Hydrogen Technologies Association

BULLETIN

E-ISSN: 3023-686X

Volume: 17 Issue: 3 / September 2024



Hydrogen Technologies Association

BULLETIN

E-ISSN: 3023-686X

Volume: 17 Issue: 3 / September 2024

Hidrojen Teknolojileri Derneği

Adına İmtiyaz Sahibi

Prof. Dr. İbrahim DİNÇER

Editör

Prof. Dr. İnci EROĞLU

Editör Yardımcısı

Prof. Dr. Nihal TÜZÜN

Genel Yayın Direktörü

Prof. Dr. Can Özgür ÇOLPAN

Yayın Danışma Kurulu

Prof. Dr. Mehmet KARAKILÇIK

Prof. Dr. Aysel Kantürk FİGEN

Prof. Dr. Filiz KARAOSMANOĞLU

Prof. Dr. Adnan MİDİLLİ

Prof. Dr. Bestami ÖZKAYA

Prof. Dr. Ramazan SOLMAZ

Doç. Dr. Mahmut Temel ÖZDEMİR

Sorumlu Yazı İşleri Müdürü

Fatma TAŞÇI

0 533 726 72 55

hidrojen@hidrojenteknolojileri.org

https://www.hidrojenteknolojileri.org/

Esentepe Mah. Sağlam Fikir Sok.

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

D:9 Esentepe / Şişli / İstanbul

Yayın Periyodu

Mart-Haziran-Eylül-Aralık

Yayın Dili

Türkçe-İngilizce

E-ISSN: 3023-686X

Tüm gönderilen ve yayınlanan içeriğin sorumluluğu yalnızca yazar(lar)a aittir. Derneği ve bülteni sorumlu kılmaz. Yayınlanan içerikten uygun olması koşuluyla kaynak gösterilerek alıntı yapılabilir.

Message from the President



Dear Readers

The process we are in is at an extremely critical stage. In addition to the beginning of the hydrogen era and the acceleration of transformation for both our country and other countries of the world, the introduction of carbon taxes creates the need to draw a new road map by taking climate change into consideration. At this point, associations, especially organisations such as the Hydrogen Technologies Association, play a critical role.

By undertaking this critical task in our country, we aim to contribute to the development of our country at individual and institutional level and to support the transition to the hydrogen age. These contributions are generally in the form of training, activities, publications, consultancy services and individual contributions. In addition to these, we also take important steps on how to establish and maintain an ecosystem by organising conferences and workshops in cooperation with public institutions and universities.

As an association and with the institutional structures we are affiliated with, we are trying to increase Turkey's success in this transformation. In our quarterly bulletin, we share the activities of the association, short reports covering important events in Turkey and abroad, information sharing, and important projects and transformations in our country. In addition, we also include various laboratory studies and studies of public institutions in our bulletin.

We want to introduce the companies in the sector, highlight the industrial sector and especially emphasise our corporate members and highlight their contributions in this process. From renewable energy to human resources, our aim is to start a successful hydrogen age process by acting with a common motivation for the hydrogen age.

This transformation is a historical opportunity for our country. We must come together to successfully complete this story and embrace this success. This will be the success story of both our country and hydrogen.

Love and respect to all of you.

Editor's Letter



We are starting our September 2024 Bulletin with sad news. We said farewell to our esteemed Honorary President, our mentor who inspired us all, Prof. Dr. Turhan Nejat Veziroğlu, on September 5, 2024. May Allah have mercy on our teacher. We offer our condolences to his esteemed wife, Ayfer Hanım, his son, Emre Bey, his daughter Lili, his entire family, and the members of the Hydrogen Technologies Association.

Prof. Dr. T. Nejat Veziroğlu saw how important Hydrogen Energy would become in the future in the 1970s. He initiated the World Hydrogen Energy Congresses with scientists who believed in hydrogen, called the "Hydrogen Romantics". The highly prestigious International Journal of Hydrogen Energy also started publishing peer-reviewed articles related to hydrogen research.

