

3rd INTERNATIONAL CONFERENCE ON

CATALYSIS SCIENCE AND CHEMICAL ENGINEERING

JULY 21–23, 2025

Budapest University of Technology and
Economics, Hungary



HOSTING UNIVERSITY



www.catalysis-science.com

CONFERENCE CHAIR



Gyorgy Keglevich
Professor

Budapest University of Technology
and Economics, Hungary

Professor Gyorgy Keglevich is a distinguished chemist and professor at the Budapest University of Technology and Economics. With over 40 years of academic and research experience, he has made significant contributions to organophosphorus and green chemistry, including MW-assisted synthesis, ionic liquids, and flow chemistry. He has authored 699 publications (42 reviews, 55 book chapters, 4 books), holds 3 patents, and has an H-index of 48 with over 6,500 independent citations. He served as Head of the Department of Organic Chemistry and Technology for 22 years and has supervised 21 PhD students. Prof. Keglevich is Editor-in-Chief of Current Organic Chemistry and Current Green Chemistry, and a board member of several international journals. He chaired the 22nd International Conference on Phosphorus Chemistry (ICPC 2018) and currently leads a major university sustainability initiative. He has been honoured with the Knight's Cross (2021) and the József Nádor Medal (2022).

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INSTRUCTIONS FOR SPEAKERS

1. **Plenary Talks:** Plenary speakers will be allotted 25 minutes to present their results, followed by a 5 minutes discussion period.
2. **Keynote Talks:** Keynote speakers will be allotted 20 minutes to present their results, followed by a 5 minutes discussion period.
3. **Invited Talks:** Invited speakers will be allotted 17 minutes to present their results, followed by a 3-minute discussion period.
4. **Oral Talks:** Oral speakers will be allotted 12 minutes to present their results, followed by a 3-minute discussion period.
5. Please do not exceed the allotted time slot.
6. Speakers should have their presentations saved on a USB memory stick.
7. It is suggested to email a copy of the presentations to us as back up.
8. Please prepare the presentation in PPT files, PDF is not recommended.
9. Basic AV setup will be provided: laser pointer, cordless mike, desktop mike, sound system.
10. Laptops equipped with Windows 10, Office 2010 Pro English (Word, Powerpoint, Excel) and Adobe Reader are provided.
11. If your presentation files contain movies, please make sure that they are well formatted and connected to the main files. You may check your slides during the breaks.
12. Projectors are equipped with standard VGA connection ports. Mac users should bring their own adapter cord.
13. Please re-check this program prior to the conference to confirm if any changes have been made to your session.
14. Conference volunteers will move the mic during Q&A. Audience with questions may raise hand to receive the mic.

INSTRUCTIONS FOR POSTER

1. Maximum poster size is A0.
2. Push pins for attaching the poster to the board will be provided.
3. Poster presenters will be directed to the designated board at the start of the poster session.
4. Author must be present to provide details and answer questions during the selected poster session times.

DAY-1 JULY 21, 2025

09:00–09:45 Registrations

09:45–10:00 Opening Remarks by the Conference Chair

Gyorgy Keglevich, Budapest University of Technology and Economics, Hungary

Plenary Session

Session Chairs: Rafael Luque, National University of Science and Technology, Polytechnica Bucharest, Romania

Gyorgy Keglevich, Budapest University of Technology and Economics, Hungary

10:00–10:30 **Plenary Talk:** Emerging Technologies and AI to Answer to Electronics and Energy Digitalization Demands

Rodrigo Martins, Universidade NOVA de Lisboa, Portugal

10:30–11:00 **Plenary Talk:** Molecular Redox Catalysts for the Generation of Solar Fuels

Antoni Llobet, Institute of Chemical Research of Catalonia, Barcelona Institute of Science and Technology, Spain

11:00–11:30 **COFFEE BREAK**

11:30–12:00 **Plenary Talk:** Carbon-based Metal-free Electrocatalysts for Energy and Chemical Conversions

Liming Dai, University of New South Wales, Australia

12:00–12:30 **Plenary Talk:** A New Generation of Modified TiO₂-Based Photocatalytic Hybrid Structures

George Kiriakidis, PCN Materials, Greece

12:30–13:00 **Plenary Talk:** Application of Ionic Liquids in Organic Catalysis

Rita Skoda Foldes, University of Pannonia, Hungary

13:00–14:00 **LUNCH BREAK**

Session Chairs: Douglas Macfarlane, Monash University, Australia

Rui Shang, The University of Tokyo, Japan

14:00–14:25 **Keynote Talk:** Effect of Strong Metal-Support Interaction on the Improvement of Mo-doped Titania-Carbon Composite Supported Pt Electrocatalysts Performance

