



SALTILLO 2026

SCIENTIFIC PROGRAM

SEPTEMBER 1-4, 2026

📍 CINVESTAV SALTILLO & FCQ - UAdeC
SALTILLO, COAHUILA, MEXICO





Dr. Gerardine “Gerri” Botte

“Guest of Honor –
Congress Honoree”.

Texas Tech University, USA

*Electrochemical Engineering,
Hydrogen & Sustainable Technologies*



Dr. Gerardine “Gerri” Botte is Professor and Whitacre Endowed Chair in Sustainable Energy at Texas Tech University, Founder and Director of the **NSF Engineering Research Center for Advancing Sustainable and Distributed Fertilizer Production (CASFER)**, and Founder and Director of the **Institute for Sustainability and Circular Economy**.



An internationally recognized leader in electrochemical science and technology, her research has pioneered innovative electrochemical approaches for **hydrogen production, sustainable resource recovery, energy storage, water treatment, and advanced manufacturing**. Her work is distinguished by its ability to transform fundamental electrochemical concepts into technologies addressing major challenges in energy, water, food, and sustainability.



Throughout her career, Dr. Botte has combined scientific innovation, technological development, entrepreneurship, and academic leadership, establishing herself as an influential figure in electrochemical engineering worldwide.



The XXVI International Congress of the Mexican Hydrogen Society is proudly held in honor of Dr. Gerardine Botte, in recognition of her outstanding scientific career and contributions to hydrogen and electrochemical technologies.

KEYNOTE LECTURE

Unconventional Electrolysis for Hydrogen Production and Circular Economies

Gerardine G. Botte

Professor and Whitacre Endowed Chair in Sustainable Energy
Founder and Director, Institute for Sustainability and Circular Economy
Founder and Director, CASFER an NSF Engineering Research Center
Texas Tech University
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September 2 | 10:00–11:00 AM | Paraninfo, Ateneo Fuente

Abstract

Water is not the only molecule that can be electrolyzed to produce hydrogen, and it is rarely the most efficient one. For the past two decades, my group has pursued what we call *unconventional electrolysis*: the use of waste, low-value, and abundant streams — ammonia, urea, sewage sludge, and coal — as the hydrogen source. Because the thermodynamic potentials of these reactions lie well below that of water splitting, hydrogen can be produced at a fraction of the electrical energy while the anode performs useful work: remediating a pollutant, recovering a nutrient, or valorizing a carbon resource. Hydrogen becomes one product of a circular process rather than the sole objective.

The majority of this lecture will focus on ammonia electrolysis. Ammonia is a carbon-free energy carrier with established storage and distribution infrastructure, and it is simultaneously one of the most pervasive contaminants in municipal, agricultural, and industrial effluents. Its electrolysis requires a theoretical cell potential roughly twenty five times lower than water electrolysis, but realizing that advantage demands control of the ammonia oxidation reaction. I will trace our path from the first demonstration of ammonia electrolysis for hydrogen production through mechanistic understanding of the reaction and its catalyst poisoning pathways — combining *in situ* spectroscopy, density functional theory, and kinetic modeling — to the design of bimetallic platinum-based electrocatalysts on high-surface-area supports. I will then move from the electrode to the reactor: hydrodynamic and mathematical modeling of flow cells, gas diffusion electrodes that oxidize gaseous ammonia and effectively double the hydrogen produced per ammonia molecule, pulse electrolysis strategies for the simultaneous removal of ammonia and nitrate, and finally the scale-up to a 3,000 cm² bipolar electrolyzer approaching net energy-positive operation. Along the way I will highlight the closely related chemistry of urea electrolysis on nickel-based catalysts, which converts human and animal waste into hydrogen and clean water, and which has since grown into an active field worldwide.

The second stream I will present is coal. Electrolysis of carbon-rich feedstocks produces pure hydrogen at the cathode at potentials well below water splitting and without the sulfur and carbon monoxide burden of thermal routes, while leaving behind a modified carbon that can be converted into liquid fuels, graphene and other carbon nanomaterials, and a matrix from which critical materials and rare earth elements can be recovered.

I will close by showing how these ideas converge in the NSF Engineering Research Center CASFER, where modular, distributed, electrified technologies are being developed to capture, recycle, and produce nitrogen-based fertilizers — the foundation of a nitrogen circular economy connecting energy, water, and food.

INVITED LECTURE

Advances and Challenges in Safety Regulations for Hydrogen Facilities: Case Study of the Green Hydrogen Plant at the University of Magallanes

María Luisa Ojeda Almonacid

Senior Researcher in Sustainable Energy Systems
Center for Energy Resources Studies (CERE), University of Magallanes
maria.ojeda@umag.cl

September 2 | 15:00–16:00 PM | Auditorium, Faculty of Chemical Sciences

Abstract

Following several technical analyses and participatory processes, the Chilean Ministry of Energy achieved significant progress in the development of specific hydrogen regulations and standards through the issuance of Supreme Decree No. 13, which regulates safety in hydrogen facilities. This regulation establishes minimum safety requirements for the design, construction, operation, maintenance, inspection, and permanent decommissioning of facilities where hydrogen production, conditioning, storage, packaging, and consumption activities are carried out. It also establishes the obligations and responsibilities of the individuals and legal entities involved in these activities.

However, slightly more than two years after its entry into force, its implementation has proven challenging from a technological perspective, as many technologies are advancing more rapidly than the safety standards currently in place. In addition, detailed regulations are still lacking for emerging or highly demanding niches, particularly in the field of hydrogen applications.

Through a specific example of the implementation of this regulation at a facility for the production and use of renewable hydrogen for human capital development and training, this presentation highlights the challenges that a pilot-scale project may encounter. It also illustrates the competencies required to address multidisciplinary and, at times, complex processes while ensuring safe operation without posing risks to people or the facilities themselves.

INVITED LECTURE

From Molecules to Markets: Is Power-to-X Ready to Deliver on Its Promise?

Jimena Incer Valverde

Associated Professor and Researcher
University of Costa Rica, Costa Rica
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September 3 | 10:00–11:00 AM | Auditorium, Faculty of Chemical Sciences

Abstract

Power-to-X (PtX) technologies are emerging as key enablers for the conversion of renewable electricity into hydrogen, synthetic fuels, and sustainable chemical feedstocks, offering viable pathways for the decarbonization of hard-to-abate sectors.