Prof. Dr. T. Nejat Veziroğlu has organized and held many national and international hydrogen energy congresses for the adoption and spread of the hydrogen energy concept in Turkey. Most of the members of our association met him in these activities and accelerated their research on hydrogen with his encouragement. With the support of the United Nations Development Organization UNIDO and the relevant institutions of the Republic of Turkey, he pioneered the establishment of the International Hydrogen Research Center UNIDO_ICHET in Istanbul in 2004 and served as the founding chairman of this center for three years. The activities of the center, which lasted ten years, have led to the training of many researchers in Turkey, the development of laboratories on essential issues, the initiation of pilot and demo projects, and the development of technology in the field of hydrogen energy.

When the Hydrogen Technologies Association was established in 2014, one of our most important supporters was our Honorary President, Prof. Dr. T. Nejat Veziroğlu. We met him online during the 23rd World Hydrogen Energy Congress (WHEC 2022-Istanbul). This year, in February, to celebrate our teacher's 100th birthday, we prepared a video for him as the Board Members of our Association. Prof. Dr. T. Nejat Veziroğlu had a valuable and profound mark on us; we would like to thank him and present our love and respect. He will live on in our memories.

İnci Eroğlu

Dear Members,

We have learned with great sadness that we have lost the Honorary President of our Association and one of the leading names in the field of hydrogen energy worldwide, Prof. Dr. Turhan Nejat Veziroğlu. His contributions to the world of science and energy policies have left a mark on the national and international scale, and he has left a profound legacy as the primary advocate of hydrogen energy.

Life and Education

Born in Turkey in 1924, Prof. Dr. Nejat Veziroğlu demonstrated his interest in education and scientific research at an early age. After completing his graduate education in England, he went to Miami University in the USA and specialized in clean energy and engineering. Throughout his career, which focused on energy efficiency, environmentally friendly energy sources, and sustainable technologies, he was recognized as a scientist who produced solutions to the global energy crisis.

Scientific Research and Contributions

Prof. Dr. Veziroğlu has earned a respected place in the scientific world with his revolutionary studies in hydrogen energy. His research, which aims to reduce dependency on fossil fuels, has enabled him to take pioneering steps towards using hydrogen as a sustainable energy source.

- **Studies on Hydrogen Energy and Economy**: Prof. Dr. Veziroğlu was one of the first scientists to demonstrate that hydrogen can produce energy cleanly and efficiently through fuel cells. He pioneered the establishment of the International Association for Hydrogen Energy (IAHE) in 1974, laying the theoretical foundations of the hydrogen economy. Through this association, he ensured the widespread adoption of hydrogen technologies.
- **Hydrogen Energy Conferences and Publications:** As the World Hydrogen Energy Conferences (WHEC) organizer, Prof. Dr. Veziroğlu created platforms where hydrogen was discussed and developments were shared globally. He led many of these conferences, ensuring hydrogen was central to energy policies.
- **Scientific Publications and Contributions to Literature:** Having written hundreds of scientific articles and books and sharing his extensive research on hydrogen technologies and energy, he founded the International Journal of Hydrogen Energy. This journal has become one of the world's leading publications for hydrogen energy research. He has also undertaken many studies analyzing the contributions of hydrogen energy to the environment and economy.
- **The Future of Hydrogen and Environmental Contributions:** Prof. Dr. Veziroğlu has placed great emphasis on technologies that will reduce carbon emissions, arguing that hydrogen is the cleanest energy source that can replace fossil fuels. As a result of his studies, important steps have been taken to use hydrogen in the automotive sector and industry, and the theoretical infrastructure for hydrogen-powered vehicles and power plants has been established.

Awards and Honors

His significant achievements and pioneering studies in the scientific world have earned him many national and international awards. The value of his work has been recognized internationally with the Outstanding Contribution Awards on Hydrogen Technology, Honorary Doctorates, and Science and Engineering Awards given by many respected scientific organizations. Some of the awards he has received are:

• Global Energy Prize

• United Nations Industrial Development Organization (UNIDO) Gold Medal

• IAHE Medal of Honor

Social and Academic Leadership

As a scientist, academic leader, and community leader, Prof. Dr. Veziroğlu has guided countless young scientists. The hundreds of students he has trained have continued his vision of hydrogen energy and his desire for environmental sustainability. In addition to his scientific publications, he has contributed to shaping sustainable energy policies worldwide by consulting for international organizations such as UNESCO and the United Nations.

