

Curriculum Vitae of Federico Franco

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Nationality	Italian
Date of birth	14/07/1988 (Torino, Italy)

1. SUMMARY OF RESEARCH ACTIVITY

Over the past decade, I have developed a strong and multidisciplinary scientific background in the fields of electrochemistry and (photo)electrocatalysis, working in five internationally recognized research institutions across four different EU countries (Italy, Spain, Germany, and Czech Republic). This international experience has broadened my scientific perspective and has given me the opportunity to integrate my expertise within diverse, interdisciplinary environments, paving the way to new research lines. My research activity focuses on the fundamental understanding of catalytic processes for sustainable energy conversion, with particular emphasis on electrochemical and photoelectrochemical systems, as a basis for an improved rational catalyst design. My work spans from molecular homogeneous catalysis to nanostructured and hybrid heterogeneous systems, covering a large variety of processes, including CO₂ reduction reaction, water splitting, ammonia synthesis and organic transformations.

To summarize, my areas of expertise can be divided into three main research lines:

- 1) Molecular Electrocatalysis, Photocatalysis, and Photoelectrocatalysis.** My research in this field has focused on the development and study of transition metal-based complexes as homogeneous or heterogenized catalysts for energy-related transformations, including CO₂ reduction, hydrogen evolution and conversion of organic substrates. Using these molecular systems as model platforms, my research aims to investigate structure–function relationships in (photo)electrocatalysis, exploring the effect of the chemical environment on the reactivity of the catalytic metal center, in terms of selectivity, activity and stability.
- 2) Design and development of nanomaterials and hybrid interfaces for heterogeneous electrocatalysis.** In parallel, I have worked extensively on the development of heterogeneous catalytic materials for the electrochemical conversion of CO₂ into value-added products and fuels, as well as for the electrosynthesis of ammonia from various nitrogen sources, including nitrate, nitrite, and N₂. My expertise encompasses a wide range of materials, such as Covalent Organic Frameworks (COFs), Metal–Organic Frameworks (MOFs), single-atom catalysts (SACs), and nanostructured electrodes. A key aspect of my research in this area involves the design of hybrid electrified interfaces, where molecular functionalities are integrated with heterogeneous nanomaterials to enhance their catalytic performances, tune their selectivity and improve their durability under electrochemical conditions.

- 3) ***In Situ* and *Operando* spectroscopic investigation of catalytic mechanisms.** A distinctive feature of my research lies in the use of advanced *operando* spectroscopy and *in situ* spectroelectrochemical techniques in combination with conventional electrochemical techniques, to investigate catalytic processes at a molecular level. This approach enables the experimental detection and characterization of key intermediate species involved in catalysis, thus providing essential insights into the mechanistic pathways of both homogeneous and heterogeneous systems. Moreover, by applying these methods to materials, my research aims to investigate the structural and functional changes occurring in the materials during the electrocatalytic reactions.

2. PROFESSIONAL EXPERIENCE: CAREER AND EDUCATION

<p>3rd April 2023 – present</p> 	<p>Assistant Professor, Tenure Track (Ricercatore a Tempo Determinato / tipo B, RTD-B) at the Department of Chemical and Pharmaceutical Sciences (DSCF) of the University of Trieste (Italy)</p>
<p>1st May 2021 – 17th March 2023</p> 	<p><i>Juan de la Cierva Incorporacion</i> researcher (IJC2019-042363-I /AEI/10.13039/501100011033) at the Institute of Chemical Research of Catalonia (ICIQ), The Barcelona Institute of Science and Technology, Tarragona, Spain Advisor: <u>Prof. Emilio Palomares</u></p> <p><u>Research topics and tasks:</u> Research activity focused on the development of hybrid molecular-nanostructured materials and photocathodes functionalized with molecular systems for electrocatalytic and photoelectrocatalytic CO₂ conversion. Implementation and coordination of a laboratory unit in the ICIQ Research support area specifically dedicated to the study of energy-conversion catalytic processes. Coordination and management of national/international projects of the group related to solar fuels and catalysis.</p>
<p>1st May 2019 – 30th April 2021</p> 	<p>Postdoctoral researcher at the Fritz-Haber Institut (FHI) of the Max Planck Society, Department of Interface Science, Berlin, Germany Advisor: <u>Prof. Beatriz Roldan Cuenya</u></p> <p><u>Research topics and tasks:</u> Development of nanostructured catalysts (mainly copper-based) for CO₂ electroreduction and ammonia electrosynthesis from various nitrogen sources (N₂, NO_x⁻). Implementation of a workstation dedicated to ammonia electrosynthesis and setup of experimental procedures for carrying out research in this field. Utilization of advanced spectroscopy to investigate the structural evolution of nanocatalysts under electrochemical conditions.</p>
<p>1st March 2018 – 12th April 2019</p> 	<p>Postdoctoral researcher at the Institute of Chemical Research of Catalonia (ICIQ), The Barcelona Institute of Science and Technology, Tarragona, Spain Advisor: <u>Prof. Julio Lloret-Fillol</u></p> <p><u>Research topics and tasks:</u> Contract funded by ERC Consolidator Grant of Prof. Lloret-Fillol (H2020-ERC-2015-CoG (648304) (GREENLIGHT_REDCAT).</p>