Despite rapid technological progress, the large-scale implementation of PtX systems remains constrained by complex interactions among process performance, renewable energy intermittency, resource availability, infrastructure requirements, and economic viability. Addressing these challenges requires integrated methodologies that extend beyond component-level optimization.

This lecture presents a comprehensive systems engineering perspective on PtX pathways, combining results from process simulation, energy integration, technoeconomic analysis, and multi-criteria decision-making (MCDM) to evaluate the technical feasibility and deployment potential of alternative process configurations.

Results from rigorous steady-state and dynamic simulations will illustrate the influence of operating conditions and downstream synthesis processes on energy efficiency, exergy performance and product yields. The presentation will further demonstrate how MCDM frameworks can support technology selection by simultaneously considering technical performance, economic indicators, environmental impacts, resource efficiency, operational flexibility, and supply chain resilience under multiple deployment scenarios.

Successful commercialization of Power-to-X depends not only on advances in electrochemical and catalytic technologies but also on the development of robust optimization and decision-support frameworks capable of navigating the inherent trade-offs among efficiency, cost, sustainability, and market readiness. The insights presented will identify critical research directions for accelerating the transition from laboratory-scale innovation to resilient, industrial-scale PtX ecosystems

INVITED LECTURE

Mg-based Hydrogen Storage Materials: Research, Application and Future prospects

Jianxin Zou

Center of Hydrogen Science and School of Materials Science and Engineering, Shanghai
Jiao Tong University, Shanghai. China
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September 4 | 9:00–10:00 AM | Auditorium, Faculty of Chemical Sciences

Virtual presentation

Abstract:

Mg-based hydrogen storage materials garnered tremendous interests due to their high hydrogen capacity (~ 7.6 wt% for MgH_2), low cost, and excellent reversibility. However, the high thermodynamic stability ($\Delta H = -74.7$ kJ mol $^{-1}$ H_2) and sluggish kinetics result in a relatively high desorption temperature (> 300 °C) and slow sorption rate, which severely restrict the widespread applications of MgH_2 in hydrogen energy sector. To solve these problems, we have conducted nanostructuring, catalysts addition and nanoconfinement approaches to improve the hydrogen storage properties of MgH_2 using transition metal based catalysts and multi-dimensional scaffolds (such as Ni, MXene, V_2O_5 , TiO_2 nanosheets, single atom catalysts, etc.). The in-situ observations together with other analyses revealed that the nano-catalyzing and/or nano-confinement effects were main reasons accounting for the lowered hydrogen sorption temperatures ($< 200^\circ\text{C}$) and excellent cyclic stability (> 3000 times). In addition to the scientific research, we have also attempted the applications of Mg based materials for large scale hydrogen storage and transportations. As an example, a ton level Mg based hydrogen storage container has been developed under the help of numerical modeling of thermal-hydrogen coupled processes and the container is used in cases of long distance hydrogen transportation, hydrogen refueling station and hydrogen metallurgy, etc. These studies give inspiration to develop high performance Mg-based energy materials and systems for future applications.

Tuesday, September 1

Pre-congress courses

Sustainable Hydrogen and Fuel Cells

Dr. Gliserio Romeli Barbosa Pool

Centro de Investigación Científica de Yucatán (CICY), Mexico

Pencil Power: Hands-on Construction of Plug-in Bio-Batteries for a Sustainable Future

Dr. Sathish Kumar Kamaraj

Instituto Politécnico Nacional (IPN), Mexico

9:30-10:00	Registration
10:00-10:20	Courses
11:20-11:30	Coffee break
11:30-13:30	Courses
13:30-14:30	Lunch
14:30-16:00	Courses
16:00-19:00	Free time
19:00-20:00	Welcome Cocktail (Hotel)

Wednesday, September 2

8:30-9:00	Registration
9:00-9:30	Welcome and Opening Ceremony
9:30-10:00	Traditional Saltillo Music Performance
10:00-11:00	Keynote Lecture (Parainfo, Ateneo Fuente) Unconventional Electrolysis for Hydrogen Production and Circular Economies Prof. Gerardine G. Botte Professor and Whitacre Endowed Chair in Sustainable Energy Texas Tech University Director: CASFER, CETI Lab, ISCE Institute
11:00-11:30	Coffee break

Center for Research, Innovation and Graduate Studies (CIIP)			
Room 1	Room 2	Room 3	Room 4
11:30-11:45			
288 Descripción general de la optimización del dimensionamiento en sistemas híbridos PEMFC-Batería en vehículos eléctricos. Mónica Barrón Cano, Josefa Morales Morales, Cornelio Morales Morales, Mirna Castro Bello, Jaime Navarrete Damián, Marco Antonio Sánchez Martin	284 Evaluación del rendimiento de biohidrógeno a partir de jugo de guishe de Agave lechuguilla mediante lodos anaerobios. Alondra Sifuentes, Jorge Gonzáles, Miguel Medina, José Rodriguez, Thelma Morales, Leopoldo Rios	286 Compositionally complex cerates zirconates electrolytes for hydrogen-based power generation. Gerardo Hernández González, Sergio Rodolfo Arreazola López, José Alonso Díaz Guillén, María Elena Bazaldúa Medellín, Antonio Fernández Fuentes	261 Visible-Light-Assisted Hydrogen Evolution over $\text{CoFe}_2\text{O}_4/\text{g-C}_3\text{N}_4$ Heterojunctions: Effect of Ferrite Loading and Charge Transport. Blanca Cristina Hernandez-Majalca, Jorge Luis Dominguez-Arvizu, Javier Eliel Morales- Mendoza, Luz Idalia Ibarra Rodriguez, Felipe Angel Gaxiola-Cebreros, Jesus Manuel Castro-Lozoya, Cristian de Jesus Méndez-Morales, Isaac Briceño-Martínez, Sergio Asahel Ochoa-Casas, Carlos Abdias Bautista-Pérez, Liliana Corral-Correa, Virginia Hidolina Collins-Martínez, Alejandro Lopez Ortiz.