His Memory and Scientific Legacy

The innovations that Prof. Dr. Turhan Nejat Veziroğlu has brought to the scientific world and his pioneering role in the field of hydrogen energy will be an excellent guide today and in the future. This valuable scientist, who will be an example for future generations to follow in the clean energy transition, has left a deep knowledge and vision behind. His determination and scientific foresight on environmentally friendly energy will continue to make the world cleaner and more livable.

We wish God's mercy upon him and offer our condolences to his family, loved ones, and colleagues in the scientific world. We remember Prof. Dr. Turhan Nejat Veziroğlu with love, respect, and gratitude.







Dear teacher on memories....



My Esteemed Professor,

You are always with us. In each of our speeches during the commemoration ceremony, we emphasized that you are and will always be a part of us. It has been my honor and pride to have you in my life since 1988, when I first learned about hydrogen from you. How fortunate I am. You have profoundly influenced my career, as well as the careers of hundreds of other academics in our country.

We were the students of the "Hydrogen Economy School," founded by the father of hydrogen himself, Dr. V. We were always learning. In your remarkable 100 years of life, you have shaped both our present and our future. You were more vibrant than hydrogen itself, more energetic than its very essence. Beyond your role as a scientist, you taught me the importance of healthy eating, afternoon naps, good sleep, the value of family, and the joy of being cheerful and stylish. Most importantly, you showed me that resilience is essential on the academic path.

Together with ten academicians, you always smiled with technical elegance at those who called you "Hydrogen Romantics." You worked tirelessly for the "Hydrogen Economy," and you became the pride of our nation through your global success. After completing three semesters at the Department of Civil Engineering at Istanbul Technical University and then your undergraduate education in London, you remained connected to our country even while working at Miami University. You were practically always with us, always returning, always striving to explain hydrogen to the government, the business community, and even our military. You never gave up.

I was always in awe of your fluent, articulate, and beautiful Turkish, and your deep love for our country. There was never a shortage of researchers from Turkey in your Miami Clean Energy Research Institute team. Our academics pursued their master's, doctorate, and post-doctorate studies there, and many joint projects were carried out.

I will never forget the summer of 2003 when I had the privilege of being a guest researcher with you. I will always remember your smiling face and playful jokes when I speak of you. Every time your name is mentioned, there will be a smile on all of our faces, dear Professor.

With my deepest respect,
Prof. Dr. Filiz Karaosmanoğlu
Faculty Member, Istanbul Technical University

The VI Summer School of Turkic States was held in Turkistan, Kazakhstan



In cooperation with Khoja Ahmet Yesevi International Turkic-Kazakh University, the International Turkic Academy, and the Turkish Academy of Sciences, the VI Summer School of Turkic States was held in Turkistan, Kazakhstan, between 18-25 August 2024. Two summer schools were held simultaneously: "Turkology Summer School" and "New Energy Technologies Summer School". A total of 50 students and 37 faculty members from Azerbaijan, Turkey, Uzbekistan, Kazakhstan, Kyrgyzstan, North Macedonia and Albania participated in the one-week summer school.



Rector of Ahmad Yesevi University Zhanar Temirbekova, Chairman of the Board of Trustees of the University Muhittin Şimşek, President of the Turkish Academy of Sciences Muzaffer Şeker, President of the International Turkic Academy Şahin Mustafayev and Vice President of the Turkish Language Association Harun Şahin made speeches at the opening ceremony of the New Energy Technologies Summer School.

The New Energy Technologies Summer School provided participants with a comprehensive overview of energy technologies' latest developments, challenges, and opportunities. It also addressed innovative energy methods and applications to meet future energy needs. The New Energy Technologies Summer School included comprehensive information on 7 main topics: Energy History, Energy Physics, Renewable energy sources, Hydrogen energy and related technologies, Energy storage systems and applications, Energy conservation and efficiency, and Energy and innovation. Participants increased their knowledge on the realization of innovative projects and research in the field of energy, the development of new technologies and innovations, and discussed suggestions and opinions on sustainable energy solutions.

