

Hydrogen Technologies Association



BULLETIN

E-ISSN: 3023-686X

Volume: 18 Issue: 3 / September 2025



Hydrogen Technologies Association



BULLETIN

E-ISSN: 3023-686X

Volume: 18 Issue: 3 / September 2025

Concessionaire on behalf of Hydrogen Technologies Association

Prof. Dr. İbrahim DİNÇER

Editor

Prof. Dr. İnci EROĞLU

Deputy Editor-in-Chief

Doç. Dr. Bilge COŞKUNER FİLİZ

Dr. Mustafa TAN

Editor-in-Chief

Prof. Dr. Can Özgür ÇOLPAN

Editorial Advisory Board

Prof. Dr. Mehmet KARAKILÇIK

Prof. Dr. Aysel Kantürk FİĞEN

Prof. Dr. Filiz KARAOSMANOĞLU

Prof. Dr. Adnan MİDİLLİ

Prof. Dr. Bestami ÖZKAYA

Prof. Dr. Ramazan SOLMAZ

Doç. Dr. Mahmut Temel ÖZDEMİR

Managing Editor

Fatma TAŞÇI

0 533 726 72 55

hidrojen@hidrojentechnologies.org
https://www.hidrojentechnologies.org/

Esentepe Mah. Sağlam Fikir Sok.

No:2 Esen Palas Apt.2/A Blok K:3

D:9 Esentepe / Şişli / İstanbul

Broadcast Period

March-June-September-December

Publication Language

Turkish-English

E-ISSN: 3023-686X

All submitted and published content is the sole responsibility of the author(s). It does not make the Association and the bulletin responsible. Published content can be quoted by citing the source provided that it is appropriate.

8th Workshop / PPB in Wastewater Treatment: Challenges and Opportunities and Potential for Resource Recovery

Prof. Dr. İnci Eroğlu has participated as Keynote Speaker in the 8th Workshop "PPB in Wastewater Treatment: Challenges, Opportunities and Potential for Resource Recovery" held on the 1st & 2nd July 2025 in Ankara, Turkey, with the presentation titled Green Hydrogen Production by Photosynthetic Purple Non-Sulfur Bacteria.

The full program can be found at <https://purplegain.eu/workshop-8/>

MESSAGE FROM THE PRESIDENT

Dear Readers,

Hydrogen energy now stands before us not only as the energy of the future but also as a transformative power of today. The growing global demand for energy, the pressing impacts of climate change, and the objectives of sustainable development drive us to create cleaner and more innovative solutions. In this context, with the contributions of our Association and our partner institutions, we have recently witnessed many significant developments.

Next year, the **International Hydrogen Congress (IHTEC 2026)**, to be hosted by Istinye University, will bring together all stakeholders in the field, offering a visionary platform for academia, industry, public authorities, and young researchers. As part of the congress, we will also continue our tradition of the **IHTEC Awards**, honoring distinguished scientists, institutions, and young researchers who have made valuable contributions to hydrogen technologies.

In the past period, we have witnessed the strengthening of bilateral cooperation in the energy sector at the **Turkey-Azerbaijan Energy Forum**. In addition, through the **Turkey Hydrogen Action Plan Workshops**, we continue to contribute to shaping our country's roadmap. I firmly believe that these efforts will play an important role in advancing the hydrogen economy.

As we commemorate with respect and gratitude the first anniversary of the passing of **Prof. Dr. Nejat Veziroğlu**, the global pioneer of hydrogen energy and Honorary President of our Association, I would like to emphasize once again that his vision continues to guide us.

Furthermore, with the launch of the **SNG&HydTec Laboratory** at Boğaziçi University, our country has gained an infrastructure capable of competing at the global level in catalyst and adsorbent technologies. These developments represent highly valuable steps in strengthening our national capacity.

On the international stage, I had the honor of representing our country at events such as the TÜBA-TÜBİTAK Summer School, **ANM 2025 in Portugal**, and **SEEP 2025 in the UK**. Our contributions at these events not only enriched scientific exchange but also strengthened international collaborations.

