnetic Refrigeration System in the Temperature Range of Liquid Hydrogen" *W. Zheng, J. Shen, Z. Li, K. Li, W. Dai, P. Hai & H. Huang* **#1619** "Investigation of Hydrogen Kinetics of Copper Pellets with ENG Additives" *G. Atalmis, N. Yelegen, M. Demiralp & Y. Kaplan*	**#276** "Highly Efficient Low Metal Loading Nanostructured Electrocatalysts" *A.M. Valenzuela-Muñiz, H. Valenzuela-Ramos, M.E. Zi-Chi, M. Miki-Yoshida & Y. Verde Gomez* **#1567** "Modeling of H_2/Br_2 Redox Flow Battery in Fuel Cell Mode" *A.C. Turkmen, K. C. Ata & C. Çelik* **#91** "Giantleap Project: Development of a Fuel Cell Range Extender for a Battery Electric Bus" *F. Barbir, N.Y. Steiner & F. Zenith* **#1455** "Investigation of Waste Heat Recovery from Proton Exchange Membrane Fuel Cell Using Organic Rankine Cycle with Zeotropic" *T.A.H. Ratlamwala, M.F. Siddiqui, S.M. Ali, M.M. Vohra, A. Sami & K. Kamal* **#440** "Controlling and Comparison of PEM Fuel Cell Based DC-DC Cascade Boost Converter with Classic Control Methods" *S. Kart, İ. Kocaarslan, N. Genç & H. Üzmuş*
12:15 14:00	**LUNCH**		

PARALLEL SESSIONS – 7

ROOM 8	Digital Boards – Onsite
Track 15. Hydrogen Economy, Logistics, Infrastructure **Session Chair: *Olgun Konur***	**POSTER PRESENTATIONS – 7**
#260 "Influence of the Turbulence Model in the CFD Simulation of Hydrogen Tank Filling by an Impinging Oblique Jet" *J. Martin, Q. Nouvelot, V. Ren, G. Lodier, P. Carrere, A. Charolais, F. Ammouri, E. Vyazmina, A. Grab & A. Ruiz* **#351** "Transactive Mobility with Hybrid Electric and Hydrogen Charging Infrastructures" *H.A. Gabbar* **#153** "Numerical Model and Experimental Validation of Ultra-Lean Air-Hydrogen Combustion in Catalytic Monoliths" *F. Battistella, A. Donazzi, A. Ravidà, G. Groppi & G. Valenti* **#397** "Economic and Environmental Evaluation of Fueling Options for Hydrogen Fuel Cell Heavy-Duty Vehicles" *A. Elgowainy & K. Reddi* **#409** "Analysis of the Demand of Hydrogen as Fuel for Transport in the UAE" *M. Awad, A. Bouabid, A. Sleptchenko, A. Almansoori & A. Alhajaj* **#439** "Grid based Risk Assessment of a Hydrogen Supply Chain" *E. Gecici, M.G. Guler & A. Erdoğan*	**#322** "Development of Monitoring Tool for High Voltage Proton Exchange Membrane Water Electrolyze" *C.Y. Lee, C.H. Chen, S.Y. Chen & Z.Y. Huang* **#244** "Pseudo-Dynamic Modeling and Optimization of Heavy Paraffin Dehydrogenation Process for Selective Olefin and Hydrogen Production in Conventional Reactors" *M. Dehdashti, M. Farsi & M. Binazadeh* **#407** "CO2 Methanation over Surface Modified $LaNi_5$ Films with Pd" *H. Baba, S. Kaneta, S. Yamada, A. Motoshige & R. Gemma*
LUNCH	

Wednesday – June 29, 2022

PARALLEL SESSIONS – 8

	ROOM 1	ROOM 2
	COUNTRY HYDROGEN PRESENTATIONS **Session Chair: *Peter Strasser***	**Track 1. Hydrogen Production: Thermochemical and Photonic Methods** **Session Chair: *Ipek Torun Bahar***
14:00 **15:30**	**Inci Eroğlu** *Turkish Hydrogen Technologies Association* Turkey's Role in the Hydrogen Age **Konstantin Brosch** *German Energy Agency* The German National Hydrogen Strategy: The Import Gap and how to close it **Stefan Matz** *Hamburg Invest, Germany* Green Hydrogen Hub Hamburg – Establishing a Hydrogen Economy in Northern Germany **Ko Sakata** *The Institute of Applied Energy (IAE) & Hydrogen Energy Systems Society of Japan (HESS)* Significance of Introduction of Large Amount of Hydrogen to Japan **Robin J. White** *Luxembourg Institute of Science & Technology* Materials RDI for the Hydrogen Economy in Luxembourg	**#1586** "$Cd_xZn_{1-x}S$ with Bulk-Twinned Homojunctions and Rich Sulfur Vacancies for Efficient Photocatalytic Hydrogen Production" *I. Boz, M.A. Hamid & Y. Zengin* **#1601** "Solar Light Driven Photocatalytic Hydrogen Evolution in Situ Deposited Pt on Perovskite Type Oxides" *A. Keles, T. Kuru, E. Aslan & I. Hatay Patir* **#1527** "Kinetic Characterization of Pt/Al_2O_3 Catalyst for Hydrogen Production via Methanol Aqueous-Phase Reforming" *P. Lakhtaria, P. Ribeirinha, J. Sousa & A. Mendes* **#1515 "**Promotion of Copper-Zinc Catalyst with Sm and Gd for Steam Reforming of Methanol**"** *Y.S. Lin, K.S. Lin, W.T. Hong, Y. Ko, A. Hussain & Y.C. Hsieh* **#81** "Thermodynamic Analysis of Biogas-to-Syngas Conversion with Dry Oxidative Reforming and CH_4 Recycling Using ASPEN HYSYS" *P. Rosha & H. Ibrahim*
15:30 **16:00**	**Coffee Break**	