Prof. Dr. Ibrahim Dinçer, President of the Hydrogen Technologies Association, gave lectures on Hydrogen Energy and Related Technologies and Fundamental Principles and Concepts in Thermodynamics within the scope of the New Energy Technologies Summer School, and Prof. Dr. Can Özgür Çolpan, Secretary General of the Association, gave lectures on Fuel Cells. Prof. Dr. Can Özgür Çolpan, Secretary General of the Association, made presentations on Fuel Cells and Energy Storage Systems and Applications, and Prof. Dr. Adnan Midilli, Member of the Board of Directors of the Association, made presentations on Waste to Energy Options and District Energy Systems.



9th International Hydrogen Technologies Congress (IHTEC-2025)

We invite you to the 9th International Hydrogen Technologies Congress (IHTEC-2025), a leading multidisciplinary international event by Dokuz Eylül University and the Hydrogen Technologies Association. The congress will occur from May 25 to 28, 2025, in Izmir, Türkiye.

IHTEC-2025 will serve as a forum for the exchange of technical knowledge, the dissemination of high-quality research, and the presentation of new policies and scientific advancements in the field of hydrogen energy. The congress will cover a broad range of topics related to the hydrogen ecosystem, including production, storage, distribution, utilization, safety, and policy. We warmly welcome participation from academia and industry, and we hope that the conference will foster effective and fruitful discussions and collaborations among participants from various disciplines, institutions, and sectors worldwide.

We look forward to welcoming you to IHTEC-2025 and sharing with you the unique Turkish hospitality and the stunning historical, cultural, and natural beauty of Izmir.

https://ihtec2025.org/

Congress Chairs
Prof. Dr. C. Ozgur Colpan
Prof. Dr. Azize Ayol



Don't forget to apply to our Association for IHTEC2025 Awards.

https://ihtec2025.org/awards/

NATIONAL HYDROGEN ASSOCIATION TÜRKİYE

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 IHTEC-2025 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 IHTEC-2025 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

The winners of these awards will be invited to the conference where they will attend the award ceremony. Conference registration fee and accommodation expenses will be covered by the association.

CONTACT
+90 533 726 72 55
hidrojen@hidrojenteknolojileri.org

More information and application:
www.hidrojenteknolojileri.org

Hydrogen energy technologies marked the 30th year of WIN EURASIA



WIN EURASIA, the largest manufacturing industry gathering in the region created new business partnership opportunities worth millions of dollars. WIN EURASIA, the largest industrial fair in the region, was organized for the 30th time this year with the motto "Industry Meets the Future". With 750 exhibitors from 19 countries, the fair was visited by 41,554 purchasing authorities. Organized by Hannover Fairs Turkey, the fair hosted the most potent procurement and purchasing professionals worldwide. WIN EURASIA, the regional representative of HANNOVER MESSE, the world's most important industrial fair, created an important trade and technology network.

Future Energy met with the industry at WIN EURASIA

Sustainability, rising energy costs, and demand for renewable energy have increased interest in hydrogen, a clean energy. As every year, WIN EURASIA, the center of innovation in the industry, brought the industry together with hydrogen energy, which is expected to have an impact of 2.5 trillion dollars on the world economy by 2050, including 30 million job opportunities. The climate crisis, which has increased exponentially in recent years and is frequently on the agenda, makes hydrogen energy production a robust solution on a global scale. With the highest energy content per unit mass and low environmental impact, hydrogen is emerging as an essential alternative to fossil fuel-based energy sources as an energy carrier.

WIN EURASIA pioneered industrial transformation with the 'Hydrogen Special Area'

Technologies related to the production, storage, transportation, and utilization of hydrogen energy for sectors where hydrogen energy is used intensively, such as heavy industry, were exhibited in the Hydrogen Special Area. The fair pioneered the green transformation in the Hydrogen Special Area, which was created this year for Hydrogen energy and has recently been frequently discussed worldwide.