11:45-12:00			
287 Development of a Wet Cell HHO Generator with PWM Control. German Hurtado Arellano, Cornelio Morales Morales, Diego Cortez Olalde, Mirna Castro Bello, Ma. Socorro Guerrero Ramírez, José Carlos García García, Abimelec Salazar Resendiz, Josefa Morales Morales	285 Evaluation of pretreated anaerobic sludge as inoculum for biohydrogen production from glucose. Christopher Malacara, Jorge González, José Rodríguez, Thelma Morales, Miguel Medina, Leopoldo Ríos	277 Estudio experimental de ánodos de espuma de níquel modificados con NiSx/rGO/NiFe para la producción de hidrógeno verde a partir de soluciones salinas de NaCl. Claudia Patricia Parra Medina, Héctor Darío Sánchez Londoño, Edwin García	273 Energy Assessment of a PV-PEM Electrolysis System for Solar Hydrogen Production in Southern Mexico. Emmanuel Fernández Méndez, Lizbeth Morales Salas, José Vidal Herrera Romero, Francisco López Santos, Benjamin Álvarez Alor
12:00-12:15			
254 Data-Driven Characterization and Modeling of Electric Double-Layer Capacitance in PEM Fuel Cell Stacks. Jesus E Valdez-Resendiz, Julio C Rosas-Caro, Avelina Alejo-Reyes, Edgar D. Silva-Vera, Victor Sanchez	282 Production of biohydrogen via dark fermentation of glucose using Clostridium beijerinckii ATCC 51743. Jazmín Hernández, Jorge González, José Rodríguez, Thelma Morales, Miguel Medina, Leopoldo Ríos	257 N-doped mesoporous carbons. The role of nitrogen in selectivity toward the ORR and HER. Anayantzin Hernández-Ramírez, Elton Torres-Zanoni, Roberto Benavides, Rodolfo Cruz-Silva, Luciano Da Silva, Diana Morales-Acosta	264 CFD-Based Optimization of LVRPA in a SrFe₂O₄ Photocatalytic Reactor by Solving the Radiative Transfer Equation for Hydrogen Production. Jorge Luis Domínguez-Arvizu, Blanca Cristina Hernández-Majalca, Cristian del Jesus Méndez-Morales, Jesus Manuel Castro-Lozoya, Sergio Asahel Ochoa-Casas, Carlos Abbdias Bautista-Pérez, Liliana Corral-Correa, Iyiade Gbolahan Alalade, Luz Idalia Ibarra-Rodríguez Isaac Briceño-Martínez, Alejandro López-Ortiz, Virginia H. Collins-Martínez

12:15-12:30			
252 MXenes (Ti₃C₂Tx) as promising supports for electrocatalysts in fuel cells. Juliana Martínez Hernández, Beatriz Ruiz Camacho, Adriana Medina Ramirez	255 Promoted visible-light-driven H₂ production over hydrothermally synthesized Ag₂S/AgInS₂-NiO nanocomposites. Luis Angel May Ix, Sandra Cipagauta Díaz, Víctor Suárez Quezada, Fernando Tobola Inchaurregui, Monserrat Suárez Quezada, Agileo Hernández Gordillo, Francisco Tzompantzi Morales	258 Amitrole-based mesoporous carbon as an electrocatalyst for the oxygen reduction reaction (ORR). Diana Morales-Acosta, Elton Torres-Zanoni, Anayantzin Hernández-Ramírez, Roberto Benavides, Rodolfo Cruz-Silva, Luciano Da Silva	250 Experimental Validation of a Cuckoo Search – Golden Section Hybrid MPPT Algorithm for Green Hydrogen Production in Solar Panels under Partial Shading. A.I. Perea, I.L. Alonso-Lemus, G. Vargas-Gutiérrez, F.J. Rodríguez-Varela, America B. Morales Diaz
12:30-12:45			
186 Characterization of Plant Microbial Fuel Cell systems based on their transient electrical response and analysis using artificial intelligence. Sathish Kumar Kamaraj, Wilgince Apollon, Marco Antonio Merino Treviño	263 Computational Exploration of Hydrogen Adsorption in Advanced Materials. María Esther Sánchez Castro, Marisol Ibarra-Rodríguez, Mario Sánchez	249 Power Conditioning of PEM FC Stack with a Quadratic Boost Converter based on Non-Series Energy Transfer (QBC-NSET). Luis Humberto Diaz-Saldierna, Julio C Rosas-Caro, Jesus Leyva-Ramos, Jesus Valdez-Resendiz, Avelina Alejo-Reyes, Victor M Sanchez	221 Hydrogen Integration and Energy Transition Policies in Mexico. Rosa de Guadalupe González-Huerta
12:45-13:00			
182 Artificial Intelligence-Based Maximum Power Point Tracking for Bioelectrochemical Energy Harvesting in Hydrogen-Oriented Systems. Francia Valencia, Marco Merino, Sathish Kumar	256 Adsorción de hidrógeno en una supercelda de MoS₂: estudio mediante DFT. Abel Rodríguez Rodríguez, María Teresa Romero de la Cruz, Aracely del Carmen Martínez Olguín, Yuliana E. Avila Alvarado	187 Effect of initial pH on biogas enrichment using bioH₂ and metal wastes from the metal-processing industry. Blanca Adela Carrillo-Ortiz, Germán Buitrón, Karla M. Muñoz-Páez	202 Evaluación termoeconómica de la combustión de mezclas de CH₄ e hidrógeno verde utilizando el problema CGAM. Daniel Molinero-Hernández, Carlos Rubio-Maya, Luis F. Villalón-López, Víctor M. Ambríz-Díaz, Oskar J. González-Pedraza