PARALLEL SESSIONS – 8

ROOM 3	ROOM 4	
Track 2. Hydrogen Production: Electrolysis **Session Chair: *António Labrincha***	**Track 4. Hydrogen Production: Nuclear** **Session Chair: *Iordache Ioan***	
#1469 "Enhancing the Electrocatalytic Hydrogen Evolution Activity of Bare Copper Electrodes Through Ultrafast Femtosecond Laser Nanostructuring" *S. Ahmad, M. Egilmez, M.F. Orhan & A.S. Alnaser* **#1481** "Thin Film Coating of Platinum on 3D Printed Polymeric Anode Electrodes for PEMWE" *B. Hüner, N. Demir & M.F. Kaya* **#1573** "Development of Pt-Cr Coated SS316L Electrodes for PEM Electrolyzers by Selective Laser Melting Method" *M. Kıstı, E. Ozdogan, S. Uysal & M.F. Kaya* **#1517** "Iridium-Ruthenium Catalyst on Sputter-Etched Membrane for Proton Exchange Membrane Water Electrolyzers" *T. Hrbek, P. Kúš, V. Matolín & I. Matolínová* **#1543** "Understanding Research Evolution in Hydrogen Production from Water Electrolysis: A Bibliographic Study" *I. Ulah, M.N. Nasser, J. Kim, J.B. Pyo & B. Kim*	**Keynote Speaker** **Shannon Bragg-Sitton** *Idaho National Laboratory, USA* **The Essential Role of Nuclear-generated Clean Hydrogen in Achieving a Net-Zero Economy** **#1484** "A Hybridized Solar-Nuclear Energy System for Generating Multiple Useful Outputs with Hydrogen" *M. Temiz & I. Dincer* **#131** "Study on the Catalytic Performance of Sulfuric Acid Decomposition in Iodine-Sulfur Cycle Hydrogen Production" *Q. Gao, P. Zhang, W. Peng & G. Zhao* **#1593** "Nuclear Hydrogen Projects to Support Clean Energy Transition" *A. Constantin*	**EXHIBITION**
Coffee Break		

Wednesday – June 29, 2022

PARALLEL SESSIONS – 8

	ROOM 5	ROOM 6
	Track 9. Integrated Hydrogen Energy Systems **Session Chair: *Önder Kızılkan***	**Track 6. Hydrogen Storage** **Session Chair: *Mehmet Akif Ezan***
14:00 **15:30**	**#389** "Scientific and Technological Synergies Connecting Electrolysers, Fuel Cells and Electrochemical Compressors for Hydrogen Use" *S. Calnan & R. Schlatmann* **#348** "System Integration and Validation of Hydrogen Fuel Cell Niche Vehicles and Related Refuelling Infrastructure at HYSA Systems/ South Africa" *V. Linkov, M. Lototskyy & S. Pasupathi* **#412** "Hydrogen and Oxygen (HHO) Gas Influence on Engine Characteristics While Fueled on Petrol Ant Bioethanol Lean Mixtures" *G. Mejeras, A. Rimkus & J. Matijosius* **#411** "Effect of the Addition of Hydrogen-Containing Gas on Indicated and Effective Parameters of a Gasoline Engine" *J. Matijosius, Y. Gutarevych, Y. Shuba, A. Rimkus & O. Syrota* **#379** "Exergy Analysis of Reversible SOFC Coupled with Organic Rankine Cycle and Hydrogen Storage for Renewable Energy Storage" *U.R. Singh & S.S. Bhogilla* **#398** "Preliminary Assessment of the Green Hydrogen Production Potential in Kazakhstan" *S. Danenova, Y. Abuov, A. Tleubergenova & W. Lee*	**#1602** "Comparative Study on Active and Passive Thermal Management Options of a Metal Hydride Hydrogen Storage Tank" *T. Dişli, S.A. Çetinkaya, M.A. Ezan & C.O. Çolpan* **#1603** "Design Parameters Optimization of Phase Change Material Integrated Metal Hydride Hydrogen Storage Tank" *S.A. Çetinkaya, T. Dişli, M.A. Ezan & C.O. Çolpan* **#1557** "A Simple Dynamic Model for Predicting the Absorption and Desorption Behaviour of Metal Hydride Systems" *A. Parida, S.P. Jenne & M. Palanisamy* **#1539** "Evaluation of Basic Physical Properties of Ammonia Borane Stored in Liquid Ammonia" *F. Guo, Y. Wang, T. Ichikawa, H. Miyaoka, Y. Shimizu, S. Takamine, T. Nakagawa & T. Ichikawa* **#1446** "Effective Hydrolysis of Alkaline Sodium Borohydride: CoB-Triton Catalyst" *C. Kaya, J.H. Türkcan, H. Elçiçek, O.K. Özdemir, G. Kökkülünk, K. Ünlügençoğlu*
15:30 **16:00**	**Coffee Break**	