All these efforts demonstrate that hydrogen energy is not only a source of power but also a strategic element for global peace, prosperity, and sustainability. As the Hydrogen Technologies Association, together with you—our valued stakeholders—we will continue to take the lead in this transformation.

With the hope of shaping the future together, I extend my warmest regards.

Prof. Dr. İbrahim Dinçer

President of the Hydrogen Technologies Association
Chairman of the Board



LETTER FROM EDITOR

Dear Members of the National Hydrogen Association,

We have been together since the founding of our Association in 2014. Our President, Prof. Dr. İbrahim Dinçer, has been our most valuable support in preparing the E-bulletin, providing his ideas, suggestions, and articles. We have shared the news, evaluations, and announcements with our members. We have introduced our members, award-winning researchers, member institutions, and companies. We have particularly shared information about our laboratories working on hydrogen in Türkiye.

With our strong team that collects global and Turkish hydrogen news, we have published this on the web. I want to thank Prof. Dr. Nihal

Tüzün, Assistant

Editors, Assoc.

Prof. Dr. Bilge

Coşkuner Filiz

and Dr. Mustafa Tan, for their contributions to sharing the hydrogen news, and Fatma Taşçı and Hasan Küçük, for their meticulous work in preparing and publishing the E-bulletin.

It is now time to hand over my duties to a new member of staff. I wish you success in your endeavors.

There is always hope with hydrogen.

With love and respect,

İnci Eroğlu



International Hydrogen Technologies Congress Istinye University, May 10-13, 2026



Hydrogen is no longer just the fuel of the future; it is today's viable, transformative, and strategic energy source. As the world advances toward net-zero emission goals, hydrogen stands at the center of clean energy innovation, offering groundbreaking opportunities in production, storage, infrastructure, and the development of scalable solutions.

Within this framework, the **International Hydrogen Congress**, to be held at **Istinye University from May 10 to 13, 2026**, will bring together all stakeholders of the hydrogen ecosystem—academia, industry, public authorities, and young researchers.

The congress will address the latest developments that are mainstreaming hydrogen: from next-generation fuel cells to groundbreaking storage technologies, from sustainable production methods to scalable infrastructure. The program will feature keynote lectures by internationally recognized scholars, paper presentations, poster sessions, expert panels, workshops, and an exhibition of innovative products from leading companies.

The event provides unique opportunities for different stakeholders:

- **Academics:** Access to the latest scientific findings and collaboration opportunities,
- **Industry representatives:** Real-world applications and business prospects,
- **Students:** An inspiring learning and networking environment,
- **Public authorities:** Strategic data to

inform policy-making.

Participants will gain a comprehensive vision of the future of hydrogen technologies through interdisciplinary perspectives. Young researchers will be able to share their ideas, opening new horizons that combine scientific curiosity with innovative thinking.

This congress is not only a platform for knowledge exchange but also aims to create a strong synergy. Collaborations among universities, research centers, industry, and public institutions will pave the way for concrete steps that accelerate the clean energy transition.

We invite you to Istinye University to shape the future of hydrogen together, leave a lasting impact, and make a sustainable world possible!

Why Hydrogen, Why Now – and Why Here?

Hydrogen is no longer a distant promise; in terms of performance, cost, and sustainability, it has become an engineering reality built on materials science and catalytic pathways. From catalysts that produce hydrogen with fewer critical metals than water, to membranes that transport protons with minimal loss, the most crucial breakthroughs fundamentally rely on material solutions—and these are solvable challenges.

Materials Science: The Lever that Moves the Curve

- **Catalysts and supports:** Beyond scarce Ir/Pt, earth-abundant high-entropy alloys, doped oxides, layered nitrides, and carbon-based structures provide active site stabilization, corrosion resistance, and conductivity in harsh environments.
- **Electrolyzer stacks:** Durable PEM/AEM membranes, graded-porosity gas diffusion layers, and coatings that mitigate peroxide/radical attacks extend lifetimes while enabling higher current densities.
- **Storage and carriers:** Solid-state hydrides, nanoporous sorbents, and safer liquid organic hydrogen carriers (LOHCs) are optimized through pore chemistry and binding energies for faster kinetics.
- **Pipelines and tanks:** Hydrogen-embrittlement-resistant steels, barrier liners, innovative coatings, and crack-detecting sensor materials enhance safety.