13:00-13:15			
131 Synthesis, structural characterization and ionic conductivity of Ti-substituted $\text{Bi}_2\text{Me}_x\text{V}_{1-x}\text{O}_{5.5}$ phases ($x = 0.1, 0.2$ and 0.3) for intermediate-temperature Solid Oxide Fuel Cells. Dulce Esperanza Puente Martínez, Antonio Fernández Fuentes, José Alonso Díaz Guillén, Madelyne Salazar Zertuche, Sagrario Martínez Montemayor	236 Production of Ammonia as a Vector for Hydrogen Storage Using 5% Pt Nanocatalysts Supported on Cu-BTA-Functionalized Graphene: An Experimental and Theoretical Study. R. López-Leal, M. E. Sánchez-Castro, I. L. Alonso-Lemus, A. Ochoa-Calle, F. J. Rodríguez-Varela	154 Syngas and carbon monoxide fermentation as a biorefinery platform for carboxylate production. Paulina Núñez-Valenzuela, Julián O. Ovis-Sánchez, Sergio Revah, Elías Razo-Flores	200 Parametric Techno-Economic Assessment of Photovoltaic Systems with Hydrogen Storage Based on Levelized Cost of Energy and Discounted Payback Period. Andree Gibran Aranda Cen, Romeli Barbosa Pool, Abimael Rodríguez Sánchez, Luis Ordóñez López, Mauricio Escalante Soberanis
13:15-13:30			
	148 Hydrogen Storage in Metal Hydrides – Fifty years...and we keep trying. Jose Cabañas Moreno		166 Comparative Spatial Prioritization of Green Hydrogen Hubs in Mexico Using MCDA and Probabilistic Clustering. Juan Antonio Herrera Contreras, Sergio Ivvan Valdez Peña, Luis Carlos Ordoñez López

13:30-15:00	Lunch
15:00-16:00	Invited Lecture (Auditorium, Faculty of Chemical Sciences) Advances and Challenges in Safety Regulations for Hydrogen Facilities: Case Study of the Green Hydrogen Plant at the University of Magallanes María Luisa Ojeda Almonacid Senior Researcher in Sustainable Energy Systems Center for Energy Resources Studies (CERE), University of Magallanes
16:00-18:00	Poster session
18:00-19:30	SMH Student Assembly (Auditorium, Faculty of Chemical Sciences)

Thursday, September 3

8:30-9:00	Registration
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Center for Research, Innovation and Graduate Studies (CIIP)			
Room 1	Room 2	Room 3	Room 4
9:00-9:15			
247 Synthesis of a Mg-Co oxide electrode via electrospinning with application in the oxygen evolution reaction. Fernando Sánchez-Rivera, Berenice López-González, Francisco Enrique Longoria, Francisco M. Cuevas-Muñiz	246 Development and evaluation in HER of 3D printed nanostructured electrodes (SLA): Comparative study between pristine and functional carbon nanotubes. Xochitl Mondragon Pineda, Andrea Carolina Andrade Ponce, Miriam Iran Lopez Aguirre, Saul Alejandro Aguilar Maruri, Rosalba Fuentes Ramirez, Julián Cabrera Ruiz, Lourdes Ramos Galicia	206 Seasonal Storage of Green Hydrogen to Reduce Intermittency in Hybrid Wind–Solar Plants: Assessment of Sizing Methods. Alberto Gutiérrez-Martínez, Carlos Rubio-Maya, Gilberto Gonzalez-Avalos, G. Romelí Barbosa-Pool	244 Modulating the HER of carbon nitrides: A systematic comparison between phosphorus doping and CeO₂/α-Fe₂O₃ nano-decoration. Andrea Carolina Andrade Ponce, Jesus Eduardo Rodriguez Moreno, Saul Alejandro Aguilar Maruri, Julián Cabrera Ruiz, Rosalba Fuentes Ramirez, Lourdes Ramos Galica, Alejandro Lopez Ortiz
9:15-9:30			
228 Ni–Fe LDHs-based nanocatalysts as high-performance catalysts for the oxygen evolution reaction. William Miguel Ramírez-Santander, Ivonne Liliana Alonso-Lemus, Francisco Javier Rodríguez-Varela	245 Electrocatalytic evaluation of β-cyclodextrin polymers doped with Pd-MWCNTs for efficient hydrogen production. Jesus Eduardo Rodriguez Moreno, Xochitl Mondragon Pineda, Miriam Iran Lopez Aguirre, Saul Alejandro Aguilar Maruri, Rosalba Fuentes Ramirez, Julián Cabrera Ruiz, Lourdes Ramos Galicia	224 Solid solution materials as alternative for enhancing photocatalytic hydrogen production. Luis F. Garay-Rodríguez, Leticia M. Torres-Martínez	192 Microwave-Synthesized Fe–Co Spinel-based Electrocatalysts with Bifunctional Activity toward Oxygen Electrochemical Reactions. María S. Ramírez Vargas, Ismailia L. Escalante García, Sergio M. Durón Torres, Virginia H. Collins Martínez, Araceli Sánchez Martínez, Jesús A. Díaz Real

9:30-9:45			
215 Thin film photocatalyst: Optimization strategies for solar fuel production. Maria Alfaro	213 Differential Neural Network Control for Optimised Temperature Management of a 10 kW Alkaline Electrolyser. José Angel Pineda Jimenez, Hugo Alfonso Casas Mejía, Alejandro Wintergerst Felipe, Juan Manuel Sandoval Pineda, Rosa de Guadalupe González Huerta, Raúl Rivera Blas	226 Waste-to-Hydrogen: Photocatalytic Conversion of PET Microplastics Using Cu ₂ O/CuO Heterostructures. Edith Luévano-Hipólito, Valeria Carvalho Antonio, Leticia M. Torres-Martínez	190 Process Optimization of Biohydrogen Production from Cattle Manure and Glycerol Co-digestion. José A. Contreras, Iván Moreno-Andrade
9:45-10:00			
209 Optical coefficient determination of NiFe ₂ O ₄ /g-C ₃ N ₄ heterojunctions for naproxen degradation and simultaneous photocatalytic hydrogen production. Jorge Luis Dominguez-Arvizu	212 Synthesis, characterization, and corrosion evaluation of macroporous Ni deposits used in an alkaline environment. Luis Flores-Melo, Héctor Dorantes Rosales, Rosa de Guadalupe González-Huerta, Carlos Barrios-Durstewitz	211 Assessing Dark Fermentative Hydrogen Production from Trametes versicolor-Pretreated Lignocellulosic Residues: H ₂ Yield and Microbial Dynamics. Roberto Carlos Campos Flores, Eric Trably, Santiago Iván Suárez Vázquez, Nicolas Bernet, Arquímedes Cruz López	194 Preliminary Integration of a Hybrid Wind-Photovoltaic System for Hydrogen and Desalinated Water Production in the Comondú Region, Baja California Sur, México. José Luis Guevara Gómez, Carlos Rubio Maya, Gilberto Morales Vázquez, Alberto Gutiérrez Martínez, José Javier Román Peñaloza