PARALLEL SESSIONS – 8

ROOM 7	ROOM 8	Digital Boards – Onsite
Track 7. Fuel Cells: PEMFC **Session Chair: *Tom Gießgen***	**Track 15. Hydrogen Economy, Logistics, Infrastructure** **Session Chair: *Erdal Aydın***	**POSTER PRESENTATIONS – 8**
#1585 "A Scalable Analytical Model for Rapid Multiphysical Analysis and Structural Optimization of PEM Fuel Cells" *M. Kohrn, Y. Liu, M. Wick & S. Pischinger* **#103** "Synthesis and Characterization of MWCNT-Supported PBI Membranes for HT-PEM Fuel Cells" *M.T. Goruryilmaz, S. Ozenler, B. Zeytuncu & N. Karatepe* **#1617 "**Modeling Oxygen Transport in Carbon Support Microstructure of Proton Exchange Membrane Fuel Cell Electrodes Using Pore Networks" *A.C. Ince, M.F. Serincan, H. Hafiz, E.F. Holby, J.S. Spendelow, U. Pasaogullari & W.J.M. Kort-Kamp* **#1558** "The Impact of Ambient Temperature on High-Temperature PEM Fuel Cell" *P.J. Alphonse, M. Taş & G. Elden*	**#1525** "Techno-Economic Analysis of 350 bar LOHC-Supplied Hydrogen Refueling Stations for Heavy Duty Vehicle Fleets" *S. Aschbrenner, T. Eissler, M. Schneider & C. Voglstätter* **#1470** "Assessment of Hydrogen Delivery Options" *E. Weidner, F. Dolci, R. O. Cebolla & A. Arrigoni* **#1632** "What is the Key Role of Hydrogen Energy in Metaverse?" *F.C. Iskenderoğlu, H.T. Arat & M.K. Baltacioğlu* **#1485** "Techno-Economic and Process Simulation of Small-Scale Hydrogen Production from NH_3 Decomposition" *M. El-Shafie & S. Kambara* **#1458** "Analysis of a Hydrogen Supply Chain with Random Demand: A Case Study" *B.T. Özbek & M.G. Güler* **#1562** "Evaluation of Potential Hydrogen Production Methods in Turkey by using a Hybrid Method Based on Pythagorean Fuzzy AHP and Interval Type-2 Fuzzy TOPSIS" *A. Yildiz, Y. Demir & G. Işik*	**#127** "AISI 442 and 446 Ferritic Stainless Steels as a Support for Bipolar Plates in Proton Exchange Membrane Water Electrolyzers" *C.M. Craciunescu, A.S. Lædre, N. Vaszilcsin, T. Khoza, M.L. Dan, A. Kellenberger, D. Duca, A. Ercuta & I. Mitelea* **#208** "Enhanced Hydrogen-Rich Syngas Produced by Developed Plasma Reformer System" *A. Alharbi, N. Alqahtani, A. Alkhedhair, A. Alabduly, A. Almaleki, M. Almadih, M. Albishi & A. Almayeef*
Coffee Break		

Wednesday – June 29, 2022

PARALLEL SESSIONS – 9

	ROOM 1	ROOM 2
	COUNTRY HYDROGEN PRESENTATIONS **Session Chair: *Detlef Stolten***	**Track 1. Hydrogen Production: Thermochemical and Photonic Methods** **Session Chair: *Mustafa Kaan Baltacıoğlu***
16:00 **18:00**	**Zong Qiang Mao** *Tsinghua University, China* Current Situation of Hydrogen Energy in China **Frano Barbir** *Croatian Hydrogen Association* Hydrogen Activities in Croatia **Ekain Fernandez** *TECNALIA, Spain* H24NEWAGE – Development of Advanced Technologies for Hydrogen Production, Storage and Distribution, and Technology Transfer to Industry for the New Era of Hydrogen in Spain **Guadalupe Ramos Sánchez** *Mexican Hydrogen Society* 23 Years of Hydrogen Research in Mexico **Roel van de Pas** *NWBA – Dutch Hydrogen and Fuel Cell Association* H2olland – An Introduction to the Dutch Hydrogen Economy **Eniya Listiani Dewi** *Indonesia Fuel Cell Hydrogen Energy Association (IFHE)* Current Hydrogen Actions Towards Net Zero Emission in Indonesia **Miguel Peña** *Spanish Hydrogen Association (AeH2)* Status of Hydrogen Economy Deployment in Spain	**#199** "Photoelectrochemical Water Splitting: Short Review on Current Density and Stability of Photoelectrodes" *D. Brezak, D. Marciuš & A. Kovač* **#430** "Synthesis of SnS_2 Photocatalyst for Photocatalytic Hydrogen Production" *A.C. Ok & C. Sarioglu* **#291** "Economically Viable Low Temperature Hydrogen Production Using Aluminum-Water Splitting Methods" *J. Kandasamy, R.N. Mutlu, E. Eroglu, M. Karaca, H. Toffoli & I. Gokalp* **#287** "On-Solar Simulator Data for Kinetic Studies of CdSZnS-Pt Waters Splitting" *T. Mohammed & K. Kakosimos*

PARALLEL SESSIONS – 9

ROOM 3	ROOM 4	
Track 2. Hydrogen Production: Electrolysis **Session Chair: *Benedetto Nastasi***	**Track 17. Social Dimensions** **Session Chair: *Mustafa Umut Karaoğlan***	
#72 "Investigation of Electricity, Hydrogen and Clean Water Production with Renewable Energy System Integrated onto a Ship: Mobile Energy Production on a Ship" *M. Erden, A. Atiz, H. Karakilcik & M. Karakilcik* **#1538** "Exergetic Analysis of a Solar Energy-Based Hydrogen Production System" *H. Akçi, H. Gunerhan & A. Hepbasli* **#180** "Preparation and Analysis of Electrocatalysts for PEM Water Electrolysers Based on Laser-Generated Iridiumoxide Nanoparticles for the Oxygen Evolution Reaction" *N. Kazamer, S. Reichenberger, M. Spree, U. Rost, M. Tack, T. Bopardikar, F. Wirkert, H. Salih, L. Böhm, M. Cieluch, J. Roth, T. Zoz, T. Hülser, S. Barcikowski & M. Brodmann* **#128** "Chemically Stabilised Short Side Chain Aquivion® Membranes for Operation in Water Electrolysis" *S. Siracusano, A.S. Aricò, C. Oldani & S. Tonella* **#74** "Parabolic Through Solar Collector Integrated with Solar Pond for Electricity and Hydrogen Production Based on Solar Energy" *S. Damarseçkin, A. Atız & M. Karakılçık* **#393** "Efficiency of The Production Process and Management of Green Hydrogen Through Simulation and Balance of Plants (BOF)" *C. Castañeda-Castañeda, J.J Ramos-Valencia, M.T Cadenas-González, G.L. Avelino*	**#71** "Teachy - A Flagship Project for Teaching Fuel Cell and Hydrogen Technology" *I. Iordache, R. Steinberger-Wilckens, V. Dumbrava, N. Al-Mufachi, A. P. Vellayani, M. Santarelli, L.N. Cleeman, Y. Brodnikovskyi, K. Bouzek, V. Molkov, O. Jedicke, J.V. Herle, F. Druart & J.L. Delplancke* **#1474** "Green Hydrogen in Costa Rica – Perspectives of an Economic Paradigm Shift for a Small Developing Country"*A. Stamm, K. Thoms & F.L. Moreno* **#1477** "Turkey's Potential to Produce Geothermal-Based Green Hydrogen: Insights from Inside" *E. Oyan* **#193** "Social Life Cycle Assessment of a Solid Oxide Electrolysis Cell Stack" *F. Campos-Carriedo, G. Puig-Samper, E. Bargiacchi, D. Iribarren & J. Dufour* **#1631** "Effects of Social Media Platforms About Attendance to WHEC 2022 Conference" *F.C. İskenderoğlu, M.K. Baltacıoğlu & H.T. Arat* **#1473** "Green Hydrogen, An Economic Paradigm Shift – New Perspectives for the Global South?"*A. Stamm, R. Strohmaier, E. Oyan & K. Thoms* **#239** "Assessing Public Acceptance on Hydrogen Economy in Japan: A Comparison of Past Survey in 2015" *J. Yap & B. McLellan* **#1633** "Green Hydrogen Production for Eskil OIZ Heating" *Y. Öğütcü & B. Tanç*	**EXHIBITION**