Catalytic Pathways: From Cleaner Electrons to Cleaner Molecules

Hydrogen production and utilization are diversified and made sustainable through different catalytic approaches:

- **Electrocatalytic routes:** Low-cost electrocatalysts such as doped transition metal oxides or nitrides enable efficient water splitting into H₂ and O₂.

- **Thermocatalytic routes:** Nickel-based catalysts play a key role in processes like biomass pyrolysis and methane reforming.
- **Photocatalytic routes:** Semiconductor-based materials (e.g., TiO_2 , $\text{g-C}_3\text{N}_4$) convert sunlight directly into chemical energy and are widely studied for hydrogen generation under visible light.
- Beyond that, “Beyond H_2 ” approaches position hydrogen not only as an energy carrier but also as a key player in producing essential chemicals such as NH_3 , e-fuels, and methanol.

From Fuel Cells to Real Devices

- **PEM/PAFC/SOFC stacks:** Better ionomers, corrosion-resistant bipolar plates, and non-precious oxygen reduction catalysts increase efficiency while lowering costs.
- **Applications:** Extending range in electric transportation (buses, trucks, trains, maritime), providing backup power for hospitals and data centers, and enabling off-grid microgrids through solar-electrolyzer- H_2 storage-fuel cell integration.

How Green Is It? Life Cycle Matters

Green hydrogen, when produced with

renewable energy, significantly reduces life-cycle CO_2 emissions compared to fossil-based methods. Catalysts with lower critical metal requirements, recyclable membranes, and long-lived stacks shrink the carbon footprint. Circular design and recovery processes ensure that hydrogen remains truly “green” at scale.

Societal Impact: Reliability, Resilience, and New Industry

Hydrogen complements batteries: it can store energy from weeks to seasons, strengthen grids, and decarbonize hard-to-electrify sectors (steel, chemicals, high-temperature processes, long-haul transport). This creates new supply chains, skilled jobs, and regional innovation hubs.

Challenges We Must Solve (and the Need for Investment)

1. **Cost and scale:** Reduce Ir/Pt usage, expand AEM/PEM manufacturing, and automate stack assembly.
2. **Durability:** Address degradation mechanisms (radical attacks, metal dissolution, mechanical creep) in electrodes and membranes to reach >60–80k operating hours. This requires new material strategies, protective architectures, operational optimization, and academia–industry partnerships.
3. **Infrastructure and safety:** Standards, leak detection, embrittlement mitiga-

tion, and regulation aligned with innovation.

4. **Storage and logistics:** Denser, safer, faster-cycling systems.

5. **System integration:** Smart control systems for renewable–electrolyzer–storage–fuel cell integration.

6. **Urban transformation:** Transport networks, energy infrastructure, safety protocols, and smart city applications must adapt to hydrogen use.

Why Is Our Congress Important?

Interdisciplinary problems require interdisciplinary solutions. This congress will bring together materials scientists, electrochemists, process engineers, safety experts, policy-makers, and industry leaders.

This gathering will accelerate collaborations, foster new consortia, facilitate standard alignment, and contribute to transferring laboratory successes into real-world applications.

Call to Action: Bring your data, prototypes, and most rigid constraints. Let us discuss material breakthroughs for cheaper, more durable electrolyzers and fuel cells; align on safety and infrastructure; and launch projects from Istanbul that will decarbonize industry and empower societies.

For more information, please visit the congress website: www.ihotec2026.org

The 4th Turkey-Azerbaijan Energy Forum took place today in Izmir.

Opening speeches were delivered by Azerbaijan’s Minister of Energy Parviz Shahbazov, COP29 President Muhtar Babayev, and Turkey’s Minister of Energy and Natural Resources Alparslan Bayraktar. Following the opening, Hydrogen Technologies Association Board Member Prof. Dr. Can Özgür Çolpan also participated in the CEO Roundtable Meeting.

The forum continued with discussions aimed at strengthening cooperation between Turkey and Azerbaijan in the energy sector.