	<p>Research activity focused on the design and study of molecular catalysts for the light-driven and electrochemical conversion of small molecules, including CO₂ reduction, H₂ evolution and organic transformations. Mechanistic studies and characterization of key reaction intermediates in photocatalysis and electrocatalysis.</p>
<p>1st March 2016 – 28th February 2018</p> 	<p>Marie Curie-COFUND Fellow under the COFUND programme (291787-ICIQ-IPMP and Severo Ochoa Program, SEV-2013-0319) at the Institute of Chemical Research of Catalonia (ICIQ), The Barcelona Institute of Science and Technology, Tarragona, Spain Advisor: <u>Prof. Julio Lloret-Fillol</u></p> <p><u>Research topics and tasks:</u> Synthesis and study on earth-abundant transition metal molecular catalysts for electrocatalytic CO₂ reduction; utilization of electrochemical and <i>in situ</i> spectroelectrochemical techniques to elucidate mechanistic details of CO₂ electroreduction catalyzed by molecular systems.</p>
<p>1st January 2013 – 31st December 2015</p> 	<p>PhD in Chemical and Material Sciences (XXVIII cycle, CHIM/03) at the Università degli Studi di Torino, Italy PhD Supervisor: <u>Prof. Roberto Gobetto</u></p> <p><i>PhD Thesis (defended on 29/01/2016):</i> “Design and development of Group VII and VI transition metal complexes for electro- and photocatalytic conversion of carbon dioxide”</p> <p><u>Research topics and tasks:</u> synthesis, design and mechanistic investigation of molecular complexes based on Group VI (Mo, W) and Group VII (Mn, Re) transition metals with polypyridyl ligands as homogeneous catalysts for photochemical and electrochemical CO₂ reduction reaction.</p>
<p>October 2014 – February 2015</p> 	<p>Visiting PhD fellow at the J. Heyrovsky Institute of Physical Chemistry, Department of Molecular Electrochemistry, Prague, Czech Republic Supervisors: <u>Ing. CSc. Jan Fiedler</u> and <u>Mgr. Ph. D. Magdaléna Hromadova</u></p> <p><u>Research topics and tasks:</u> experimental mechanistic studies based on <i>in situ</i> spectroelectrochemical techniques (UV-Vis, FTIR) to investigate the electrochemical behavior of molecular complexes and electrocatalytic reactions.</p>
<p>October 2010 – October 2012</p>	<p>Master’s Degree in Advanced Methodologies in Chemistry at the Università degli Studi di Torino, Italy <i>Thesis Title:</i> "A computational and experimental Solid-State NMR study on potential hydrogen storage materials" (110/110, <i>cum laude</i>) Supervisor: <u>Prof. Roberto Gobetto</u></p>
<p>March 2010 – June 2010</p>	<p>Internship at the Laboratorio Chimico della Camera di Commercio, Torino, Italy</p>
<p>October 2007 – October 2010</p>	<p>Bachelor’s Degree in Chemistry at the Università degli Studi di Torino, Italy <i>Thesis Title:</i> "Hyperpolarization and MRI applications" (110/110, <i>cum laude</i>) Supervisor: <u>Prof. Roberto Gobetto</u></p>

3. SCIENTIFIC PUBLICATIONS (PEER-REVIEWED)

- **1865 citations** (source: Scopus as of February 19th, 2026)
- **H-index = 18** (source: Scopus as of February 19th, 2026)

Scopus, Link: [\[here\]](#)

Google Scholar, Link: [\[here\]](#)

ORCID: 0000-0002-1166-1256. Link: [\[here\]](#)

(* corresponding authors)