Wednesday – June 29, 2022

PARALLEL SESSIONS – 9

	ROOM 5	ROOM 6	ROOM 7
	Track 12. Codes, Standards and Regulations **Session Chair: *Edwin Geo Varuvel***	**Track 6. Hydrogen Storage** **Session Chair: *Ahmed Alhajaj***	**Track 7. Fuel Cells: PEMFC** **Session Chair: *Hüseyin Turan Arat***
16:00 **18:00**	**Invited Speaker** **Karen Quackenbush** *Fuel Cell and Hydrogen Energy Association (FCHEA), USA* **Codes and Standards for Hydrogen Energy Systems** **#25** "The German Hydrogen RCS Roadmap" *R. Wurster & E. Hof* **#213** "European Regulatory Framework for Hydrogen Underground Storage" *S.M. Casasnovas, J. Simón, A. Réveillère & F. Ostapoff* **#258** "Testing of Blended Green Hydrogen in Gas Pipelines: Considering the End-Users Limits" *A. Ekhtiari, L. Nolan & E. Syron* **#338** "Hydrogen Fuel Quality for Transport: NPL Accreditation ISO 17025, Reference Materials, Proficiency Testing and New Sampling System" *T. Bacquart, A. Morris, N. Moore, M. Hookham, Y. Hristova, R. Wilmot, F. Omoniyi & A. Murugan* **#368** "Metrology for Hydrogen Vehicle 2: Achievements and Progresses" *T. Bacquart, M. De Huu, K. Arrhenius, T. Aarhaug, J. Viitakangas & A. Murugan* **#1563** "Safe Energy Relations: Unfolding the Precautionary Principle with the Advent of Hydrogen Technologies" *A.Ş. Kart & İ. Gökalp*	**#269** "Contribution to Modeling Hydrogen Permeation and Barrier Layer Optimization in Blow Molded Plastic Liners for an On-Board Compressed Hydrogen Tank" *Z. Benrabah, A. Bardetti, F. Ilinca & S. Bournival* **#364** "The Effect of Different Organic Acids on the Hydrolysis of Magnesium Hydride" *M.W. Davids, T.K. Sekgobela & M. Lototskyy* **#1528** "Synthesis of Calcium Borohydride with Boron-Floride Exchange at High Pressures" *G. Gizer, F. Karimi, C. Pistidda & J. A. Puszkiel* **#1491** "Effect of Iron Particle Shape and Alloy Composition on Hydrogen Production Efficiency in the Water-Iron Reaction" *H. Yagi & H. Eba* **#1506** "Modeling of a Hydrogen Storage System Based on Metal Hydride and Phase Change Material" *W.H. Wiersma & C. Acar* **#1465** "CFD-Assisted Hydrodynamic Characterization of a Centrifugal Liquid Organic Hydrogen Carrier Dehydrogenation Unit" *L. van Hoecke & P. Perreault* **#126** "Hydrogen Absorption/ Desorption of the $(TiVNb)_{85}Cr_{15}$ Multicomponent Alloy" *B.H. Silva, C. Zlotea, W.J. Botta, Y. Champion & G. Zepon* **#1532** "Structural Evolution of a Mg-C Composite Material Over 1000 H_2 Storage Cycles" *R. Carson, B. Ellis & S. Persaud*	**#1590** "Study of Catalyst Loading and GDL Porosity Gradient Variation Effect to PEMFCs Performance Through Recurrent Neural Network (RNN) Data-Driven Assisted Modelling" *H. Lei* **#1591** "Sulfonated Silica/ Nafion® Based Composite Electrospun Membranes for PEM Fuel Cells" *N. Rajabalizadeh, A.C. Kırlıoğlu, S. Alkan Gursel & B. Yarar Kaplan* **#305** "Design, Integration and Validation of a Testing Setup for PEMFC Stack Characterization at Heavy Duty and Maritime Load Profiles" *P. Bujlo & Ø. Ulleberg* **#1582** "Non-Traditional Machining Methods for Metallic Bipolar Plate Materials" *O. Çakır* **#1579** "GDL Degradation Effect on Flows Inside Flow Channel on Polymer Electrolyte Membrane Fuel Cell" *J.W. Moon, S.K. Kim & S.Y. Jung* **#1570** "Transient Characteristics of In-Plane Water Transport in the Gas Diffusion Layer of PEM Fuel Cells" *S.Y. Jung & M. Mortazavi*

