

4th INTERNATIONAL CONGRESS ON

CATALYSIS SCIENCE AND CHEMICAL ENGINEERING

JUNE 29–JULY 01, 2026

Palazzo Corrado Alvaro, Reggio Calabria, Italy



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.

CONFERENCE CHAIRS



Francesco Mauriello

Associate Professor
Università Mediterranea di
Reggio Calabria, Italy



Emilia Paone

RTD-B Researcher
Università Mediterranea di
Reggio Calabria, Italy



Rafael Luque

Professor
ECOTEC University
Ecuador

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Westlake University
China



Hendrik Heinz

Professor
University Of Colorado
United States



Priyanka Ramaswamy

Staff Process Integration Engineer
Micron Technology
USA

08:00–08:45 **Registrations**

08:45–09:15 **Opening Ceremony**

Session Chairs: **Francesco Mauriello**, Università Mediterranea di Reggio Calabria, Italy
Emilia Paone, Università Mediterranea di Reggio Calabria, Italy

Plenary Talks

09:15–09:45 **Title:** Catalysis for Bio-Chemicals and Bio-Fuels: Scientific and Technical Achievements in an Evolving Landscape

Fabrizio Cavani, University of Bologna, Italy

09:45–10:15 **Title:** Emerging Catalysis Process for Effective Energy Storage

Qiang Zhang, Tsinghua University, China

10:15–10:45 **Title:** Colloidal Metal Nanocrystals as the Next-Generation Catalytic Materials

Younan Xia, Johns Hopkins University, USA

10:45–11:15 **COFFEE BREAK**

11:15–11:45 **Title:** Photocatalytic Water Splitting to Produce Green Hydrogen and Related Fuels [Online]

Kazunari Domen, The University of Tokyo, Japan

11:45–12:15 **Title:** Green Shades in Catalysis for Fine Chemicals and Pharmaceuticals

Luigi Vaccaro, University of Perugia, Italy

Session: Catalysis for the Energy Transition

Keynote Talk

12:15–12:40 **Title:** Where to Look for Shape Selectivity? The Strange Cases of Catalysis on Ferrierite

Francesco Di Renzo, University of Montpellier-CNRS-ENSCM, France

Invited Talks

12:40–13:00 **Title:** Towards Accurate Modeling of Elementary Reaction Steps in Heterogeneous Catalysis *via* Insights from Gas-Surface Dynamics

Jörg Meyer, Leiden University, Netherlands

13:00–13:20 **Title:** Catalysis in Ball Mills: Mechanochemistry as an Alternative Synthesis Strategy

Lars Borchardt, Ruhr University Bochum, Germany

13:20–14:20 **LUNCH BREAK**

Session Chairs: **Stefano Bellucci**, INFN-Laboratori Nazionali di Frascati, Italy
Raffaella Mancuso, University of Calabria, Italy

Invited Talks

14:20–14:40 **Title:** Sustainable Cross-Coupling Protocol: Miyaura Borylation and One-Pot Suzuki-Miyaura Reaction in Deep Eutectic Solvents (DES)

Daniele Franchi, CNR-ICCOM, Italy

14:40–15:00 **Title:** Use of Zeolites for the Synthesis of Ketals from Ethyl Levulinate and Glycerol
Vincenzo Russo, University of Naples Federico II, Italy

15:00–15:20 **Title:** Value Added Chemicals from Acetylene, Ethylene and Isocyanides by Single to Multi-Cycle Catalytic Processes Using Late Transition Metal Heteroatom Stabilized Singlet Carbene Complexes
Prasenjit Ghosh, Indian Institute of Technology Bombay, India

Session: Single-Atom Catalysis and Nanostructured Catalysts

Keynote Talks

15:20–15:45 **Title:** Non-Conventional Technologies for Catalyst Preparation and Synthetic Processes
Giancarlo Cravotto, University of Turin, Italy