1	M. Vettori, F. Franco , S. Fernández, G. Pey, V. Martin Diaconescu, J. M. Luis, J. Lloret-Fillol, <i>Angew. Chem. Int. Ed.</i> 2026 , e8293935
2	A. Yoon, L. Bai, F. Yang, F. Franco , C. Zhan, M. Rüscher, J. Timoshenko, C. Pratsch, S. Werner, H. S. Jeon, M. Cecilio de Oliveira Monteiro, S. W. Chee, B. Roldan Cuenya, Revealing catalyst restructuring and composition during nitrate electroreduction through correlated operando microscopy and spectroscopy, <i>Nature Materials</i> 2025 , <i>24</i> , 762–769
3	G. Sportelli, M. Marchi, P. Fornasiero, G. Filippini*, F. Franco* , M. Melchionna*, Photoelectrocatalysis for Hydrogen Evolution Ventures into the World of Organic Synthesis, <i>Global Challenges</i> 2024 , <i>8</i> , 2400012
4	L. Bai,# F. Franco ,# J. Timoshenko, C. Rettenmaier, F. Scholten, H. Sang Jeon, A. Yoon, M. Rüscher, A. Herzog, F. T. Haase, S. Kühn, S. Wee Chee, A. Bergmann, B. Roldan Cuenya, <i>J. Am. Chem. Soc.</i> 2024 , <i>146</i> , 9665–9678 (# equal contribution)
5	F. Mancuso, P. Fornasiero, M. Prato, M. Melchionna*, F. Franco* , G. Filippini*, Nanostructured Electrocatalysts for Organic Synthetic Transformations, <i>Nanoscale</i> 2024 , <i>16</i> , 5926-5940.
6	G. C. Dubed Bandomo, F. Franco , C. Liu, S. S. Mondal, A. Gallo, C. Nervi, J. Lloret-Fillol, Toward the Understanding of the Structure–Activity Correlation in Single-Site Mn Covalent Organic Frameworks for Electrocatalytic CO ₂ Reduction, <i>ACS Appl. Energy Mater.</i> 2024 , <i>7</i> , 3, 1348
7	S. Fernández; F. Franco* ; M. Martínez; S. Friães; B. Royo; J. M. Luis*; J. Lloret-Fillol*; Decoding the CO ₂ Reduction Mechanism of a Highly Active Organometallic Manganese Electrocatalyst: Direct Observation of a Hydride Intermediate and its Implications, <i>ACS Catalysis</i> 2023 , <i>13</i> , <i>15</i> , 10375–10385
8	B. Domingo-Tafalla, T. Chatterjee, F. Franco , J. Perez Hernandez, E. Martínez-Ferrero, P. Ballester, E. Palomares-Gil; Electro- and Photoinduced Interfacial Charge Transfers in Nanocrystalline Mesoporous TiO ₂ and TiO ₂ /Iron Porphyrin Sensitized Films under CO ₂ Reduction Catalysis, <i>ACS Appl. Mater. Interfaces</i> 2023 , <i>15</i> , 14304–14315
9	B. Domingo-Tafalla, E. Martínez-Ferrero, F. Franco ,* E. Palomares-Gil*, Applications of Carbon Dots for the Photocatalytic and Electrocatalytic Reduction of CO ₂ , <i>Molecules</i> 2022 , <i>27</i> , 1081

10	S. Fernández, S. Cañellas, F. Franco , J. M. Luis, M. À. Pericàs, J. Lloret-Fillol, The Dual Effect of Coordinating –NH Groups and Light in the Electrochemical CO ₂ Reduction with Pyridylamino Co Complexes, <i>ChemElectroChem</i> 2021 , 8 (23), 4456-4465 (Cover Feature)
11	G. C. Dubed Bandomo, S. S. Mondal, F. Franco ; A. Bucci, V. Martin-Diaconescu, M. A. Ortuño, P. H. van Langevelde, A. Shafir, N. López, J. Lloret-Fillol, Mechanically Constrained Catalytic Mn(CO) ₃ Br Single Sites in a Two-Dimensional Covalent Organic Framework for CO ₂ Electroreduction in H ₂ O, <i>ACS Catalysis</i> 2021 , 11 (12), 7210–7222
12	C. Casadevall, V. Martin-Diaconescu, W. R. Browne, S. Fernández, F. Franco , N. Cabello, J. Benet-Buchholz, B. Lassalle-Kaiser, J. Lloret-Fillol, Isolation of a Ru(IV) side-on peroxo intermediate in the water oxidation reaction, <i>Nature Chemistry</i> 2021 , 13, 800–804
13	F. Franco ; C. Rettenmaier; H. Jeon; B. Roldan Cuenya; Transition metal-based catalysts for the electrochemical CO ₂ reduction: from atoms and molecules to nanostructured materials, <i>Chem. Soc. Rev.</i> 2020 , 49 (19), 6884-6946
14	S. Fernández, # F. Franco ,# C. Casadevall; V. Martin-Diaconescu; J. M. Luis; J. Lloret-Fillol; A Unified Electro- and Photocatalytic CO ₂ to CO Reduction Mechanism with Aminopyridine Cobalt Complexes, <i>J. Am. Chem. Soc.</i> 2020 , 142, 1, 120-133 (# equal contribution)
15	F. Franco ; S. Fernández; J. Lloret-Fillol; Advances in the electrochemical catalytic reduction of CO ₂ with metal complexes, <i>Current Opinion in Electrochemistry</i> 2019 , 15, 109-117
16	M. Claros; F. Ungeheuer; F. Franco ; V. Martin-Diaconescu; A. Casitas; J. Lloret-Fillol; Reductive Cyclization of Unactivated Alkyl Chlorides with Tethered Alkenes under Visible-Light Photoredox Catalysis, <i>Angew. Chem. Int. Ed.</i> 2019 , 58, 4869–4874; <i>Angew. Chem.</i> 2019 , 131 (15), 4923-4928.
17	M. F. Pinto; S. Friães; F. Franco ; J. Lloret-Fillol; B. Royo; Manganese N-Heterocyclic Carbene Complexes for Catalytic Reduction of Ketones with Silanes, <i>ChemCatChem</i> 2018 , 10, 2734 –2740 (Cover page, Front Cover).
18	F. Franco ; M. Pinto; B. Royo; J. Lloret-Fillol; A Highly Active N-Heterocyclic Carbene Manganese(I) Complex for Selective Electrocatalytic CO ₂ Reduction to CO, <i>Angew. Chem. Int. Ed.</i> 2018 , 57, 4603–4606; <i>Angew. Chem.</i> 2018 , 130, 4693–4696.
19	O. González-del Moral; A. Call; F. Franco ; A. Moya; J. A. Nieto-Rodríguez; M. Frias; J. L. Fierro; M. Costas; J. Lloret-Fillol; J. Alemán; R. Mas-Ballesté; Bioinspired Electro-Organocatalytic Material Efficient for Hydrogen Production, <i>Chem. Eur. J.</i> 2018 , 24, 3305 – 3313.
20	A. Call; F. Franco ; N. Kandoth; S. Fernández; M. González-Béjar; J. Perez-Prieto; J. M. Luis; J. Lloret-Fillol; Understanding light-driven H ₂ evolution through the electronic tuning of aminopyridine cobalt complexes, <i>Chem. Sci.</i> 2018 , 9, 2609-2619 (Highlighted by Editor)
21	M. Wang, V. Artero, L. Hammarström, J. Martinez, J. Karlsson, D. Gust, P. Summers, C. Machan, P. Brueggeller, C. D. Windle, Y. Kageshima, R. Cogdell, K. R. Tolod, A. Kibler, D. H. Apaydin, E. Fujita, J. Ehrmaier, S. Shima, E. Gibson, F. Karadas, A. Harriman, H. Inoue, A. Kudo, T. Takayama, M. Wasielewski, F. Cassiola, M. Yagi, H. Ishida, F. Franco , S. O. Kang, D. Nocera, C. Li, F. Di Fonzo, H. Park, L. Sun, T. Setoyama, Y. S. Kang, O. Ishitani,