PARALLEL SESSIONS – 9

ROOM 8	Digital Boards – Onsite
Track 9. Integrated Hydrogen Energy Systems **Session Chair: *Khalid Al Ali***	**POSTER PRESENTATIONS – 9**
#270 "Green Military Site Supporting Public Hydrogen Mobility" *M. Mori, U.Ž. Baskovic, B. Drobnič, R. Šipec & T. Katrašnik* **#18** "Reactor Evaluation for Alternative Fuel Synthesis of Methanol and Dimethyl Ether (DME) from CO_2 and Renewable Hydrogen" *S. Weiske, N. Beltermann, R. Becka, R.C. Samsun, R. Peters & D. Stolten* **#302** "Pilot-Scale Hybrid System for CO_2/H_2 Mixture Production- First Experiences in the "Tennessee" Project" *L. Bartela, J. Zdeb, J. Milewski, A. Martsinchyk, W. Smolka & Ł. Rybak* **#1472** "Simulation of PEMFC Integrated Trilateral Cycle (TLC) in MATLAB/Simulink Environment" *K. Kamal, A. Sheikh, M.N. Saleem, A. Naseer, T.A.H. Ratlamwala & A.A. Zaidi* **#318** "Thermodynamic Considerations of the CO_x Hydrogenation Reaction to Light Olefins Using Carbon-Neutral Feedstock Mixtures" *E. Mandela, G. Varvoutis, A. Lampropoulos, E. Papista, C. Athanasiou, D. Ipsakis, M. Konsolakis & G. Marnellos* **#330** "Process Simulation and Assessment of An Integrated Power System Combining Olive Kernel Pyrolysis, Gasification and Solid Oxide Fuel Cell" *A. Lampropoulos, G. Varvoutis, E. Mandela, S. Spyridakos, D. Ipsakis, C. Athanasiou, M. Konsolakis & G.E. Marnellos* **#428** "Experimental Study on Spray Characteristics of Internal Mixed Hydrogen-Assisted Fuel Injection System" *Z. Liu, T. Qiu & Y. Lei* **#435** "Analysis of An Integrated Gas Turbine-Locomotive Engine Using Sustainable Fuel Blends with Hydrogen" *S. Seyam, I. Dincer & M.A. Chaab*	**#64** "Optimization of Energy Management Strategy for Fuel Cell-Range Extended Electric Vehicle" *Y. Sun & C. Xia* **#210** "Evaluation of Hydrogen Production Processes for Use in Automotive Sector" *F.E.B. Feitosa & A.L. Costa* **#66** "Future Economic perspective of Power-to-gas system based on Molten Carbonate Electrolyzer" *D. Monzer & C. Bouallou* **#141** "Novel Emergency Gas-to-Power MH-Storage and Fuel Cell System: Modeling and Experimental Validation" *D.M. Dreistadt, J. Puszkiel, J.M. Bellosta von Colbe, G. Capurso, G. Steinebach, S. Meilinger, T.T. Le, M.C. Guarneros, T. Klassen & J. Jepsen* **#252** "Safety Analysis of Fuel Cell Hydrogen Supply System" *X. Cao, X. Yu, D. Hu & C. Zhang* **#38** "Steam Methane Reforming integration and increase of carbon dioxide production" *M. Tagliabue* **#179** "Performance Analysis and Comparison on Energy Storage Devices in Hydrogen-Based Integrated Energy Systems" *K. Shao, X. Dong, J. Zhang, Z. Xu & J. Wu*

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PARALLEL SESSIONS – 10

	ROOM 1	ROOM 2
	Track 9. Integrated Hydrogen Energy Systems **Session Chair: *Ali Cemal Benim***	**Track 2. Hydrogen Production: Electrolysis** **Session Chair: *Nestor E. Sanchez Ramirez***
09:00 10:45	**#37** "Coke Oven Gas as Potential Fuel for Stationary SI Engines" *R.O. Imedio, A. Ortiz, D. Gorri & I. Ortiz* **#204** "Integration of PEM Electrolyzer and Fuel Cell to a Solar-Geothermal Combined System for a Zero-Energy Building: An Exergy-Economic Analysis" *E. Baniasadi, M. Ziaei-Rad, M.A. Behvand & N. Javani* **#148** "Integration of a Renewable Methanol Production Process with a Low CO_2 Emissions CRGT Power Plant" *V. Tola & F. Lonis* **#1626** "Design of a New Helical Methane Fixed Bed-Reactor" *A. Bolt, I. Dincer & M.A. Chaab* **#1606** "A Newly Developed Brayton Cycled-based Combined Plant Including Hydrogen Production and Compression: Energy and Exergy Analyses" *Y.E. Yuksel, M. Ozturk & I. Dincer* **#1523** "Modeling of A Sustainable Integrated Plant With S-CO_2 and T-CO_2 Cycles for Hydrogen Generation" *F. Yilmaz, M. Ozturk & R. Selbas*	**#13** "Enhanced Water Oxidation Reaction by Nickel Oxide Nanorod Arrays Electrocatalyst" *K. Hemmati, O. Moradlou & A.Z. Moshfegh* **#68** "Nickel Cobalt Oxide Nanocubes as an Efficient Electrocatalyst for Hydrogen Evolution in Alkaline Solution" *H. Faraji, K. Hemmati & K. Mirabbaszadeh* **#434** "Parametric Analysis of Biomethanol Production Unit Using Biomass Gasifier and High-Temperature Electrolyzer" *H. Ghiasirad & A. Skorek-Osikowska* **#78** "Hydrogen Production Flat Plate Solar Collector Integrated with PV-T", *A. Atiz, M. Erden & M. Karakılçık* **#150** "H_2BASQUE – Technologies for Boosting the Hydrogen Economy in the Basque Country: Green Hydrogen Production" *E. Fernandez, B.C. Sanchez, F. Alcaide, S. Doppiu, M. Oregui-Bengoechea, E. G-Berasategui, E. Unzueta & J. Irigoyen* **#1629** "The Experimental Studies on Electrolyser Mode Operation of Unitized Regenerative PEM Fuel Cell" *N. Yelegen, E.S. Altuntop, G. Atalmış & Y. Kaplan* **#1627** "Energy Perspective and Analyses of Seawater Electrolyzer for Sea Vehicle" *M.G. Sürer & H.T. Arat*
10:45 11:15	**Coffee Break**	