15:45–16:10 **Title:** Tuning the Reactivity of Sol-Gel Multifunctional Catalysts for the Synthesis of Added-Value Products
Martino Di Serio, University of Naples Federico II, Italy

16:10–16:40 **COFFEE BREAK**

Invited Talks

16:40–17:00 **Title:** Accelerating Green Technologies: The Role of DFT Modeling in Catalyst Design for Low-Carbon Chemical Processes
Izabela Czekaj, Cracow University of Technology, Poland

17:00–17:20 **Title:** Towards the Discovery of Single-Atom Catalysts for Electrochemical Reactions with Atomistic Simulations
Giovanni Di Liberto, University of Milan Bicocca, Italy

17:20–17:40 **Title:** Quantitative Structure-Reactivity Relationships in Catalytic Biomass Pyrolysis
Tetiana Kulik, Cardiff Catalysis Institute, United Kingdom; Chuiko Institute of Surface Chemistry, Ukraine

17:40–18:00 **Title:** Ketalization of Ethyl Levulinate with Glycerol Catalyzed by Strata™-XL-C
Francesco Taddeo, University of Naples Federico II, Italy

18:00–18:20 **Title:** Turning Food Waste into Fuel: Sustainable Production of Ethyl Levulinate as Bio-Blendstock for Gasoline Engines
Sara Fulignati, University of Pisa, Italy

18:20 ONWARDS **Networking Cocktail**

08:30–08:45 Registrations

Session: Advanced Electrocatalysis and Photocatalysis

Session Chairs: Francesco Di Renzo, University of Montpellier–CNRS–ENSCM, France

Katia Martina, University of Turin, Italy

Keynote Talks

- 08:45–09:10** Title: Rational Design of Doped Oxide and Hybrid Nanomaterials for Enhanced Photocatalysis
Stefano Bellucci, INFN–Laboratori Nazionali di Frascati, Italy
- 09:10–09:35** Title: Nanoporous Hybrid Catalysts for Photo(electro)Catalytic Conversion Reactions Across the Carbon, Nitrogen and Water Cycles
Conchi Ania, Université d'Orléans, France

Invited Talks

- 09:35–09:55** Title: Hydrogen Production from Aqueous Organic Solutions *via* Solar Thermo–Photoreforming over Semiconductor/Carbon Photocatalysts
Giuseppe Marci, University of Palermo, Italy
- 09:55–10:15** Title: Photocatalytic Energy Conversion with Nanostructured Semiconductors
Kei Noda, Keio University, Japan
- 10:15–10:35** Title: TaNbHfZrTi High–Entropy Alloy in Photo(electro) Catalytic Tetracycline Degradation
Miran Čeh, Jožef Stefan Institute, Slovenia

10:35–11:05 COFFEE BREAK

- 11:05–11:25** Title: Nitrate Radicals in Photocatalysis: An Emerging Tool for Selective Oxidation [Online]
Alessandro Gottuso, Shanghai Jiao Tong University (SJTU), China
- 11:25–11:45** Title: Recent Advances in Single Nanowire Photodetector [Online]
Priyanka Ramaswamy, Micron Technology, USA
- 11:45–12:05** Title: Eco–Friendly and Reusable CNT/Halloysite–Based Sensor for Ciprofloxacin Electrochemical Detection
Carlo Spampinato, Consiglio Nazionale delle Ricerche (IMM), Italy
- 12:05–12:25** Title: An Operando Study of the Surface Chemistry of (Ni,Cu)–Catalysts for Bio–Ethanol Dehydrogenation Reaction
Elena Spennati, University of Genoa, Italy
- 12:25–12:45** Title: Oriented WO₃ Nanoflakes Immobilized on Glass Spheres for the Continuous Flow Photocatalytic Degradation of Pharmaceuticals
Vito Cristino, University of Ferrara, Italy
- 12:45–13:05** Title: Nanocatalysts for Lignocellulosic Biomass Conversion Toward Pharmaceutical Building Blocks
Alina M. Balu, University of Córdoba, Spain