Hydrogen energy technologies exhibited at WIN EURASIA attracted great interest in sustainable solutions. While exhibitors showcased the many different uses of hydrogen, from energy generation, storage, and transportation to industrial applications, experts gave important information about the future potential of this energy in seminars and panels on hydrogen energy.

The WIN EURASIA Hydrogen Special Area was one of the most innovative areas of the fair, bringing together the industry's key players. Both local and international companies exchanged information about hydrogen energy's applicability and potential benefits throughout the exhibition. As it was announced that Turkey aims to reach a hydrogen production capacity of 2 GW by 2030, 5 GW by 2035, and 70 GW by 2053, WIN EURASIA shed light on the investments to realize these targets.

New generation technologies and developments took center stage at WIN EURASIA

On 55 thousand square meters of exhibition area, companies specializing in Industrial Automation, Factory Automation Systems, Industrial Production Machinery, Energy, Electricity, Electronic Technologies, Welding and Robotic Welding Technologies, Logistics, Supply Chain Management, and Internal Logistics Solutions exhibited their latest products.

Trending industrial topics such as 5G, Metaverse, Hydrogen, Digital Factories, and Comvac Compressor & Vacuum Technologies were exhibited in WIN EURASIA particular areas, offering visitors a glimpse into the industry's future.

Leading the manufacturing industry with innovations and technology, WIN EURASIA brought new developments and current issues that shape the industry's future to the agenda in its internationally recognized conferences and seminars.

During WIN EURASIA, 125 panelists contributed to the conference programs in approximately 40 panels. Expert speakers illuminated various aspects of the industry and discussed innovations and comprehensive solutions.



Following WIN EURASIA 2024, which ended with the intense participation of manufacturers and industry professionals, the largest meeting of the manufacturing industry in the region will be held at the Istanbul Expo Center on May 28-31, 2025.

The Student Club Focused on Hydrogen Technologies Has Been Established Under the YTU Roof!

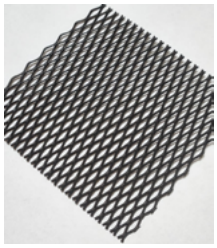


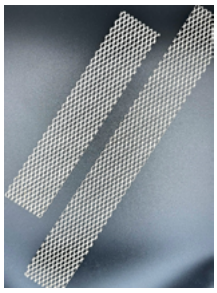
The Hydrogen Technologies Club, established within the Yıldız Technical University (YTÜ), has started its activities as a student community focusing on hydrogen technologies, aligning with Yıldız Technical University's goal of becoming a 'Hydrogen University.' The club aims to provide students with comprehensive academic and technical knowledge by addressing all hydrogen-related processes, from production to storage, logistics to economics, when the carbon age is ending and the hydrogen age is beginning. Adopting the Paris Agreement and Sustainable Development Goals as guiding principles, this club aims to develop environmentally friendly and sustainable projects both in Turkey and globally. As a club, they plan to organize various events to emphasize the importance of hydrogen technologies and encourage collaborations among students, academics, and industry professionals in this field. Through practical training, awareness activities, social responsibility projects, scientific research, and international career summits, they aim to increase students' interest in hydrogen technologies and support their efforts in this area. Additionally, by collaborating with other student clubs, they aim to explore the applications of hydrogen technologies in different disciplines and develop new projects. The team that brings the club's activities and goals to life is introduced below.

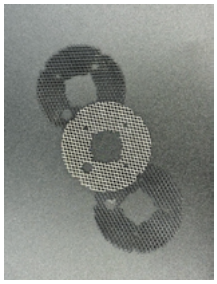
With this dynamic and passionate team, under the guidance of Prof. Dr. Aysel KANTÜRK FİGEN and Assistant Professor Dr. M. İberia AYDIN, they aim to represent their university and country in the best possible way on national and international platforms in the field of hydrogen technologies. Hydrogen technologies are a multifaceted and interdisciplinary field that requires expertise from various disciplines, such as chemical engineering, electrical and electronics engineering, mechanical engineering, and economics. Their club offers an environment where students from these disciplines can collaborate to create synergy and develop innovative solutions. They aim to help students maximize their potential in this field by providing advanced equipment and working environments. They invite you to join this exciting journey to contribute to a sustainable and clean energy future!