Andras Tompos, HUN-REN Research Centre for Natural Sciences, Hungary

14:25–14:50 **Keynote Talk:** Synthetic Fuel Production based on CCU Technologies

Andras Sapi, University of Szeged, Hungary

14:50–15:10 **Invited Talk:** From Ionic Liquids to Functional Poly (Ionic Liquid) Aerogels: Green and Catalytic

Marta C. Corvo, NOVA School of Sciences and Technology, Portugal

15:10–15:30 **COFFEE BREAK**

15:30–15:50 **Invited Talk:** Synthesis of Multi-metallic Sub-Nanocatalysts Using a Dendrimer Reactor

Kimihisa Yamamoto, Tokyo Institute of Technology, Japan

15:50–16:10 **Invited Talk:** Design Strategy of Carbon Catalysts for Oxygen Reduction and Mixed-Potential-Driven Catalysis

Kotaro Takeyasu, Hokkaido University, Japan

16:10–17:00 **NETWORKING COCKTAILS**

DAY-2 JULY 22, 2025

Plenary Session

Session Chairs: Antoni Llobet, Institute of Chemical Research of Catalonia, Barcelona Institute of Science and Technology, Spain
Jacek Nycz, University of Silesia in Katowice, Poland

- 09:00–09:30** **Plenary Talk:** Towards Direct Electro-Catalytic Production of Ammonia
Douglas Macfarlane, Monash University, Australia
- 09:30–10:00** **Plenary Talk:** Biomass/Waste Valorisation into High-added Value Products: From Energy Vectors to Pharmaceuticals
Rafael Luque, National University of Science and Technology Polytechnica Bucharest, Romania
- 10:00–10:30** **Plenary Talk:** Green Methods for the Synthesis of Phosphonates, Phosphonites and Phosphine Oxides
Gyorgy Keglevich, Budapest University of Technology and Economics, Hungary
- 10:30–10:55** **Keynote Talk:** Single Atom Catalysts for the Efficient and Selective Synthesis of Fuel Additives
Samy El-Shall, Virginia Commonwealth University, USA

10:55–11:25 COFFEE BREAK

Session Chairs: Skodane Foldes Rita, University of Pannonia, Hungary
Henrik Haspel, University of Szeged, Hungary

- 11:25–11:50** **Keynote Talk:** Iron Catalysis: Developing Reactions for Conjugated Material Synthesis
Rui Shang, The University of Tokyo, Japan
- 11:50–12:15** **Keynote Talk:** Organic Nanoparticles for Biohybrid Photocatalysis
Haining Tian, Uppsala University, Sweden
- 12:15–12:35** **Invited Talk:** P-alkyl esters and Methods to Obtain them Without the Use of Transition Metals and Halides
Jacek Nycz, University of Silesia in Katowice, Poland
- 12:35–12:55** **Invited Talk:** Mechanochemistry and Photochemistry: Novel Synthetic Strategies
Bartłomiej Furman, Institute of Organic Chemistry Polish Academy of Sciences, Poland

12:55–13:55 LUNCH BREAK

Session Chairs: Liming Dai, University of New South Wales, Australia
Haining Tian, Uppsala University, Sweden

- 13:55–14:15** **Invited Talk:** Operando NAP-XPS During Electrochemical Methane Formation on Ni(Cu)/YSZ: A Model Approach
Bernhard Klotzer, University of Innsbruck, Austria
- 14:15–14:35** **Invited Talk:** Photoassisted Radical-Mediated Regeneration of Saturated Activated Carbons
Conchi Ania, University of Orleans, France
- 14:35–14:55** **Invited Talk:** Recent advances in MBE-grown GaAsSb Nanowires for Near-Infrared Photodetector Applications
Priyanka Ramaswamy, Micron Technology Boise, USA
- 14:55–15:15** **Invited Talk:** Shaping the Future of Catalysis: AI and Molecular Modeling for Superior Selectivity
Izabela Czekaj, Cracow University of Technology, Poland

Session Chairs: Priyanka Ramaswamy, Micron Technology Boise, USA
Jyri-Pekka Mikola, Abo Akademi University, Finland

- CAT01** **Title:** Efficient oxidation of Organic Pollutants using Ni(II)@SiO₂-PDS: A study on Reaction Pathway and Kinetics
Justinabraham Romiyo Vijayakumar, Ariel University, Israel
- CAT02** **Title:** A Magnesium Catalyzed Fenton-Like Process: Radical Pathways in Peroxymonosulfate Oxidations for Environmental Remediation
Gayathri Jeevanandham, Ariel University, Israel
- CAT03** **Title:** B/Co/Carbon-Catalyzed Pyrolysis of Plastic Waste for Enhanced Hydrogen Generation
Monica Calero, University of Granada, Spain
- CAT04** **Title:** Development of Non-Critical Metal-Based Electrocatalysts for Enhanced OER Activity in Anion Exchange Membrane Water Electrolyzers
Mireya Carvela Soler, Industrial Technology Center of Castilla-La Mancha, Spain
- CAT05** **Title:** Engineering High-Performance PTLs for Next-Generation AEM Electrolyzers
Jesus Roman Barranco, Industrial Technology Center of Castilla-La Mancha, Spain