13:05–14:10 LUNCH BREAK

Oral Talks

- 14:10–14:25** **Title:** Bio-Based LICL-Containing Hydrogel Electrolytes for Sustainable Energy Storage: Structure–Efficiency Relationships
Quentin De Roover, University of Liege, Belgium
- 14:25–14:40** **Title:** Enhancing Photocatalytic Hydrogen Production: Modification of TiO₂ by Coupling with Semiconductor Nanoparticles
Saud Alshammari, University of Leeds, United Kingdom
- 14:40–14:55** **Title:** Catalytic Decarboxylation of Lignin-Derived Cinnamic Acids
Borys Palianytsia, Chuiko Institute of Surface Chemistry, Ukraine

Session: Catalytic CO₂ Conversion and Utilization

Invited Talks

- 14:55–15:15** **Title:** Sequential Catalytic Incorporation of CO₂ and CO Leading to Carbonylated Cyclic Carbamates
Lucia Veltri, University of Calabria, Italy
- 15:15–15:35** **Title:** Catalytic Conversion of CO₂ and CH₄ into Acetic Acid and Formic Acid Through Ni₁₃ Clusters Supported on MgO Surface: A DFT Study
Aravindhan Ramachandran, University of Milan-Bicocca, Italy
- 15:35–15:55** **Title:** Zn-Based Electrocatalysts for CO₂ Utilization: from Controlled Synthesis to Mechanistic Understanding and Efficient Devices
Nataly Carolina Rosero-Navarro, Institute of Ceramic and Glass (CSIC), Madrid, Spain

15:55–16:30 COFFEE BREAK

- 16:30–16:50** **Title:** NAP-XPS Study of CO and CO₂ Hydrogenation on Ni(111) Under h-BN Cover [Online]
Luca Vattuone, University of Genoa, Italy
- 16:50–17:10** **Title:** Anthocyanins as Natural Sensitizers of TiO₂ Thin Films: Optical and Electrochemical Characterization
William Vallejo, Universidad del Atlántico, Colombia
- 17:10–17:30** **Title:** Electrocleavage Synthesis of Molecular-Level Hybrid COF/Single-Layer MOF-Derivative MOOH Catalysts with Interface-Heterojunction for Biomass Electrooxidation Reaction
Lingling Wang, Technical University of Munich, Germany
- 17:30–17:50** **Title:** Improving the Performance of Co/TiO₂ Catalysts by Messtructuring the Support
Alfonso Caballero, University of Seville, Spain
- 17:50–18:10** **Title:** Optimize the Chemical and Physical Properties of H-ZSM-5 Zeolite Catalysts to Produce Ethylene by the Process of Ethanol Dehydration
Makhosonke Ngcobo, University of South Africa, South Africa

18:10–18:40 POSTER PRESENTATIONS

@SALA ESPOSIZIONI BOCCIONI

Session Chairs: Francesco Mauriello, Università Mediterranea di Reggio Calabria, Italy
Emilia Paone, Università Mediterranea di Reggio Calabria, Italy

- CAT-01** **Title:** Democratizing the Jellium Model for Plasmonic Nanoparticles
Bibiana Türkcan, Leiden University, Netherlands