	J. R. Shen, H.-J. Son, S. Masaoka, Molecular catalysts for artificial photosynthesis: general discussion, <i>Faraday Discuss.</i> , 2017 , 198, 353-395 (<i>Discussion</i>)
22	F. Franco ; C. Cometto; L. Nencini; C. Barolo; F. Sordello; C. Minero; J. Fiedler; M. Robert; R. Gobetto; C. Nervi; Local Proton Source in Electrocatalytic CO ₂ Reduction with [Mn(bpy-R)(CO) ₃ Br] Complexes, <i>Chem. Eur. J.</i> 2017 , 23, 4782 – 4793 (Cover page, Frontispiece)
23	F. Franco ; C. Cometto; F. Sordello; C. Minero; L. Nencini; J. Fiedler; R. Gobetto; C. Nervi; Electrochemical Reduction of CO ₂ by M(CO) ₄ (diimine) Complexes (M=Mo, W): Catalytic Activity Improved by 2,2'-Dipyridylamine, <i>ChemElectroChem</i> 2015 , 2, 1372 – 1379.
24	F. Franco ; C. Cometto; C. Garino; C. Minero; F. Sordello; C. Nervi; R. Gobetto; Photo- and Electrocatalytic Reduction of CO ₂ by [Re(CO) ₃ { α,α' -Diimine-(4-piperidinyl-1,8-naphthalimide)}Cl] Complexes, <i>Eur. J. Inorg. Chem.</i> 2015 , 296-304.
25	F. Franco ; C. Cometto; F. Ferrero Vallana; F. Sordello; E. Priola; C. Minero; C. Nervi; R. Gobetto; A local proton source in a [Mn(bpy-R)(CO) ₃ Br]-type redox catalyst enables CO ₂ reduction even in the absence of Brønsted acids, <i>Chem. Comm.</i> 2014 , 50 (93), 14670 – 14673.
26	F. Franco ; M. Baricco; M. R. Chierotti; R. Gobetto; C. Nervi; Coupling Solid-State NMR with GIPAW ab Initio Calculations in Metal Hydrides and Borohydrides, <i>J. Phys. Chem. C</i> 2013 , 117, 9991–9998.

4. TEACHING ACTIVITY (with related exams)

I have carried out academic teaching activities (both **classroom-based lectures** and **laboratory sessions**) across all three levels of higher education in the field of chemistry, including:

- **Undergraduate courses** (Bachelor's Degree level)
- **Graduate courses** (Master's Degree level)
- **Doctoral courses** (PhD level)

Teaching language: Italian, English

Report on student evaluation at the following link to the **SISValDidat Portal**: [\[here\]](#)

Academic year	Course
2025/2026	Chemistry (007MG – General Chemistry part) (48 hours) <i>Lectures (English)</i> – Bachelor's degree in Earth Sciences for Sustainable Development (1 st year) at the Department of Mathematics, Informatics and Geosciences, University of Trieste
2024/2025 and 2023/2024	Electrochemical methods for sustainable chemical production (DR17003 – 8 hours) <i>Lectures (English)</i> – PhD Course of the PhD Program in Chemistry at the Department of Chemical and Pharmaceutical Sciences (DSCF), University of Trieste.