📍 Hyatt Regency Otel, İzmir

📅 4 September 2025



Turkey Hydrogen Action Plan 1st Sectoral Working Group (SWG) Workshop

The Turkey Hydrogen Action Plan 1st Sectoral Working Group (SWG) Workshop is the first official meeting held with private sector stakeholders. The purpose of this workshop is to present the modeling approach and assumptions for forecasting hydrogen demand, validate key parameters with the contributions of sector representatives, identify obstacles and investment needs, and ensure that the Clean Hydrogen Action Plan reflects real conditions by providing a two-way dialogue environment. Our Institute Director, Prof. Dr. Aysel KANTÜRK FİGEN, participated in the workshop.

[More Info](#)





IHTEC Awards

Dear Researchers, Academics, Industry Leaders, Policy Makers, and Young Innovators,

Hydrogen is not only an energy carrier but also a cornerstone of sustainable development, climate-friendly transformation, and technological progress. This transformation is made possible through the combined efforts of scientists, engineers, entrepreneurs, and policymakers.

As the National Hydrogen Association (HTD), we are proud to present the IHTEC Awards each year within the framework of the International Hydrogen Technologies Congress (IHTEC). These awards, which have become a tradition, aim to honor pioneers and innovators in the field while inspiring the next generation.

Award Categories

Nejat Veziroğlu Special Award

Presented in honor of Prof. Dr. Nejat Veziroğlu, the father of hydrogen technologies and Honorary President of our Association, this award recognizes individuals who have provided internationally acknowledged contributions to the scientific and technical advancement of hydrogen energy.

Technology Award

Granted to companies or institutions that develop innovative products, establish pilot or industrial hydrogen facilities, or hold patents that contribute to the hydrogen eco-

nomy. Preference is given to technologies that have been implemented in practice and generate real-world impact.

Service Award

Awarded to individuals who have dedicated at least 20 years of service to hydrogen energy, contributing to social, technological, and economic progress, advancing education and youth development, and playing an active role in industrial applications.

Young Researcher Award

Designed for researchers under 35 years of age (as of the congress date), this award highlights those who have made nationally or internationally recognized contributions, particularly through inventions, innovative applications, or unique methodologies in hydrogen technologies.

Student Researcher Award

Granted to undergraduate, master's, or PhD students under the age of 30 (as of the congress date). The award recognizes students who demonstrate originality through inventions, new applications, or innovative approaches in hydrogen technologies.

Participation and Opportunities

As in previous years, applications and nominations will be accepted via the official website of the Hydrogen Technologies Association.



A distinguished international jury will conduct the evaluation process in accordance with transparency and academic standards.

Award recipients will be invited to attend the IHTEC Award Ceremony during the congress. Their conference registration fees and accommodation expenses will be covered by the Association, ensuring not only recognition but also the opportunity to present their work on an international stage.

The IHTEC Awards represent a prestigious tradition that brings together individuals who have devoted their careers to hydrogen energy, those who have made groundbreaking scientific discoveries, those who have delivered innovative industrial solutions, and the next generation of researchers. Each year, these awards contribute to the collective memory of the field and carry success stories into the future.

We warmly invite you to join this tradition, share your achievements with the international community, and work together with us to shape the hydrogen era.

Sincerely,

Hydrogen Technologies Association

IHTEC Awards Committee

For more information, please visit the congress website.



1st Anniversary of the Passing of Prof. Dr. Nejat Veziroğlu

Today, on the first anniversary of the passing of Prof. Dr. Nejat Veziroğlu, recognized worldwide as the "father of hydrogen energy" and a great scientist who devoted his life to science and humanity, we remember him with respect, gratitude, and longing.

Not only in Türkiye but across the globe, our esteemed professor pioneered the advancement of hydrogen technologies. Through the Energy and Environmental Research Center he established at the University of Miami, his numerous international publications, conferences, and projects have engraved his name in the history of energy with golden letters.

His vision opened not only a scientific jour-

ney for us but also the doors to a cleaner, safer, and more sustainable world for the future of humanity.

As the Hydrogen Technologies Association, we take his vision as our compass. We will continue to work with determination to advance hydrogen energy both in our country and globally.