PARALLEL SESSIONS – 10

ROOM 3	ROOM 4	
Track 11. Hydrogen Safety **Session Chair: *Thomas Bacquart***	**Track 16. Environmental Impact and Sustainable Development** **Session Chair: *Eniya Listiani Dewi***	
#1514 "Aspects of Risks Using Magnesium Hydride for Zero Emission Mobility" *B.A. Gran, K. Løvold & S. Deledda* **#1519** "Hydrogen Sensing Properties of Ultrathin Pt-Co Alloy Films" *M. Erkovan, C. Deger, S. Cardoso & N. Kilinc* **#1560** "Numerical Investigations on Flashback Limits of Premixed Methane-Hydrogen-Air Laminar Flames" *T.B. Kıymaz, E. Böncü, D. Güleryüz, M. Karaca, B. Yılmaz, C. Allouis & İ. Gökalp* **#436** "Metal Nanoparticle Decorated ZnO Nanorods for Hydrogen Sensor Applications" *S. Özturk, A. Kösemen, N. Kilinç & Z.Z. Özturk* **#296** "Risk Evaluation of Hydrogen Dispersion from Compressed Hydrogen (H_2) Storage Vessels" *R.Md. Kasmani, A. Ahmad, N. Norazahar, A.A. Jalil, T.A.T. Abdullah & M.F.A. Kamaroddin* **#1534** "An Experimental Apparatus for In-Situ Studies of Hydrogen Ingress, Dissolution and Precipitation at Controlled Temperature and Applied Tensile Stresses" *J. Lang, M. Gharghouri & H. Fritzsche*	**#1480** "Reduction of Hydrogen Carbon Footprint in Europe via International Shipping" *A. Arrigoni, E. Weidner, F. Dolci, R. O. Cebolla, U. Eynard & F. Mathieux* **#1549** "Life Cycle Assessment of Different Hydrogen Conversion Technologies from Biomass Gasification" *M.U. Öztürk, A. Ayol & O. Tezer* **#197** "The International Energy Agency's Hydrogen Technology Collaboration Programme for WHEC-2022" *P. Lucchese & M. Holgado* **#1589** "Life Cycle and Economic Assessment of Hydrogen Fuel Cell Buses" *A. Khoshnevisan, P. Ahmadi & N. Javani* **#1492** "Hot Gas Desulfurization Performance of SBA-15 Supported/Mixed Metal Oxides (Cu, Fe, Mn, and Zn)" *A. Kanca & G. Korkmaz* **#1516** "The Effect of Hydrogen and Ammonia Combustion on Performance and Emissions" *K. Bayramoglu, A. Bahlekeh, K. Masera*	**EXHIBITION**
Coffee Break		

PARALLEL SESSIONS – 10

	ROOM 5	ROOM 6
	Track 6. Hydrogen Storage **Session Chair: *Sergei A Markov***	**Track 14. Hydrogen Industry, Commercialization and Marketing, Applications** **Session Chair: *Guadalupe R. Sánchez***
09:00 10:45	**#133** "Easy Up-Scaleable Approach to Improve the Properties of Metal-Alloys for Hydrogen Storage" *J. Warfsmann, M. Passing, P.S. Krause, E. Wienken, J. Jepsen, T. Klassen & J.A. Puszkiel* **#139** "Modeling and Parameterization of a PEM Fuel Cell Stack for a System Integration into a Metal Hydride Based Hydrogen Storage System" *M.C. Guarneros, D. Dreistadt, J.B. von Colbe, G. Capurso, M. Siegers, J. Jepsen, J. Puszkiel & T. Klassen* **#196** "Different Ways to Store Massive Quantities of Hydrogen" *L.F. Londe & A. Réveillère* **#234** "Elastic Brittle Behavior of an Iron – Titanium Alloy Dedicated to Hydrogen Storage" *L. Bebon, A. Maynadier, Y. Gaillard & D. Chapelle* **#1564** "Investigation of Palladium Coated Nickel Foam Anode Electrode Application for Direct Ethanol Fuel Cells" *C. Kilic, K.C. Ata, A.C. Turkmen, S. Demirel & C. Celik* **#279** "Synthesis and Stabilization of Energy Fuel Material Aluminum Hydride: A Review" *Y. Liu, Y. Zhang, F. Yang, F. Zhao, Z. Wu & Z. Zhang*	**#1595** "Drive Cycle Simulation of a Small-Sized Fuel Cell Electric Vehicle" *E. Alpaslan, M.U. Karaoglan & C.O. Colpan* **#298** "Development of Hydrogen Energy in Russia" *D. Dunikov & V. Borzenko* **#267** "Hydrogen Energy Research and Development in Kazakhstan: Current Status" *S. Zholdayakova & B. Suleimenova* **#1531** "Prediction of Carbon Dioxide and Other Emissions Characteristics of Low Carbon Biofuel-Hydrogen Dual Fuel Engine - A Machine Learning Approach" *F. Josephin, J.S. Bai & E.G. Varuvel* **#1552** "Evaluation of Kinetic Models via Computational Optimization Techniques for Direct Syngas-to-Olefins Process" *K. Bulbul, A. Z. Turan, A. Sarıoğlan, G. Behmenyar & O. Ataç*
10:45 11:15	**Coffee Break**	