2024/2025	Inorganic Electrochemistry and electrocatalysis (035CM – 36 hours) <i>Lectures + Laboratory activity (English)</i> – Master’s Degree in Chemistry, at the Department of Chemical and Pharmaceutical Sciences (DSCF), University of Trieste.
2024/2025	Synthesis and reactivity of nanomaterials (027CM – 16 hours) <i>Lectures (English)</i> – Master’s degree in Chemistry, at the Department of Chemical and Pharmaceutical Sciences (DSCF), University of Trieste
2024/2025 and 2023/2024	Chimica Inorganica con Laboratorio (105SM – 44 hours) <i>Lectures + Laboratory activity (Italian)</i> – Bachelor’s Degree in Chemistry (3 rd year), at the Department of Chemical and Pharmaceutical Sciences (DSCF), University of Trieste
2024/2025 and 2023/2024	C.I. Scienze Chimiche e Fisiche (064ME – General and Inorganic Chemistry part) (20 hours) <i>Lectures (Italian)</i> – Bachelor’s Degree in “Tecniche della prevenzione nell’ambiente e nei luoghi di lavoro” (1 st year), University of Trieste (Polo Universitario Goriziano)
2023/2024	Elettrochimica Inorganica ed Elettrocatalisi (021CM – 32 hours) <i>Lectures (Italian)</i> – Master’s Degree in Chemistry, at the Department of Chemical and Pharmaceutical Sciences (DSCF), University of Trieste. Report on student evaluation not available (< 5 evaluations).
2013/2014 and 2012/2013	General and Inorganic Chemistry - Assistant Lecturer (docente a contratto) (<i>Language: Italian</i>) - BSc course at Scuola Universitaria Interdipartimentale in Scienze Strategiche (SUISS), Università degli Studi di Torino

5. SUPERVISION AND MENTORING ACTIVITY

Supervisor of thesis	
April 2025 – July 2025	Supervisor of BSc thesis (Bachelor’s Degree) Student: <i>Federico Zorzenon</i> (DSCF, <u>University of Trieste</u>) Thesis title: “ <i>Conversione elettrochimica della CO₂ in elettrolita acquoso con un catalizzatore molecolare a base di manganese con leganti carbenici</i> ” (Defended on 18 th July 2025)
June 2024 – September 2024	Supervisor BSc thesis (Bachelor’s Degree) Student: <i>Giacomo Bianchini</i> (DSCF, <u>University of Trieste</u>) Thesis title: “ <i>Studio elettrochimico su un complesso di Mn con legante piridinico-NHC per la riduzione elettrocatalitica della CO₂</i> ” (Defended on 20 th September 2024)

January 2024 - present	<p>Supervisor of PhD thesis (PhD Program in Chemistry, 39th cycle) Student: <i>Francesco Mancuso</i> (DSCF, <u>University of Trieste</u>)</p> <p>PhD Scholarship co-funded by the National Recovery and Resilience Plan (PNRR) (Ministerial Decree 118/2023)</p>
Co-supervisor of thesis	
May 2025 - present	<p>Co-supervisor of MSc thesis (Master's Degree) Student: <i>Alessandro Casarin</i> (<u>Università Milano-Bicocca</u>, Italy) Supervisor: Prof. Massimiliano D'Arienzo (<u>Università Milano-Bicocca</u>, Italy)</p> <p>The experimental work related to the thesis project is entirely or predominantly carried out at the Department of Chemical and Pharmaceutical Sciences (DSCF) of the University of Trieste.</p>
December 2022 - present	<p>Co-supervisor of PhD thesis (PhD Program "Technologies for Nanosystems, Bioengineering and Energy" of the Universitat Rovira i Virgili (URV), Tarragona, Spain) Student: <i>Joan Marc Bondia</i> (<u>ICIQ, Universitat Rovira i Virgili</u>) Supervisor: Prof. Emilio Palomares (ICIQ)</p>
November 2021 – July 2022	<p>Co-supervisor of MSc thesis (Master's degree in Synthesis, Catalysis and Molecular design of the Universitat Rovira i Virgili (URV), Tarragona, Spain) Student: <i>Joan Marc Bondia</i> (<u>ICIQ, Universitat Rovira i Virgili</u>) Supervisor: Prof. Emilio Palomares (ICIQ)</p> <p>Thesis title: "<i>Copper-based hybrid nanomaterials for the electrocatalytic reduction of CO₂</i>" (Defended on 25th July 2022)</p>

Supervision and mentoring of the research activity of several Master and PhD students in the period 2013-2022, including: Federico Ferrero-Vallana (Università degli Studi di Torino); Marcel Buen, Sergio Fernandez-Martin, Geyla Dubed-Bandomo, Beatriu Domingo-Tafalla (ICIQ).

6. CONTRIBUTIONS AT CONFERENCES AND SEMINARS

Invited Oral communications	
June 26 th – 28 th 2024	<p>Invited talk at 2024 Summer Workshop of the Doctorate in Chemistry, University of Trieste Title: "<i>From molecular to hybrid catalysts: new frontiers in CO₂ electroreduction</i>"</p>
June 16 th 2023	<p>Invited seminar at Università degli Studi di Padova, Italy Title: "<i>Molecular strategies for rational catalyst design in CO₂ electroreduction</i>"</p>
June 24 th 2022	<p>Invited seminar at University of Trieste</p>