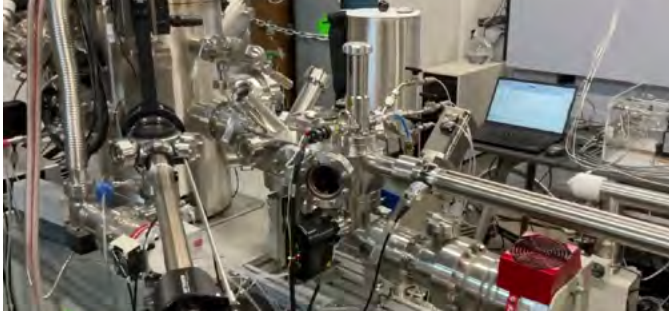
The mark he left in science will continue to guide us; his memory will forever live in our hearts.

May his soul rest in peace, and may his path remain a light for us all.

National Hydrogen Association

Synthetic (Substitute) Natural Gas and Hydrogen Production Technologies Laboratory

SNG&HydTec Lab



Synthetic Natural Gas and Hydrogen Production Technologies Laboratory (SNG&HydTec Lab) was established by Prof. Dr. Ahmet Erhan Aksoylu and Dr. Burcu Selen Çağlayan at Boğaziçi University, Kandilli Deep Technology Base. The laboratory became fully operational in February 2023, equipped with all its necessary equipment, systems, reactors, and related infrastructure.

The objective of SNG&HydTec Lab is to carry out research and development (R&D) activities aimed at producing catalysts and adsorbents for efficient, CO₂-free or low-emission energy and fuel production processes, which have been identified based on both the functional spectrum of the lab's existing infrastructure and the current global context—particularly the climate crisis—as well as scientific and technological advancements. In addition to energy-focused research, the lab also conducts studies on various solid catalytic processes.

SNG&HydTec Lab has a structure that allows it to initiate from a concept (TRL 1) and advance through all stages via characterization, testing, and analysis to conduct catalyst and adsorbent design and development, enabling a seamless transition from R&D to technology development (TRL 7–8) in the field of heterogeneous catalysis. The lab hosts advanced analysis and reaction systems capable of *operando* testing and analysis, which can determine performance shifts resulting from structural changes in catalysts and thus enable the establishment of 'structure–performance' relationships. The lab enables the transition from research-grade catalysts (powder) to technical-grade catalysts (granular), facilitating the design, development, and application of catalysts and adsorbents up to TRL 7–8 through the effective utilization of existing infrastructure.

Most of the systems within our group are unique in Türkiye; to our knowledge, there is no other applied catalysis laboratory in the country equipped with infrastructure that allows for *operando* testing capabilities and vertical integration in catalyst and adsorbent technology development.

Excluding construction, the installation cost of the SNG&HydTec Lab, based on current values, is approximately \$ 13 million USD. The main areas of focus include:

- The **design and development of technical catalysts** for the core catalytic processes of a novel cost-effective **coal-to-natural gas (SNG) production technology**
- The **design and development of a Fuel Processor (FP), along with its novel technical catalysts**, capable of producing PEMFC-grade hydrogen from widely distributed hydrocarbons (methane/biomethane, LPG)
- The **design and development of efficient and stable technical CO₂ adsorbents for use in pre- and post-combustion technologies** and for CO₂ adsorption **from hydrogen-rich streams**
- The **design and development of novel technical catalysts** for the conversion of CO₂ captured by adsorbents into economically valuable products through **dry reforming (CDRM) and mixed reforming (MRM)** reactions
- The **design, optimization, and development of state-of-the-art, novel catalysts required by industry within the scope of (joint) projects**

In addition to conducting high-quality scientific research, R&D, and technology development (TD), **SNG&HydTec Lab also provides sample-based and research-oriented deep analytical services to both**

domestic and international researchers through the university's revolving fund system. These services are not limited to heterogeneous catalysis, and the lab aims to offer the most comprehensive solutions and reliable data to those who request them. Whether routine or investigative in nature, these analyses are designed and carried out with project-specific precision.