DAY-3 JULY 23, 2025

Session Chairs: Andras Sapi, University of Szeged, Hungary

Andras Tompos, HUN-REN Research Centre for Natural Sciences, Hungary

- 08:30–09:00** **Plenary Talk:** Battery Innovation Empowered by Lithium Bond and Artificial Intelligence
Qiang Zhang, Tsinghua University, China
- 09:00–09:20** **Invited Talk:** Design of Core–Shell Catalysts for CO₂ /Syngas Conversion and Hydrogen Production
Chen Luwei, Institute of Sustainability for Chemicals, Energy and Environment, Singapore
- 09:20–09:40** **Invited Talk:** The Atomically Precise Au–Ag Nanoclusters Catalyzed Chemical Conversion of CO₂
Haizhu Yu, Anhui University, China
- 09:40–10:00** **Invited Talk:** Preparation, Modification and Performance of Low–Temperature SCR Catalysts
Jyh–Cherng Chen, Feng Chia University, Taiwan

Session Chairs: Samy–El–Shall, Virginia Commonwealth University, USA

Jyh–Cherng Chen, Feng Chia University, Taiwan

- 10:00–10:20** **Invited Talk:** Atomically Precise Size–and Composition–Selected Sub–Nanometer Cu, Pd and CuPd clusters in Oxidative Dehydrogenation Reactions
Stefan Vajda, J. Heyrovsky Institute of Physical Chemistry of the Czech Academy of Sciences, Czech Republic
- 10:20–10:40** **Invited Talk:** Catalytic CO Oxidation and Photocatalytic Methylene Blue Degradation Using ZIF–8 Materials
Khaled Mohammad Saoud, Virginia Commonwealth University, Qatar
- 10:40–11:00** **Invited Talk:** CO Adsorption and H₂ Dissociation at Supported Single–Layer Graphene (online)
Luca Vattuone, University of Genoa & IMEM–CNR, Italy

11:00–11:15 **COFFEE BREAK**

- 11:15–11:35** **Invited Talk:** Imagine! A World Free from Fossil Fuels
Jyri–Pekka Mikkola, Abo Akademi University, Finland

Session Chairs: Chen Luwei, Institute of Sustainability for Chemicals, Energy and Environment, Singapore

Haizhu Yu, Anhui University, China

- 11:35–11:55** **Invited Talk:** Experimental Setups for Electrocatalysis in Magnetic Fields
Henrik Haspel, University of Szeged, Hungary
- 11:55–12:15** **Invited Talk:** Semiconductor Photocatalysts in Advanced Reduction Processes
Joanna Kisala, University of Rzeszow, Poland
- 12:15–12:35** **Invited Talk:** Waste–to–pharma concept in SusPharma Framework
Alina M. Balu, University of Cardoba, Spain
- 12:35–12:55** **Invited Talk:** Pt Clusters Stabilized on 2D MoS₂ for Ultrafast Hydrogen Evolution
Tamas Oller, HUN–REN Centre for Energy Research, Hungary
- 12:55–13:15** **Invited Talk:** Direct Methane Aromatization over Mo/HZSM–5 Zeolites: Significance of Nickel and Magnesium as Co–Promoters
Themba E. Tshabalala, Sol Plaatje University, South Africa
- 13:15–13:35** **Invited Talk:** Synthesis of Vulcan XC–72R/Mn/Co electrocatalysts by microwave techniques for seawater electrolysis (Online)
Dzhamal Uuzn, IEES, Bulgaria

**13:35
ONWARDS**

GUIDED UNIVERSITY TOUR



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Prism Scientific Services Pty Ltd., a premier conference organizer, envisions a sustainable future for the Science and Engineering. Our goal is to unite experts and stakeholders through conferences, fostering collaboration and advancing sustainable practices. Committed to curating conferences on materials science, renewable energy and eco-friendly technologies, we catalyze the industry's development. Emphasizing interdisciplinary collaboration, our events address complex challenges. Dedicated to sustainability, we minimize footprints and promote eco-friendly venues, inspiring environmental responsibility. As catalysts for positive change, guiding the energy industry toward an innovative, environmentally responsible future in conferences that prioritize sustainable development.

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WE WISH TO SEE YOU AT CATSCIENCE-2026



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