	Title: “ <i>A molecular approach for rational catalyst design and understanding CO₂ electrochemical reduction</i> ”
September 4 th 2020	Invited seminar (online) at <u>Università degli Studi di Padova</u> , Italy Title: “ <i>Molecular catalysts for electrochemical CO₂ reduction based on earth-abundant transition metals: a mechanistic perspective</i> ”
July 30 th – August 4 th 2018	Invited talk at 43rd International Conference on Coordination Chemistry (ICCC), (Sendai, Japan) Title: “ <i>Novel tricarbonyl Mn catalysts based on N-heterocyclic Carbene ligands for efficient electrochemical CO₂ reduction</i> ”
Oral contributions at Conferences	
September 15 th – 18 th 2025	E-MRS 2025 Fall Meeting , Warsaw (Poland) Title: “ <i>Molecularly tailored nano hybrids for efficient electrocatalytic CO₂ reduction</i> ”
September 12 th – 15 th 2023	XLIX Italian Conference of Inorganic Chemistry , Perugia (Italy) Title: “ <i>Mechanistic Insights of Electrochemical CO₂ Reduction Catalyzed by Manganese N-Heterocyclic Carbene Complexes</i> ”
March 6 th - 10 th 2023	NanoGe Spring Meeting, Materials for Sustainable Development Conference (MATSUS) & Sustainable Technology Forum (STECH), #e-FuelSyn - Electrocatalysis for the Production of Fuels and Chemicals , Valencia (Spain) Title: “ <i>From molecules to nanostructured materials: novel opportunities for electrocatalytic CO₂ reduction</i> ”
November 29 th - 30 th 2018	INL Workshop on Solar Fuel Production Based on Nanostructured Photoelectrodes and Catalysts , Braga (Portugal) Title: “ <i>N-heterocyclic carbenes as alternative platforms for electrocatalytic CO₂ reduction by tricarbonyl Mn complexes</i> ”
November 22 nd - 24 th 2017	Workshop H₂BioCatO₂ 2017 , Castellon (Spain) Title: “ <i>Novel efficient Mn(I) Electrocatalysts for CO₂ Reduction based on N-heterocyclic Carbene ligands</i> ”
March 27 th -28 th 2015	Consorzio Interuniversitario per la Reattività Chimica e la Catalisi (CIRCC), XII PhD Day , Bari (Italy) Title: “ <i>Recent developments in Group VI and VII transition metal homogeneous catalysts for CO₂ electro- and photoreduction</i> ”
Selected poster contributions at Conferences	
October 24 th – 27 th 2022	NanoGe Fall Meeting, Proceedings of Materials for Sustainable Development Conference (MAT-SUS) (NFM22) #Suschem- Materials and electrochemistry for sustainable fuels and chemicals , Barcelona (Spain) Title: “ <i>Well-defined hybrid Copper-based nanoreactors for electrocatalytic CO₂ reduction</i> ”

April 3 rd – 6 th 2018	Girona Seminar 2018: Predictive Catalysis – Transition-Metal Reactivity by Design , Girona (Spain) Title: “ <i>Highly active N-heterocyclic carbene Mn(I) electrocatalysts for CO₂ reduction</i> ”
January 26 th – February 2 nd 2018	Gordon Research Conference – Renewable Energy: Solar Fuels , Ventura, CA (USA) Title: “ <i>Novel efficient N-heterocyclic carbene tricarbonyl Mn(I) catalysts for electrochemical CO₂ reduction to CO</i> ”
February 28 th – March 2 nd 2017	Artificial Photosynthesis: Faraday Discussion , Kyoto (Japan) Title: “ <i>Electrocatalytic CO₂ reduction by aminopyridine cobalt complexes: electronic effect of substituents on the pyridyl ring and mechanistic insights</i> ”
September 7 th – 12 th 2014	XXV National Congress of the Italian Chemical Society , Rende (Italy) Title: “ <i>Novel Re(I) based catalysts for CO₂ Photo- and Electrocatalytic reduction at low overpotential</i> ”
June 23 rd – 27 th 2013	46th Heyrovsky Discussion , Třešť (Czech Republic) Title: “ <i>Synthesis and Electrochemical Studies of Rhenium(I) and Molybdenum(0) Complexes as Electrocatalysts for Reduction of Carbon Dioxide</i> ”

7. RESEARCH FUNDING AND PARTICIPATION IN RESEARCH PROJECTS

Research Funding as Principal Investigator	
1	Ricerca e Innovazione per Sviluppare l'Ecosistema dell'H₂ (RISE-H2) – 2026 <u>Funding agency:</u> Region Friuli-Venezia Giulia (Italy) <u>Funded amount:</u> 370 k€
2	Helmholtz Zentrum Berlin (HZB) Research Proposal for beamtime (Proposal ID: EMF-261-00006): “ <i>Porous molecular films improving CO₂ electroreduction to ethylene on copper catalysts in aqueous media</i> ” – 2025
3	Proposal for beamtime at Elettra Synchrotron (Proposal ID: 20245128) – “ <i>Advanced surface characterization and operando spectroscopy for the study of well-defined hybrid copper-based nanoreactors for CO₂ electroreduction</i> ” – 2024
4	Microgrants 2024 – “ <i>Bio-inspired hybrid electrodes for sustainable electrocatalysis</i> ” – 2024 <u>Funding agency:</u> Region Friuli-Venezia Giulia (Italy) <u>Total Amount:</u> 5 k€
5	PhD Scholarship co-funded by the National Recovery and Resilience Plan (PNRR) (Ministerial Decree 118/2023) at Department of Chemical and Pharmaceutical Sciences (University of Trieste, 39 th PhD cycle) (Candidate: Francesco Mancuso) – 2023 <u>Funding agency:</u> Ministero dell'Università e della Ricerca (Italy)