- CAT-02** **Title:** High-Entropy Metal Sulfides as Electrocatalysts for Overall Water Splitting
Elena Miliutina, UCT Prague, Czech Republic
- CAT-03** **Title:** Pt Nanoclusters on MXene for the Methanol Oxidation Reaction
Vasilii Burtsev, UCT Prague, Czech Republic
- CAT-04** **Title:** Continuous-Flow Plasmonic Catalysis: Insights Into Mass Transport Effects in Au@Pd Nanocatalysts During Suzuki Coupling
Mariia Erzina, UCT Prague, Czech Republic
- CAT-05** **Title:** Efficient Electrochemical CO₂ Reduction to Ethylene on Thermal-Reduced Copper Electrodes
Xianyun Zhang, Uppsala University, Sweden
- CAT-06** **Title:** Enzymatic Biocatalysis as a Sustainable Route to Bio-Adhesives from Agro-Food Residues
Aušra Šimonėlienė, Kauno kolegija, Higher Education Institution, Lithuania
- CAT-07** **Title:** Assessment of Lignocellulosic Feedstocks for Efficient Bioenergy Catalytic Conversion Technologies
Tetiana Kulik, Cardiff Catalysis Institute, United Kingdom; Chuiko Institute of Surface Chemistry, Ukraine
- CAT-08** **Title:** Valorization of Cocoa Pod Husk *via* Chemical Modification and Pyrolysis Toward Catalytic Applications
Borys Palianytsia, Chuiko Institute of Surface Chemistry, Ukraine
- CAT-09** **Title:** Transfer Reductive Mechanochemical Upcycling of Polyethylene Applications: ALTEREGO Project
Antonio Cosimo Pio Trimboli, Università Mediterranea di Reggio Calabria, Italy
- CAT-10** **Title:** Upcycling of Coconut Shell Into Bifunctional Sulfonated Catalysts for Enhanced Sugar Hydrolysis
Alina M. Balu, University of Córdoba, Spain
- CAT-11** **Title:** Cascade Biorefinery Strategy for the Valorization of Orange Peel Waste into Bioactive Compounds, Sugars, and Biomethane
Silvia Sorbo, Università Mediterranea di Reggio Calabria, Italy
- CAT-12** **Title:** Direct Valorization of Spent Lithium-Ion Batteries: Layered-to-Spinel Structural Transformation for Catalytic Applications
Giulia Maria Itri, Università Mediterranea di Reggio Calabria, Italy
- CAT-13** **Title:** Sustainable Valorization of Sodium Aluminate Waste for Environmental and Catalytic Applications: ALTEREGO Project
Chiara Alessandrello, Università Mediterranea di Reggio Calabria, Italy
- CAT-14** **Title:** Synthesis and Characterization of Phosphorus-Modified ZSM-5 Zeolite Nanosheets Using Spectroscopic and Chemometric Approaches
Sara Karimi, Allameh Tabarsi University Babol, Iran

**18:40
ONWARDS**

SOCIAL DINNER

08:30–08:45 Registrations

Session: Sustainable Catalysis and Green Chemistry

Session Chairs: Rafael Luque, ECOTEC University, Ecuador

Emilia Paone, Università Mediterranea di Reggio Calabria, Italy

Keynote Talks

- 08:45–09:10** Title: Recent Advances in Palladium Iodide Catalyzed Carbonylative Transformations
Bartolo Gabriele, University of Calabria, Italy
- 09:10–09:35** Title: NiGraf and Reduced NiGraf: A New Family of Catalytic Metal Organic Alloys of Large Applicative Potential
Mario Pagliaro, Istituto Per lo Studio dei Materiali Nanostrutturati, CNR, Italy
- 09:35–10:00** Title: Waste Valorization into Chemicals and Fuels Using Nanocatalysis
Sudarsanam Putla, Indian Institute of Technology Hyderabad, India
- 10:00–10:25** Title: Unconventional Solvents: a Powerful Reaction Media for Heterocyclization Processes
Raffaella Mancuso, University of Calabria, Italy

10:25–10:55 COFFEE BREAK

Invited Talks

- 10:55–11:15** Title: Catalytic Oxidative Desulphurization of Pyrolytic Oils to Fuels Over Different Waste Derived Carbon-Based Catalysts
Mattia Bartoli, Politecnico Torino, Italy
- 11:15–11:35** Title: Designing Ru Catalysts from Atomic to Nanoparticle Scale: Mechanistic Insights from Multiscale Modeling
Hsin-Yi Tiffany Chen, National Tsing Hua University, Taiwan
- 11:35–11:55** Title: Reframing the Amazon: From Biodiversity Reservoir to a Global Platform for Catalysis Biorefineries, and Sustainable Innovation
Luís Adriano Santos do Nascimento, Universidade Federal do Pará, Brazil
- 11:55–12:15** Title: 3DM Engineering: Accelerating Protein Engineering with AI for Next-Generation Biocatalysis
Tom Van Den Bergh, Bio-Product B.V., Netherlands
- 12:15–12:35** Title: Supported Copper Catalysts for Sustainable C–H Amination and Selective Reductions Under Microwave and Flow Conditions
Katia Martina, University of Turin, Italy
- 12:35–12:55** Title: A Zinc-Based Catalyst for the Synthesis and Chemical Recycling of Polyester
Federica Santulli, University of Salerno, Italy