10:00-11:00	Invited Lecture (Auditorium, Faculty of Chemical Sciences) From Molecules to Markets: Is Power-to-X Ready to Deliver on Its Promise? Jimena Incer Valverde Expert in Energy Systems Efficiency University of Costa Rica
11:00-11:30	Coffee break

Room 1	Room 2	Room 3
11:30-11:45		
147 Analysis of Hydrogen Absorption Kinetics in Metals and Alloys: The Case of a Medium Entropy TiVCrMn Alloy. Jose Cabañas-Moreno, Paula Cintrón-Núñez, Karina Suárez-Alcántara	197 Integrated Design, Sizing, and Operational Optimization Framework for Alkaline Water Electrolyzers. Roberto Moreno-Soriano, Rosa De Guadalupe González-Huerta, Juan Manuel Sandoval-Pineda	183 Design and sizing of a green ammonia production plant in Yucatan's Peninsula. Jose Arturo Santoyo, Salvador Aceves
11:45-12:00		
145 Energy-based modeling and experimental characterization of hydrogen storage in metal hydride tanks under transient conditions. Javier Valladares Aguilera, Gliserio Romeli Barbosa Pool, Enrique Escobedo Hernández, Mauricio Alberto Escalante Soberanis	219 Overcoming Efficiency Limits in Alkaline Electrolysis: Zero-Gap Architecture and Deep Learning Insights. Samantha Ixtepan Osorio, Juan Manuel Sandoval Pineda, Amadeo José Argüelles-Cruz, Edgar Adhair Montes Gomez, Alejandro Davila Díaz, Rosa de Guadalupe González Huerta, Roberto Moreno Soriano	140 Comparative Assessment of Hydrogen Production from Nuclear Reactors and Microreactors. Valeria Juárez-Casildo, Alejandría D. Pérez.Valseca, Ilse Cervantes
12:00-12:15		
164 Renewable Integration and Green Hydrogen Blending in Combined-Cycle Economic Dispatch: A Seasonal Analysis for the Northwest Mexican area. Roberto Jair Lorenzo Diaz, Jaime Robles García, Mohamed Badaoui, David Romero Romero, Krzysztof Zaremba	180 Zero-dimensional model based on a Wiebe triple function to evaluate the effects of hydrogen energy substitution in dual diesel-hydrogen combustion. Israel Trujillo Olivares, Rosa de Guadalupe González Huerta, Alejandro Wintergerst Felipe, Juan Manuel Sandoval Pineda	168 Effects of Distribution Zones on Flow Structure and Water Accumulation in PEM Fuel Cells: A Multiphase CFD Study. David Alexandr Benavides Zadorozhna, Juan Manuel Tadeo Sierra, Grajeda Lelio de la Cruz May, Olena Benavides, Sandra Jazmín Figueroa Ramírez
12:15-12:30		
235 System for the characterization of fuel cells for educational purposes.	174 Scale Transition and Integration of a 10 kW Alkaline Electrolysis System for Hydrogen-Based Energy Applications.	165 Water flux through an anion exchange membrane fuel cell: Influence of flow field geometry.

Danna Cristina Gutiérrez-Cabrera, Diana Cristina Martínez-Casillas	Alejandro Wintergerst Felipe, Israel Trujillo Olivares, Juan Manuel Sandoval Pineda, Rosa de Guadalupe Gonzalez Huerta, Raul Rivera Blas	M. Isabel Leon Sotelo, Tatiana Romero Castañón, J. Luis Nava
12:30-12:45		
160 Carbon-Supported Sr and Pt co-doped Double Perovskites for Multifunctional Electrocatalysis in Alkaline Media. G. Guzmán-Balderas, I.L. Alonso-Lemus, F.J. Rodríguez-Varela, P. Karinjilottu-Padmadas	189 Enhancing hydrogen production via dark fermentation through codigestion of food waste, nejayote, and Opuntia residues. Daniela Vanessa Villalobos-Vázquez, Marisol Pérez-Rangel, Iván Moreno-Andrade	173 Modification and Characterization of Styrene Polymers Blends for the Development of Ion Exchange Membranes. J.C. Sánchez Hiza, Roberto Benavides, Diana Morales-Acosta, Luana Francisco-Vieira, Luciano DaSilva
12:45-13:00		
169 Reducing platinum content for efficient HER via $\text{La}_{1-x}\text{Sr}_x\text{CoO}_3\text{-Pt/C}$ nanocomposites. Juan Fernando Méndez Vázquez, Padmasree Karinjilottu Padmadas, Perla Cecilia Meléndez González, Ivonne Liliana Alonso Lemus, Francisco Javier Rodríguez Varela	130 Performance evaluation of a small-scale alkaline water electrolyzer for hydrogen production under variable power operating conditions. Abimelec Salazar, Cornelio Morales, Mirna Castro, Josefa Morales, Alfredo Gil	158 Homogeneous Sulfonation of Recycled ABS to obtain Ion Exchange Membranes. Juan Carlos Sanchez-Hiza, Roberto Benavides, Diana Morales, Adali Castañeda-Facio, Alfredo Flores, Luciano DaSilva, Luana Francisco-Vieira
13:00-13:15		
159 Linking Nano- and Mesoscale Microstructure to Electrochemical Performance in EHC Catalyst Layers: A Numerical–Experimental Framework. Alfonso Navarro-Montejo, Carlos Pacheco, Romeli Barbosa	163 Exploration of the operating conditions of a laboratory reactor for hydrogen generation by electrolysis of alkaline water. Uriel Gomez Rodriguez, Gladys Jiménez García, Rafael Maya Yescas, Rafael Huirache Acuña	150 Holopelagic Sargassum as a Sustainable Platform for the Development of Advanced Functional Materials in Alkaline Fuel Cells: A State-of-the-Art Review. Beatriz Escobar, Erika Vazquez, Jose Martin Baas
13:15-13:30		
	171 AI-Based Solar Irradiance Prediction as an Input to Photovoltaic Sizing toward Green	

	Hydrogen Applications in Tropical Regions. Manuel Alejandro Llanes Basulto, Abimael Rodríguez Sánchez, Abraham Misraim Rios Cano, Jaime Silverio Ortégón Aguilar	
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13:30-15:00	Lunch
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On-line session