Our service approach is based on the principle that obtaining detailed information at the outset about the sample(s) to be analyzed, including their description, preparation, the process or treatment they have undergone, and the issue faced by the client, is the most critical initial step. In both routine and particularly in research-driven investigative analyses, the lab maintains constant communication with the client throughout the project, works collaboratively when necessary, evaluates the obtained data together at each step, and employs every available means—including method adjustment—in case of unexpected results, with a solution-oriented mindset.

Detailed information on

- the focus areas, functions, and services of SNG&HydTec Lab (including systems for catalyst and adsorbent preparation, pre-treatment, and performance testing),
- the analytical techniques applied and instrumentation used in the lab,
- the routine and investigative analysis services offered to clients and the procedure for accessing these services, can be found in the booklet accessible via the QR code below.



The “TÜBA-TÜBİTAK Summer School on Alternative Energy Sources and the Future of Energy” was successfully held on July 20-25, 2025, hosted by Mersin University.

Organized in cooperation between TÜBA and TÜBİTAK, the summer school attracted great interest for addressing current issues and providing science-based guidance and consultancy. The program focused on the critical importance of human resource training, R&D, innovation, and technology development. Throughout the event, topics such as renewable energy, energy policies, hydrogen and other alternative fuels, climate change, environmental impacts of energy systems, and artificial intelligence applications were discussed.

With the participation of TÜBA Members, distinguished faculty, and relevant stakeholders, the summer school provided a platform

for long-term solution proposals and contributed to effectively addressing existing challenges. A total of 54 qualified PhD students or candidates expected to complete their PhD within three years from 24 different universities received training in fields such as renewable energy resources, alternative fuels, nuclear energy, hydrogen energy, decarbonization, and energy management.

The event also welcomed Prof. Dr. İbrahim Dincer from the Hydrogen Technologies Association, who shared his international expertise in hydrogen energy and sustainable energy technologies with the participants.

[More Info](#)


Advanced Nano Materials (ANM 2025) Konferansı



The “Advanced Nano Materials (ANM 2025)” conference, held in Portugal under the auspices of the Royal Society of Chemistry, was successfully completed. Prof. Dr. İbrahim Dincer participated in this event, contributing his expertise in nanomaterials and sustainable energy technologies.

With a strong international attendance and a rich scientific program, the conference addressed cutting-edge developments in nanoscience, nanotechnology, novel nanomaterials synthesis, characterization techniques, and possible applications across sectors. Prof. Dr. Dincer’s involvement enhanced the scientific depth of the program and fostered academic exchange among researchers from around the world.

The event stood out for its quality of presentations, fruitful networking opportunities, and its role in advancing collaboration in nanomaterials research.

[More Info](#)

“17th Annual Conference on Sustainable Energy & Environmental Protection (SEEP 2025)”

The “17th Annual Conference on Sustainable Energy & Environmental Protection (SEEP 2025)” was successfully held on July 28–31, 2025, hosted by Brunel University. Prof. Dr. İbrahim Dincer, President of the Hydrogen Technologies Association, also participated in the event, sharing his expertise on sustainable energy and environmental protection with the attendees.

SEEP 2025 served as a global platform for researchers and practitioners to present the latest advancements in sustainable energy and environmental protection. Prof. Dr. Dincer’s contribution enriched the scientific content of the conference and fostered stronger international collaborations.

The event stood out with its high scientific quality, valuable presentations, and interdisciplinary exchanges promoting progress in the fields of energy and environment.

[More Info](#)


REPORTS:



Raporları
görüntülemek için
QR kodu
okutabilirsiniz.

CORPORATE MEMBERS:



CONTACT INFORMATION:

Fatma Taşçı (Coordinator)

E-mail: hidrojen@hidrojentechnolojileri.org /
fatma.tasci@hidrojentechnolojileri.org

Web: hidrojentechnolojileri.org

Address: Esentepe Mah. Sağlam Fikir Sok. No:2
Esen Palas Apt.2/A Blok K:3 D:9 Esentepe / Şişli /
İstanbul / Türkiye

Mobile: +90 533 726 72 55



HidrojenDerneği



hidrojentechnolojileriderneği



hidrojentechnolojileri



hidrojen-teknolojileri-9a18bb141/