YENİ KURUMSAL ÜYELERİMİZ

AYBA Elektrokataliz A.Ş







Our company, which has specialized in developing and producing products and processes for precious metal chemistry and electrochemistry for more than fifteen years by working with our foreign partners, is one of Turkey's leading companies in the field of electrochemistry and electrocatalysis, based in Istanbul.

In addition to the sales and technical service of electroplating baths of precious metal compounds such as gold, platinum, palladium, and rhodium, which are called PGM metals (platinum group metals) for decorative and technical applications, it also offers the production and sales service of plating bath chemicals, machinery, and equipment. In addition, R&D and machinery and equipment production studies for recovering precious metals are also continuing.

Platinum group metals, which are physically and chemically quite similar and are generally found together in nature, stand out from other metals with their different and positive properties and have an ever-expanding area of use today. Our company, which has decided to focus its expertise, knowledge and experience in the field of electrochemistry on titanium electrode design and production in recent years, is making a sectoral contribution to the electrochemistry industry, especially by starting the production of innovative products such as Platinum coated titanium anodes and mixed noble metal oxide coated titanium anodes. These products are characterized by high conductivity, catalytic activity, chemical stability, and a high level of corrosion resistance.

Platinum coated titanium anodes exhibit excellent performance for hydrogen evolution reaction (HER), while IrO2/RuO2 coated anodes are critical components for oxygen evolution reaction (OER).

H2 production with electrolyzed water is an important step to realise the industrial production of **green hydrogen**. The basic part of the hydrogen production equipment by electrolysis of water is the electrolytic cell. When current passes between the electrodes of the electrolytic cell, hydrogen is produced at the cathode and oxygen at the anode.

The electrode material is the key to the electrolysed water hydrogen production cell. The electrode performance largely determines the electrolysis of water efficiency, cell voltage, and energy consumption, and directly affects the cost. Therefore, it is very important to select suitable electrode materials to improve the electrolysis efficiency in the process of electrolysis of water. Our company develops and produces platinum-coated titanium anode for hydrogen production by water electrolysis, which can withstand high current density, has strong corrosion resistance, and high electrocatalytic activity.

The future goal of our company, which continues to work under the leadership of a team specialised in electrochemistry and highly active catalytic electrode materials, is to provide on-site and effective solutions to the needs and demands of our customers in many fields such as industrial water treatment, electrochlorination, metal plating, and energy production by increasing research and development activities focusing on electrochemical reactions.

HYDRO SOLAR YENİLENEBİLİR ENERJİ MÜHENDİSLİK

Hydro Solar Energy has more than 20 years of experience in the energy sector, they are at your side with consultancy, engineering, and application services for your renewable energy investments.

They provide services in the design, engineering, operation, maintenance, project design, and licensing of hydroelectric power plants.

They provide comprehensive services, including location selection according to the need or grid conditions, basic project design, engineering, procurement, and construction installation in licensed storage or unlicensed solar power plant investments. As a result of wrong choices, many projects become unfeasible during the implementation phase and all material expenditures are wasted.

The company is on your side in wind power plant project design, pre-study, feasibility, measurement systems installation, and licensing processes.

https://www.hydro-solar.com.tr/index.html

Prof. Dr. İbrahim Dinçer lectured on "New Trends in Science and Energy"



Prof. Dr. İbrahim Dinçer, a member of the Executive Board of the Energy, Nuclear and Mining Research Council of Turkey, a member of the Executive Board of the Turkish Energy, Nuclear and Mining Research Institution, a member of the Energy Working Group of the Turkish Academy of Sciences and a full member of TÜBA, who has worked at the University of Ontario and Yıldız Technical University, gave a speech titled "New Trends in Science and Energy" in which he emphasized the importance of energy and energy. Students and academicians showed great interest in the event.

More details