Room 1	Room 2	Room 3
15:00-15:15		
290 Non-Thermal Plasma Technology for the Generation of Reactive Hydrogen Species in Water and Their Antimicrobial Application. Katherine Karina Corona Reyes, Lesly Katleya Usme Duque, Silvia Yudith Martínez Amador, Thelma Karina Morales Martínez, José Alberto Nuncio Esquivel, Yadira Karina Reyes Acosta, Jesus Alejandro Claudio Rizo, Leopoldo Javier Rios Gonzales	267 Ionic Liquid-Synthesized Catalysts with Engineered Oxygen Vacancies for Efficient Alcohol Electrooxidation. María Victoria Contreras Martínez, Isaac Velázquez Hernández, Miriam Estévez, Lorena Álvarez Contreras, Noe Arjona	207 Carbon Doping in g-C₃N₄ for Enhanced Photocatalytic H₂ Production. Montserrat Gallegos-Alegria, Esaú Yépez-Medina, Lizbeth López-Castro, José Manuel Romo-Herrera, Uriel Caudillo-Flores
15:15-15:30		
279 Electrochemical Modelling of the Performance of Ir-Sn-Sb-O Based Electrocatalysts for Evaluation in a PEM Electrolyser. Samuel Esau Jacinto Macias, Alán Rubén Calzada Hernández, Nicté Julieta Pérez Viramontes, Ingrid Rodríguez-Hernández,	265 Bismuth-Induced Electronic Modulation in Complex Multimetallic Layered Double Hydroxides (NiFeMnCoAlBi) for Enhanced Water Splitting and Alcohol Electrooxidation. Isaac Velázquez Hernández, María Victoria Contreras	239 Potential Application of ZnO–Cu_xO Bilayer Coatings on Flexible Substrates for Photocatalytic Hydrogen Production. Luz Idalia Ibarra Rodriguez, Cristina Hernandez, Alejandro Lopez, Virginia Collins

Ignacio Formoso, J. L. Pineda-Delgado	Martínez, Arnold Hernández Palomares, Janet Ledesma García, Miriam Estévez	
15:30-15:45		
227 Hydrodesulfurization of Thiophene on Interfacial Active Sites in Ni₃S₂-MoS₂ Catalysts: Theoretical Study on the Reaction Mechanism. Luis Adrian Vega Ibarra, Clara Esther Guerrero Corona, José Aarón Melo Banda, Nancy Patricia Díaz Zavala	269 Development and Long-Term Stability of Crosslinked PBI/PVA Polymer Composite Membranes for Alkaline Water Electrolysis. María Victoria Contreras Martínez, Isaac Velázquez Hernández, Miriam Estévez, Luis Gerardo Arriaga Hurtado, Janet Ledesma García	195 Study of ionic conductivity in polymeric membranes of LDPE/EVA with a styrene–vinyl tetrazole copolymer and lithium phosphate (Li₃PO₄). Karla Fabiola Rodríguez Ramírez, Saul Sánchez Valdés, Luciano Da Silva
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191 Tri-Functional Electrocatalysts: Mn/Ag-Doped Nickel Hydroxides for Sustainable Energy Applications. Edgar Adolfo Serafín Mancera	193 Binder-Free Ni–Cu–Zn Trimetallic Oxide Electrodes via Green Synthesis for Enhanced Alcohol Electrooxidation. Jose Luis Lopez Miranda, Edgar Adolfo Serafín Mancera, Marlen Alexis González Reyna, Miriam Rocío Estévez Gonzáles	144 Utilization of the NIR spectrum of TiO₂–ZnO in photocatalysis for the potential sustainable production of hydrogen. Gamaliel Alvarado-Molina, Simon Yobanny Reyes-López, José Ysmael Verde Gómez

16:00-19:00	SMH Assembly (Auditorium, Faculty of Chemical Sciences)
19:00-21:00	Free time
21:00	Norteño Night – Themed Dinner & Northern Mexican Experience

Friday, September 4

9:00-10:00	Invited Lecture (Auditorium, Faculty of Chemical Sciences) On-line presentation Mg-based Hydrogen Storage Materials: Research, Application and Future prospects Jianxin Zou Director of the Centre of Hydrogen Science Shanghai Jiao Tong University
10:00-10:15	Coffee break

On-line session

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124 Agro-waste-derived nitrogen-doped biocarbons as metal-free catalysts for the oxygen reduction reaction. Jazmin Bobadilla-Virgen, Beatriz Escobar-Morales, Bethy Jhomira Ayala, Jose Martin Baas-López	184 CuFeO ₂ /NiTiO ₃ p-n Heterojunction for Photocatalytic CO ₂ Reduction to Liquid Fuels in a Microfluidic System. Yesica Téllez García, César Coello Mauleón, Noé Arjona, Luis Ortiz Frade, Goldie Oza
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114 The electronic interaction study between metal, promoter and support in Pd/ γ -Al ₂ O ₃ -Nd catalysts and its influence on the thermocatalytic conversion of methane to produce hydrogen. Marina Caballero Diaz, Gloria Alicia Del Ángel Montes, Raquel Adriana Del Ángel, Victor Hugo Romo Castorena, Ricardo Mendoza Vizcaya, Claudia Martinez Gómez, Israel Rangel Vázquez	276 Evaluation of the performance of a microbial fuel cell by designing a data acquisition system with Arduino. Carlos Josué López Díaz, María Soraya Osegueda Robles, José Víctor Aguirre Armenta, Verónica Ávila Vázquez, Alán Rubén Calzada Hernández, Nicté Julieta Pérez Viramontes

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62 Catalytic Mechanism of Methanol Steam Reforming over Ni₃S₂–MoS₂: A DFT Study. Luis Adrian Vega Ibarra, Clara Esther Guerrero Corona	208 Hidrógeno en México: estrategias de divulgación científica para la formación de nuevas generaciones en energía sustentable. Edith Ávalos-Marrón, Laura Susana Torres Acosta, Mariana Villagómez Mora, Luis Armando Díaz-Torres
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253 Numerical Assessment of a Pillow-Shaped Conformable Tank for Onboard Hydrogen Storage Technology. Salvador Martín Aceves Saborío, Elías Rigoberto Ledesma Orozco, Benjamin Alvarez Alor, Lizbeth Morales Salas	