Participation in research projects	
1	<p>PhotoElectrocatalytic smart Systems for CHEmicals and FUels production (PESCHE-FU) – 2025 <u>Funding agency:</u> Ministero dell’Università e della Ricerca (Italy) <u>Principal Investigator:</u> Prof. Paolo Fornasiero</p>
2	<p>PRoduzione sostenibile di IDrogeno tramite sistemi fotoElettrochimici attivati dalla luce solare (PRIDE) – 2025 <u>Funding agency:</u> Ministero della Transizione Ecologica (Italy) <u>Principal Investigator:</u> Prof. Paolo Fornasiero</p>
3	<p>Infrastruttura per lo sviluppo di Materiali e Processi Avanzati per Contribuire alla Transizione Energetica nella filiera Idrogeno (IMPACT-H2) - 2025 <u>Funding agency:</u> Region Friuli-Venezia Giulia (Italy) <u>Funded Amount:</u> 150 k€ <u>Principal Investigator:</u> Prof. Alessandro Baraldi</p>
4	<p>PHOTORED (“Photocatalytic CO₂ reductions by green hydrogen”, PLEC2021- 007831 / AEI / 10.13039/501100011033) – 2021-2023 <u>Principal Investigator:</u> Prof. Emilio Palomares (ICIQ, Spain)</p>
5	<p>NEFERTITI (“Innovative photocatalysts integrated in flow photoreactor systems for direct CO₂ and H₂O conversion into solar fuels”, Horizon 2020 research and innovation programme under grant agreement No 101022202) – 2021-2023 <u>Principal Investigator:</u> Prof. Emilio Palomares (ICIQ, Spain)</p>

Organization of Conferences	
1	Member of the Organizing Committee of the “International Symposium on Homogeneous Catalysis” held at the University of Trieste from July 21 st -26 th 2024. Link [here]

8. RESEARCH OR TEACHING FELLOWSHIPS AND AWARDS

Nov 2025	<p>Recipient of Erasmus+ Staff Mobility grant for teaching Host Institution: NOVA University of Lisbon (Portugal)</p>
May 2021 – Mar 2023	<p>Juan de la Cierva-Incorporacion Fellowship (IJC2019-042363-I /AEI/10.13039/501100011033) at Institute of Chemical Research of Catalonia (ICIQ), The Barcelona Institute of Science and Technology, Tarragona, Spain Advisor: Prof. Emilio Palomares</p>

Mar 2016 – Feb 2018	Marie Curie-COFUND Fellow under the COFUND programme (291787- ICIQ-IPMP and Severo Ochoa Program, SEV-2013-0319) at Institute of Chemical Research of Catalonia (ICIQ) , The Barcelona Institute of Science and Technology, Tarragona, Spain Advisor: Prof. Julio Lloret-Fillol
Oct 2015	Holland Research School of Molecular Chemistry (HRSMC) Postdoctoral Fellowship at University of Amsterdam, Netherlands – <i>renounced (declined)</i> Hosts: Dr.ir. J. I. van der Vlugt, Dr. S. Grecea and Dr. D. Dubbeldam
2014	Special award for best Master thesis in Chemistry awarded by Università degli Studi di Torino (Italy)
2013	Optime prize awarded by Unione Industriale di Torino (Italy) (special award for best Master’s Degree students in Chemistry of Università degli Studi di Torino)
2011	Optime prize awarded by Unione Industriale di Torino (special award for best Bachelor’s Degree students in Chemistry of Università degli Studi di Torino)
2006	Selected scholarship awarded by Scuola Normale Superiore di Pisa

9. MEMBER OF EVALUATION COMMITTEES

October 15 th 2025	Member of Pre-Degree (pre-laurea) Committee for MSc thesis in Chemistry at DSCF, <u>University of Trieste</u> Candidate: <i>Marco Puntin</i> (Supervisor: Dr. Jacopo Dosso)
October 14 th 2025	Member of Pre-Degree (pre-laurea) Committee for MSc thesis in Chemistry at DSCF, <u>University of Trieste</u> Candidate: <i>Claudia Obersnù</i> (Supervisor: Prof. Albano Cossaro)
July 18 th 2025	Member of Committee for the BSc Degree in Chemistry at DSCF, <u>University of Trieste</u>
July 10 th 2025	Member of Pre-Degree (pre-laurea) Committee for MSc thesis in Chemistry at DSCF, <u>University of Trieste</u> Candidate: <i>Jacopo Masotti</i> (Supervisor: Prof. Mauro Stener)
June 30 th 2025	Member of examining committee for PhD thesis at <u>Università degli Studi di Torino (Italy)</u> (PhD Program in Chemical and Materials Sciences) Candidate: <i>Alice Barbero</i> (Supervisors: Prof. Carlo Nervi, Prof. Claudio Garino)
March 13 th 2025	Member of Pre-Degree (pre-laurea) Committee for MSc thesis in Chemistry at DSCF, <u>University of Trieste</u> Candidate: <i>Gabriele Vian</i> (Supervisor: Dr. Enrico Greco)
March 13 th 2025	Member of Pre-Degree (pre-laurea) Committee for MSc thesis in Chemistry at DSCF, <u>University of Trieste</u> Candidate: <i>Anna Lombardi</i> (Supervisor: Prof. Pierangelo Gobbo)