Thursday – June 30, 2022

PARALLEL SESSIONS – 10

ROOM 7	ROOM 8	Digital Boards – Onsite
Track 9. Integrated Hydrogen Energy Systems **Session Chair: *Mehmet Karakılçık***	**Track 9. Integrated Hydrogen Energy Systems** **Session Chair: *Mohamed Ramadan***	**POSTER PRESENTATIONS – 10**
#1608 "A System Model for Simulating a Fuel Cell Recreational Boat" *S.A. Korkmaz, S.A. Cetinkaya, B. Goksu, O. Konur, K.E. Erginer & C.O. Colpan* **#1610** "Multi-Objective Optimization of an Integrated Downdraft Biomass Gasifier and Solid Oxide Fuel Cell System" *B. Dursun, A. Erdogan, C.O. Colpan & A. Ayol* **#1504** "Hydrogen Powered Vessels at Sea: Fuel Cell & Battery Upscaling" *C. Helleland, F. Iversen & S.O. Halstensen* **#1618** "A Study on Exergetic Sustainability Indicators of Solar Methane Cracking" *A. Banu, A. Midilli, Y. Bicer* **#373** "Offshore Wind Energy Prospects for Power-to-Direct Air Capture and Power-to-Gas" *M.F. Shehzad, H. Ishaq & C. Crawford* **#1555** "Deep Learning-based Binary Classification of Islanding Conditions in a Hydrogen Energy-Based Distributed Generation System" *A.Yilmaz & G.Bayrak* **#1556** "THD Minimization of Vehicle-to-Grid (V2G) in Fuel Cell EVs with a Developed Elliptic IIR Filter" *G.Bayrak & A.Yilmaz*	**#1568** "PV-Fuel cell Hybrid System Modeling and Analysis" *B. Anlamaz, A.C. Turkmen, K.C. Ata & C. Celik* **#1624** "Negative Emissions Technology for Clean Energy Generation: Hydrogen Production via Direct Air Capture of CO_2" *A. Sodiq, M. El-Naas & A. Amhamed* **#212** "The Role of Renewable Hydrogen-Based Systems to Achieve Low-Carbon Stationary Power Applications" *V.M. Maestre, A. Ortiz & I. Ortiz* **#1622** "Development and Performance Assessment of Integrated Renewable Energy System with Hydrogen Storage for Autonomous and Mobile 3D Printing System" *S.A. Khan & M. Koc* **#237** "Control Strategies for Thermal Coupling System of Fuel Cell and Metal Hydride Tank: A Review" *F. Yang, J. Liu, F. Yang, Z.Wu & Z.Zhang* **#121** "Optimal Configuration of Energy Storage and Hydrogen Production at Renewable Energy Sites in a Power System Without Fossil Fuels in Japan" *K.Harada, K.Yabe & Y.Hayashi*	**#377** "H_2-Index for the Evaluation of Hydrogen Projects in Mexico" *G.R. Ramos- Sánchez & R. de G. Gonzalez-Huerta* **#246** "Pseudo-Dynamic Modeling and Optimization of Heavy Paraffin Dehydrogenation Process for Selective Olefin and Hydrogen Production Using Membrane Reactors" *M. Dehdashti, M. Binazadeh & M. Farsi* **#347** "Effects of Hydrogen-Methane Gas Blend on Wellbore Integrity in Underground Hydrogen Storage: An Experimental Investigation of Elastomer Performance" *D. Tetteh, E. Ugarte & S. Salehi* **#82** "H_2-Enriched Syngas Production by Algae-Plastic Waste Co-Gasification Using Aspen Plus" *P. Rosha & H. Ibrahim*
Coffee Break		

Thursday – June 30, 2022

PARALLEL SESSIONS – 11

	ROOM 1	ROOM 2
	Track 1. Hydrogen Production: Thermochemical and Photonic Methods **Session Chair: *Azize Ayol***	**Tracks 10. Power to Gas** **Session Chair: *Sonya Calnan***
11:15 **12:45**	**#1605** "Nickel-Based Grafted Catalysts for Dry Reforming of Methane Through High-Throughput Experimentation" *G. Celik, M. Ferrandon & M. Delferro* **#433** "Progress of 5 m^3/h H_2 Production Testing Facility Through Iodine-Sulfur Thermochemical Water-Splitting Method" *B. Ling, Y. He, J. Zhang, Y. Zhu & Z. Wang* **#421** "CFD Simulation and Analysis of a Novel Photoelectrochemical Hydrogen Generating Reactor Design" *A. Ismael & I. Dincer*	**#417** "Preliminary Design and Flowsheeting of a Sabatier Based Power-to-Gas System with Integral Heat Recovery and downstream Syngas Cleaning" *R. Capata, R. Melli & E. Sciubba* **#249** "Hydrogen as Energy Storage for Resolving Electricity Grid Issues in Indonesia" *A. Darmawan, M. Huda, E.L. Dewi, A.H. Budiman, A. Hadi, Kurniawan & M. Aziz* **#1625** "Thermodynamic Assessment of a New Small Modular Reactor for Hydrogen and Electricity" *I. Khan & F. Khalid*
12:45 **13:15**	**CLOSING CEREMONY**	

PARALLEL SESSIONS – 11

ROOM 3	ROOM 4	
Track 16. Environmental Impact and Sustainable Development **Session Chair: *Mehmet Karakılçık***	**Track 6. Hydrogen Storage** **Session Chair: *Aysel Kantürk Figen***	
#367 "Hydrogen Transportation Options and Challenges" *M.A. Omid, M. Koç & O.N. Cora* **#283** "The Energy-Enviro-Economic Evaluation and Multi-Objective Optimization of the Hydrogen Production Process from Coal-Biomass Co-Gasification Considering Uncertainty in Carbon Prices" *H. Yang, M. Dai, F. Yang, Y. Yu, Z. Wu & Z. Zhang* **#184** "H_2 Separation from CO_2 and CH_4 Mixtures Using a SAPO-34 Membrane" *P.F. Zito, A. Brunetti, A. Caravella & G. Barbieri*	**#142** "Size Optimization of a Hybrid Wind/Photovoltaic/Fuel Cell Grid-Connected System with Hydrogen Storage" *L. Abdolmaleki & U. Berardi* **#300** "Permeability of a Deformable Metal Hydride Bed During Hydrogen Absorption" *D. Dunikov & D. Blinov* **#413** "3D COFs for Photocatalytic N_2 Fixation: A Computational Study" *A.M.O. Mohamed & Y. Bicer* **#420** "A Novel Solar Energy Driven Thermochemical Hydrogen Production System Integrated with Electric Vehicle Charging Station" *F. Razi & I. Dincer*	**EXHIBITION**
CLOSING CEREMONY		