11:15-12:00	Closing Ceremony
12:00	Visit to Desert Museum



XXVI INTERNATIONAL CONGRESS OF THE MEXICAN HYDROGEN SOCIETY

SALTILLO 2026

September 1–4, 2026 | Saltillo, Coahuila, México



TUESDAY 01 / 09 / 2026

09:30 – 10:00	Courses Registration
10:00 – 11:20	Courses
11:20 – 11:30	Coffee Break
11:30 – 13:30	Courses
13:30 – 14:30	Lunch
14:30 – 16:00	Courses
	Free time
19:00 – 20:00	Welcome Cocktail (Hotel)

WEDNESDAY 02 / 09 / 2026

08:30 – 09:00	Congress Registration
09:00 – 09:30	Welcome and Opening Ceremony
09:30 – 10:00	Traditional Saltillo Music Performance
10:00 – 11:00	Keynote Lecture Prof. Gerardine G. Botte Texas Tech University USA
11:00 – 11:30	Coffee Break
11:30 – 13:30	Oral Presentations
13:30 – 15:00	Lunch
15:00 – 16:00	Invited Lecture María Luisa Ojeda Almonacid, Ph.D. University of Magallanes Chile
16:00 – 18:00	Posters Session
18:00 – 19:30	SMH Student Assembly

THURSDAY 03 / 09 / 2026

08:30 – 09:00	Congress Registration
09:00 – 10:00	Oral Presentations
10:00 – 11:00	Invited Lecture Jimena Incer, Ph.D. University of Costa Rica Costa Rica
11:00 – 11:30	Coffee Break
11:30 – 13:30	Oral Presentations
13:30 – 15:00	Lunch
15:00 – 16:00	Oral Presentations
16:00 – 19:00	SMH Assembly
	Free time
21:00	Norteño Night

FRIDAY 04 / 09 / 2026

09:00 – 10:00	Invited Lecture Jianxin Zou, Ph.D. Shanghai Jiao Tong University China
10:00 – 11:00	Oral Presentations
11:00 – 12:00	Closing Ceremony
12:00 – 16:00	Visit to the Desert Museum

Registration
 Keynote / Invited Lecture
 Oral Presentations
 Coffee Break
 Lunch
 Poster Session
 Assemblies
 Social Events

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Posters session

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Center for Research, Innovation and Graduate Studies (CIIP)

283 — Design and construction of a PEM electrolyzer for green hydrogen production.

Adrián Medina León, Beatriz Escobar Morales, Gliserio R. Barbosa Pool, Diego A. Fabila Bustos, Macaria Hernández Chávez

281 — Evaluation of Biohydrogen Production from Agave lechuguilla Guishe Juice.

Regina Yeverino, Jose Lugo, Jorge Gonzalez, José Rodríguez, Thelma Morales, Miguel Medina, Leopoldo Rios

280 — Enhanced Surface Charge Carrier Density in g-C₃N₄ through Ni and Co₃O₄ Cocatalysts for Visible-Light-Driven Hydrogen Production.

Felipe Angel Gaxiola Cebreros, Jorge Luis Domínguez Arvizu, Blanca Cristina Hernández Majalca, Javier Eliel Morales Mendoza, Lucero Pérez Hernández, Cristian del Jesús Méndez Morales, Jesús Manuel Castro Lozoya, Hammed Adeniyi Salami, Iyiade Gbolahan Alalade, Carlos Abdías Bautista Pérez, Sergio Asahel Ochoa Casas, Isaac Briceño Martínez, Luz Idalia Ibarra Rodríguez, Raúl Eduardo Orozco Mena, Alejandro López Ortiz, Virginia Hidolina Collins Martínez

278 — Study of MgFe₂O₄/GO/TiO₂ Ternary Heterojunction and their Pristine Components as Photocatalysts for H₂ Production from Water Splitting under Visible Light.

Isaac Briceño Martínez, Blanca Cristina Hernández Majalca, Jorge Luis Dominguez Arvizu, Cristian del Jesús Méndez Morales, Jesús Manuel Castro Lozoya, Carlos Abdías Bautista Pérez, Sergio Asahel Ochoa Casas, Luz Idalia Ibarra Rodríguez, Alejandro López Ortiz, Virginia Hidolina Collins Martínez, Felipe Ángel Gaxiola Cerberos

275 — Development of Sintering-Resistant SrO-Based Sorbents via High-Energy Mechanical Milling for Sorption-Enhanced Steam Reforming Hydrogen Production.

Carlos Francisco Godínez Alvarado, Iyiade Gbolahan Alalade, Javier Eliel Morales Mendoza, Blanca Cristina Hernández Majalca, Liliana Corral Correa, Lucero Pérez Hernández, Luz Idalia Ibarra Rodríguez, Virginia Hidolina Collins Martínez, Alejandro López Ortiz

274 — Comparative Study of SrFe₂O₄ and SrFeO₃ Ferrites for Photocatalytic Hydrogen Evolution under Visible-Light Irradiation.

Carlos Abdías Bautista Pérez, Blanca Cristina Hernández Majalca, Sergio Asahel Ochoa Casas, Isaac Briceño Martínez, Cristian del Jesús Méndez Morales, Felipe Angel Gaxiola Cebreros, Jesus Manuel Castro Lozoya, Jorge Luis Dominguez Arvizu Luz Idalia Ibarra Rodríguez, Alejandro López Ortiz, Virginia Hidolina Collins Martínez

272 — Efficient Hydrogen Production without Noble Metals: Temperature-Dependent Electrochemical Behavior of Phosphorus-Doped g-C₃N₄.

Cristian del Jesus Mendez Morales, Jesus Manuel Castro Lozoya, Sergio Asahel Ochoa Casas, Jorge Luis Dominguez Arvizu, Issac Briceño Martínez, Blanca Cristina Hernández Majalca, Carlos Abdías Bautista

Perez, Felipe Angel Gaxiola Cebreros, Raúl Eduardo Orozco Mena, Luz Idalia Ibarra Rodriguez, Alejandro Lopez Ortiz, Virginia Hidolina Collins Martinez

271 — Influence of synthesis route on Ni–Fe layered double hydroxides for visible-light-driven hydrogen production from seawater.