February 2025	Member of the selection committee for the public recruitment of one (1) fixed-term, part-time (66.7%) Level II Technologist (CHIM/03B2) at the DSCF of the <u>University of Trieste</u>
December 9 th 2024	Member of Pre-Degree (pre-laurea) Committee for MSc thesis in Chemistry at DSCF, <u>University of Trieste</u> Candidate: <i>Fabio Fasciglione</i> (Supervisor: Prof. Silvia Marchesan)
October 17 th 2024	Member of Pre-Degree (pre-laurea) Committee for MSc thesis in Chemistry at DSCF, <u>University of Trieste</u> Candidate: <i>Andrea Minin</i> (Supervisor: Prof. Federico Rosei)
September 20 th 2024	Member of Committee for the BSc Degree in Chemistry at DSCF, <u>University of Trieste</u>
July 18 th 2024	Member of Pre-Degree (pre-laurea) Committee for MSc thesis in Chemistry at DSCF, <u>University of Trieste</u> Candidate: <i>Beniamino Guzzo</i> (Supervisor: Prof. Barbara Milani)
July 17 th 2024	Member of Pre-Degree (pre-laurea) Committee for MSc thesis in Chemistry at DSCF, <u>University of Trieste</u> Candidate: <i>Alessia Vitale</i> (Supervisor: Dr. Stefano Fornasaro)
December 13 th 2023	Member of examining committee for 2nd year of PhD evaluation at <u>University of Pau and Pays de l'Adour (UPPA) (France)</u> Candidate: <i>Leonard Curet</i> (Supervisors: Prof. Laurent Billon, Prof. Emilio Palomares)
October 6 th 2023	Member of examining committee for PhD thesis at <u>University of Trieste (PhD Program in Nanotechnology)</u> Candidate: <i>Matteo Bisetto</i> (Supervisor: Prof. Paolo Fornasiero) Candidate: <i>Edoardo Raciti</i> (Supervisor: Prof. Maurizio Prato, Prof. Roberto Lazzaroni)
August 2023	Member of the Selection Committee for the admission examination to the PhD Program in Chemistry (39th cycle) at the <u>University of Trieste</u> – Scholarships funded by the National Recovery and Resilience Plan (NRRP)
April 27 th 2022	Member of examining committee for PhD thesis at <u>ICIQ, Universitat Rovira i Virgili (URV), Tarragona (Spain)</u> Candidate: <i>Klaudia Michaliszyn</i> (Prof. Julio Lloret-Fillol)
November 10 th 2021	Member of examining committee for 2nd year of PhD evaluation at <u>University of Pau and Pays de l'Adour (UPPA) (France)</u> Candidate: <i>Fábio Vieira</i>

10. ACADEMIC DUTIES

Tutor for the Department of Chemical and Pharmaceutical Sciences (DSCF) of the University of Trieste, responsible for the organization and implementation of a scientific seminar program promoted by the Foundation “I Lincei per la Scuola” (2025/2026). Link: [\[here\]](#)

11. OUTREACH ACTIVITIES (THIRD MISSION)

Participation at the Project: “*Ammoniaca: la molecola che sfama il mondo*” promoted by the National Recovery and Resilience Plan (NRRP) at the University of Trieste (2023/2024 and 2024/2025).

Proponent: Prof. Enzo Alessio

12. NATIONAL QUALIFICATIONS (ITALY)

National Scientific qualification as Associate Professor (professore universitario di Seconda Fascia) in the Italian higher education system for the disciplinary field of 03/B1 – Principles of chemistry and inorganic systems. Validity of the qualification: from 06/12/2023 to 06/12/2035.

13. REFEREE ACTIVITY

Research and projects evaluation: Deutsche Forschungsgemeinschaft (DFG, German Research Foundation); ERC-AdG; Czech Academy of Sciences

Peer-reviewed international journals: 1. Nature Communications, 2. Angewandte Chemie, 3. Journal of the American Chemical Society, 4. Advanced Functional Materials, 5. Small, 6. ACS Catalysis, 7. Electrochemical Energy Reviews, 8. Chemistry – A European Journal, 9. ChemElectroChem, 10. ChemCatChem, 11. Electrocatalysis, 12. Dalton Transactions, 13. European Journal of Inorganic Chemistry, 14. Journal of Applied Electrochemistry, 15. Catalysts, 16. Inorganica Chimica Acta

14. LANGUAGES

Italian (mother tongue)

English (fluent in both written and oral forms)

Spanish (fluent in both written and oral forms)

Trieste, 19th February 2026