Thursday – June 30, 2022

PARALLEL SESSIONS – 11

	ROOM 5	ROOM 6
	Track 7. Fuel Cells: PEMFC **Session Chair: *Begüm Yarar Kaplan***	**Track 9. Integrated Hydrogen Energy Systems** **Session Chair: *Ehsan Baniasadi***
11:15 **12:45**	**#30** "Electrospun Hybrid Electrodes with Low Platinum Loading for PEM Fuel Cells" *B. Yarar Kaplan, B.S.S. Iskandarani, N.R. Mojarrad, A. Yurum & S. Alkan Gursel* **#163** "Combined Numerical and Experimental Analysis of Liquid Water Distribution Inside PEMFCs" *Ž. Penga, I. Tolj, P. Bosnić, J. Penga, J. Šimunović, G. Radica & F. Barbir* **#372** "Investigations on the Micro-Scale Surface Interactions and Tribological Size Effect in Micro-Stamping of SS316L Sheets" *M.F. Peker, H. Gedikli, Ö.N. Cora & M. Koc* **#262** "Surface Topography Evaluation During Long-Run Micro-Stamping of BPPs and Its Effect on Corrosion and Contact Resistance Characteristics" *M.F. Peker, H. Gedikli, Ö.N. Cora & M. Koç* **#54** "Mass Transfer Analysis of Microporous Layers for Polymer Electrolyte Fuel Cells Using Pore Network Model" *H. Nakajima, S. Iwasaki, T. Kitahara* **#1596** "Preparation of Kaolin and Bentonite Added Nafion Composite Membranes" *F. Dönmez & N. Ayas*	**#1597** "Investigation of Simultaneous Hydrogen Production and Desalination of Saline Water via Electrodialysis Process" *R. Alshebli, B. Yuzer & Y. Bicer* **#1550** "Energy Management of Green Hydrogen-based Power-to-Power Generation Systems" *A. Kafetzis, S. Chatzigavriel, P. Seferlis & K. Panopoulos* **#186** "Analysis of Transport Options for Liquid Hydrogen in Germany" *T. Busch, T. Gross, J. Linssen & D. Stolten* **#1553** "Hydrogen and Freshwater Production from Tidal Energy" *C. Celik & M.E. Demir* **#1476** "Co-Generation of Electricity Using Waste Heat from Hydrogen Fuel Cell in A Vehicle: A Simulink Model" *K. Kamal, A.A. Shaikh, M.U. Shaikh, S.Khan, A. Jawed, A.Y. Tariq, T.A.H. Ratlamwala & A.A. Zaidi*
12:45 **13:15**	**CLOSING CEREMONY**	

PARALLEL SESSIONS – 11

Digital Boards – Onsite
POSTER PRESENTATIONS – 11
#345 "Experimental Studies of Well Integrity Issues Related to Cement During Underground Hydrogen Storage" *E.R. Ugarte, D. Tetteh & S. Salehi* **#1636** "Development of a Thermal Management System for Metal Hydride Hydrogen Tank" *A.Efekan, B. Yaşar, E. Karakahya, I. Dalgiç, M.H. Demir, M. Demir, N.A. Yaraş, C.O. Colpan & M.A. Ezan* **#1637** "Take Your Energy Using Servi Dut Pekmezi (Mulberry Molasses): A Novel Electroactive Film for Water Electrolysis" *Y.A. Dursun & Ramazan Solmaz*

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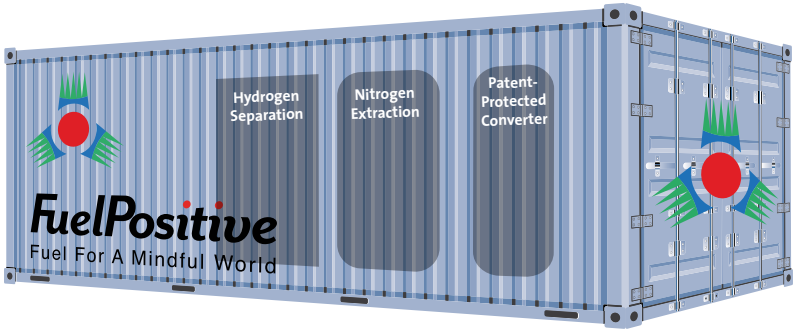

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NATIONAL HYDROGEN ASSOCIATION

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AWARDS

Nejat Veziroğlu Special Award

This award was created on behalf of Prof. Dr. Nejat Veziroğlu, who is an international leader in hydrogen energy, the father of hydrogen technologies, and the permanent honorary president of the Hydrogen Technologies Association. It is given to people who have proven themselves in the field of hydrogen energy and technologies both domestically and internationally and have made internationally recognized contributions.

Service Award of Hydrogen Technologies Association

This award is given to the people who have dedicated themselves to hydrogen energy and have served for at least 20 years in the development and application of this field, have contributed to the communal, social, technological, and economic development of the country in this field, have been a pioneer in the education and training of youth, have made institutional contributions and are active in industrial applications.

Technology Award

This award has been created for institutions that work effectively on hydrogen energy technologies and develop technologies. It is given to institutions that develop a product for the development of hydrogen technology, establish a pilot or industrial facility in the field of hydrogen energy and technologies, have patents in the field of hydrogen energy and technologies or support technology development.

Young Researcher Award

This award has been created for researchers, who are under the age of 35 (not less than 35 years old as of the date of WHEC-2022 conference, where the award will be given) and have at least a master's degree. It is given to people who have done successful studies on hydrogen energy technologies that are recognized at the national and international levels.

Student Researcher Award

This award is given to undergraduate, graduate, or doctoral students. Candidates are expected to be under the age of 30 as of the date of the WHEC-2022 conference, where the award will be given. The candidates who will be nominated for this award or who will apply themselves, will be preferred for this award if they have developed an invention, a new application, or a unique method for hydrogen technologies

Winners of these prizes will be invited to attend the conference in which they will participate in the award ceremony, and their transportation and hotel expenses will be covered by the association.

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