12:55–14:00 LUNCH BREAK

Session Chairs: Luís Adriano Santos do Nascimento, Universidade Federal do Pará, Brazil

Alina M. Balu, University of Córdoba, Spain

- 14:00–14:20** Title: Chitosan from Insects: Versatile Role in Green Chemistry and Circular Economy
Ana Paula Ribeiro, CQE-IST-ID, University of Lisbon, Portugal

- 14:20–14:40** **Title:** Cascade Biorefining of Wet Agro–Industrial Residues into Renewable Energy Carriers: Integrated Extraction, Ni–Catalyzed Supercritical Water Gasification and Mn–Ce Catalyzed Wet Air Oxidation
Catia Cannilla, CNR–ITAE, Italy
- 14:40–15:00** **Title:** Catalytic Upcycling of Plastic Waste *via* Biochar–Enhanced Microwave–Assisted Co–Pyrolysis
Matteo Francavilla, STAR*Facility Centre–University of Foggia, Italy

Oral Talks

- 15:00–15:15** **Title:** High–Entropy Oxides as Electrocatalysts in Anion Exchange Membrane Water Electrolyzers for Green Hydrogen Production
Maria Grazia Musolino, Università Mediterranea di Reggio Calabria, Italy
- 15:15–15:30** **Title:** Transformation of α –Pinene to High Value–Added Molecules on Carbon–Supported Noble Metals
Filippo Ravasio, Leibniz Institute for Catalysis e.V., Germany
- 15:30–15:45** **Title:** Computational Insights Into the Catalytic Reduction of Furfural Over Co–Based Oxides
Pierraffaele Barretta, Università Magna Graecia di Catanzaro, Italy
- 15:45–16:15** **COFFEE BREAK**
- 16:15–16:30** **Title:** Techno–Economic Considerations for Production of Commodities/Specialty Chemicals Using Immobilized Biocatalysts [Online]
Ronaldo Pio Rodrigues de Sousa, National Institute of Technology (INT), Brazil
- 16:30–16:45** **Title:** Stereoselective Bio–Organocatalytic Cascade to Chiral Amides as API Intermediates Using ω –Transaminase and Choline Chloride Under Microwave Irradiation
Salvatore Romano, University of Amsterdam, Netherlands
- 16:45–17:00** **Title:** Advanced MnO_x –Based Catalysts for PROX: Bridging Theory and Application
Alessandro Cajumi, CNR–ITAE, Italy
- 17:00–17:15** **Title:** Partial Hydrogenation of Alkynes Using Carbohydrates as Alternative Hydrogen Source on Pt/C
Till De Cahsan, Leibniz Institute for Catalysis e. V., Germany
- 17:15–17:30** **Title:** Catalytic Pyrolysis of Mixed Plastic Waste in a Two–Stage Fluidized Bed Reactor
Piotr Trochimczyk, Warsaw University of Technology, MARTEX, Poland
- 17:30–17:45** **Title:** Fatty Acid Upgrading to Linear Olefins Over Aminophosphine–Derived Precatalysts
Sibongile Pikoli, University of South Africa, South Africa

17:45
ONWARDS **Closing**



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WE WISH TO SEE YOU AT CATSCIENCE-2027



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chairs@catalysis-science.com

Australia: +61 390163202

Prism Scientific Services Pty Ltd

302/480 Collins Street, Melbourne, VIC 3000, Australia

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