Jesus Manuel Castro Lozoya, Blanca Cristina Hernández Majalca, Sergio Asahel Ochoa Casas, Carlos Abdias Bautista Pérez, Cristian del Jesús Méndez Morales, Isaac Briceño Martínez, Jorge Luis Domínguez Arvizu, Luz Idalia Ibarra Rodríguez, Alejandro López Ortiz, Virginia Hidolina Collins Martínez

270 — Producción de biohidrógeno a partir de jugo de guishe de Agave lechuguilla mediante electrólisis microbiana.

Jorge González, Alejandra Oliva, José Rodríguez, Thelma Morales, Miguel Medina, Leopoldo Ríos

262 — Synthesis and electrochemical evaluation of a NiFe layered double hydroxide nanocatalyst supported on sewage sludge biocarbon for the oxygen evolution reaction.

Itzel Sánchez Badillo, María Esther Sánchez Castro, William Miguel Ramírez Santander, Ivonne Liliana Alonso Lemus, Javier Rodríguez Varela

260 — NiFe-LDH nanocatalysts supported on grape seed-derived biochar for water electrolysis.

Enrique Flores-Wong, William Miguel Ramírez-Santander, Ivonne Liliana Alonso-Lemus, Javier Rodríguez-Varela, María Esther Sánchez-Castro

259 — Study of materials with high entropy configurational for electrolyte Materials in Hydrogen-Fueled Solid Oxide Fuel Cells.

Goretti Carolina Fraustro Castañeda

243 — Electrical Properties of Compositionally Complex CeO₂-Based Ceramic Electrolytes.

Graciela Martinez De la Rosa, José Alonso Diaz Guillén, Perla Janet Resendiz Hernandez, Oswaldo Burciaga Diaz, Oscar Juan Durá, Maria Elena Bazaldua Medellin, Antonio Fernandez Fuentes

242 — Biohydrogen Production from Agave lechuguilla Juice through Anaerobic Fermentation.

Marian G. Soria-Morales, Gustavo A. n, Lia Berlanga, Thelma K Morales-Martínez, Miguel A. Medina-Morales José Antonio Rodríguez-De la Garza, Leopoldo J. Ríos-González

241 — Biohydrogen Production from Brewer's Spent Grain through Anaerobic Fermentation.

Sofia J. Méndez-Bazaldua, Gustavo A. Neyra-Escobedo, Lia Berlanga, Thelma K Morales-Martínez, Miguel A. Medina-Morales, José Antonio Rodríguez-De la Garza, Leopoldo J. Ríos-González

240 — Biological Hydrogen Production from Agave lechuguilla Guishe through Anaerobic Fermentation.

Chelsea N. Camacho-García, Gustavo A. Neyra-Escobedo, Lia Berlanga, Thelma K Morales-Martínez, Miguel A. Medina-Morales, José Antonio Rodríguez-De la Garza, Leopoldo J. Ríos-González

238 — Effect of ZnO on the sintering behavior, densification and electrical properties of Ce_{0.8}Sm_{0.1}Nd_{0.1}O₂ solid electrolytes.

Yair Agustín de Santiago Rodríguez, Elizabeth García Pérez, Veronica Alejandra Deaquino Garcia, Padmasree Karinjilottu Padmadas, Andrea Yamile Murguia Garnica

237 — Effect of Al and Y co-doping on the microstructure and ionic conductivity of Li_{6.4+x}Al_{0.2}La₃Zr_{2-x}Y_xO₁₂ garnet oxides.

Yair Agustín de Santiago Rodríguez, Veronica Alejandra Deaquino Garcia, Padmasree Karinjilottu Padmadas

234 — Influence of alkaline earth metal doping on the electrical properties of Li_{6.4}Al_{0.2}La_{3-x}AxZr₂O₁₂ solid electrolytes.

Hirepan Chavez-Cardenas, Veronica Alejandra Deaquino Garcia, Yair Agustín de Santiago Rodríguez, Padmasree Karinjilottu Padmadas

233 — Effect of sintering additives on the ionic conductivity of BaCe_{0.5}Zr_{0.4}Y_{0.1}O₃ solid electrolytes.

Luis Manuel Acosta Castro, Padmasree Karinjilottu Padmadas, Tirso Emmanuel Flores Guía, Veronica Alejandra Deaquino Garcia, Yair Agustín de Santiago Rodríguez, Manuel de Jesús Castro Román

231 — From Electrocatalyst Screening to Prototype Development: Scaling-Up of a 400 W PEM Water Electrolyzer Based on RuO₂–IrO₂ Anodes.

Vania Monserrat Guzmán Morfín, Sofia Ximena Avilés Amador, Jose Pablo Vargas Valerio, Rosa de Guadalupe González Huerta, Jose Luis Reyes Rodríguez

230 — Cs₂TiCl_xBr_{6-x}/EVA Perovskites for Photocatalytic Hydrogen Production and CO₂ Reduction.

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225 — NiFe-LDH/Activated Coal Composites for Electrochemical Energy Storage Associated with Green Hydrogen Technologies.

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Tania Jimenez Aguilar, Edgar Adhair Montes-Gomez, Reyna Natividad, Juan Manuel Sandoval-Pineda, Angeles Mantilla

218 — Experimental Cell for Solid Electrolyte Characterization in Hydrogen and Energy Systems.

Juan Alejandro Ramírez Duarte, Paulina Mercedes Gonzalez Puente, María de los Angeles Mantilla Ramírez, Juan Manuel Sandoval Pineda

216 — NiFe catalyst for oxygen evolution in alkaline media: With potential application in anion exchange membrane electrolyzers.

Luis Charbel Guzman Aguilar, Paz Del Ángel Vicente, Martha Leticia Hernandez Pichardo, Rosa de Guadalupe Gonzalez Huerta

214 — Design and Implementation of a 10 kW Alkaline Electrolysis Test Bench with an Integrated Instrumentation and Data Acquisition System.

Irvin Daniel Rivas Yreta, Elisa Arianne Arroyo Ortiz, Israel Trujillo Olivares, Alejandro Wintergerst Felipe, Juan Manuel Sandoval Pineda

210 — Implementation of a neural network as a monitoring system for an alkaline electrolysis test bench.

Elisa Arianne Arroyo Ortiz, Irvin Daniel Rivas Yreta, Israel Trujillo Olivares, Alejandro Wintergerst Felipe, Juan Manuel Sandoval Pineda

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Lizbeth López-Castro, Uriel Caudillo-Flores

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