PERSONAL INFORMATION

Surname: Lanzafame
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Date of birth: 10/07/1976
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ORGANIZATION University of Messina, Department of Chemical, Biological, Pharmaceutical and Environmental Sciences (ChiBioFarAm) & INSTM CASPE (Lab. of Catalysis for Sustainable Production & Energy)

ACTUAL POSITION Associate Professor in Industrial Chemistry (03/CHEM-04), University of Messina

DEGREE PhD in Engineering and Chemistry of Materials (2006, University of Messina)

SUMMARY

Paola Lanzafame obtained her PhD in Engineering and Chemistry of Materials in 2006 from the University of Messina. From 2005 to 2010, she held a fixed-term position in Scientific and Strategic Management for the IDECAT Network of Excellence, working with INSTM. She was assistant professor from 2011 to 2021 and is associate professor of Industrial Chemistry (03/CHIM-04) at the University of Messina since 2022.
She is a member of the Academic Board of the International and Intersectoral (industrial) Innovative Doctorate Program, "ADVANCED CATALYTIC PROCESSES FOR USING RENEWABLE ENERGY SOURCES" (ACCESS). She has also served as Treasurer and Secretary of the Board of Directors for the Italian Zeolite Association (AIZ).
Her research primarily focuses on sustainable chemical processes in the areas of heterogeneous catalysis, photo- and electrocatalysis, and the catalytic conversion of biomass and CO2 into biofuels and high value-added chemicals. A particular emphasis of her work is the development, synthesis, characterization, and application of nanostructured catalytic materials.
In 2023, she obtained the National Scientific Qualification as Full Professor.

EDUCATION AND CAREER

2022-today Associate Professor (03/CHEM-04 – Industrial Chemistry), University of Messina

2011-2022 Assistant Professor (03/CHEM-04 – Industrial Chemistry), University of Messina

2010-2011 Research fellow, University of Messina

2005-2006 Post-doctoral contract, Scientific and Strategic Management of the IDECAT Network of Excellence "Integrated Design of Catalytic Nanomaterials for a Sustainable Production", INSTM Consortium

2003-2006 Doctorate in Engineering and Chemistry of Materials, University of Messina

2002-2003 INSTM Scholarship European project SUPER "Use of supercritical conditions for developing eco-efficient catalytic processes in chemical"

SCIENTIFIC RESPONSIBILITY OF PROJECTS

2023-today BOMBCAT Project "*Boosting efficiency and selectivity in CO_2 conversion with Multilayer Bifunctional photo-Catalysts*" (Prin 2022 PNRR – ERC PE4 "Physical and Analytical Chemical Science", P202253ANE)

2017-2022 RECODE Project *"Recycling carbon dioxide in the cement industry to produce added-value additives: a step towards a CO_2 circular economy"* (Project ID: 768583, Call H2020-SPIRE-2017);

2014-2016 ERANET CAPITA Project WAVES *"WAste bio-feedstocks hydro-Valorisation processES"*, (Project ID: 266543, FP7 - ERA-NET CAPITA);

2005-2012 Network of Eccellence IDECAT (Integrated Design of Catalytic Nanomaterials for a Sustainable Production Instrument, contract n°: NMP3-CT-2005-011730, Thematic Priority: NMP)

PROJECTS PARTICIPATION

National Projects

PRIN project (Year 2015 – Prot. 2015K7FZLH_004) “Solar driven chemistry: new materials for photo- and electro-catalysis (SMARTNESS)” (2017-2018);

PRIN project (Years 2010-2011 - 2010H7PXLC_006) “Innovative processes for the conversion of algal biomass for the production of jet fuel and green diesel”(2013-2016);

PON project (PON02_00355_3391233) "Technologies for energy and energy efficiency" (2012-2015);

PON project (PON01_01725 FOTOVOLTAICO) " New photovoltaic technologies for intelligent systems integrated in buildings" (2011-2015);

RILTUS project (Sicily Region PO FESR 2007/2013) “Integrated Network of Technological Laboratories of Sicilian Universities” (2011-2015);

PRIN project (Year 2007-200775CREC_002), “H_2 production by photo-reforming from (ligno) cellulose hydrolysis solutions using TiO_2 nanostructured thin films” (2008-2010);

International Projects

EU project EPOCH (HORIZON-EIC-2021-PATHFINDER CHALLENGES-01, Grant Number 101070976” “Electrocatalytic Production of liquid Organic hydrogen carrier and Chemicals from lignin”

EU project A-LEAF (H2020_FETPROACT-01-2016-RIA) “An Artificial Leaf: a photo- electro-catalytic cell from earth-abundant materials for sustainable solar production of CO_2-based chemicals and fuels” (2017-2021);

EU project SUPER (EU G5RD-CT2001-00519) “Use of supercritical conditions fordeveloping eco-efficient catalytic processes in chemical industry” (2002-2003)

TEACHING ACTIVITY

from 2022-today ***Responsible for the following courses (Univ. of Messina)*:**

- *Science and Technology of Polymeric Materials* (6CFU), Dept. ChiBioFarAm M.Sc. Chemistry. From AY 2022/23.
- *Environmental Impact Reduction Technologies* (6CFU), Dept. ChiBioFarAm B.Sc. Sustainability and Environmental Innovation. From AY 2022/23.

from 2020-today ***Responsible for the following PhD courses*:**

- *Safety in lab experimentation* (2CFU), Doctorate course in “Advanced catalytic processes for using renewable energy sources (ACCESS), Cycles: XXXVI, XXXVII, XXXVIII, XXXIX
- *Synthesis of nanomaterials and electrodes* (6CFU), Doctorate course in “Advanced catalytic processes for using renewable energy sources (ACCESS), Cycles: XXXVI, XXXVII, XXXVIII, XXXIX
- *Electrocatalysis for sustainable chemical production* (1CFU), Doctorate course in “Ingegneria e Chimica dei Materiali e delle Costruzioni”, Cycles: XXXVI
- *Catalytic Materials for Sustainable chemical processes* (1CFU), Doctorate course in “Ingegneria e Chimica dei Materiali e delle Costruzioni”, Cycles: XXXVI

from 2012-2020 ***Responsible for the following courses (Univ. of Messina)*:**

- *Fundamental of Industrial Chemistry and Technologies for Environmental Protection* (6CFU), Dept. MIFT B. Sc. Analysis and Management of Natural and Anthropogenic Risks. from AY2012/13 to AY 2019/20

PUBLICATIONS

She is the author of 61 peer reviewed publications and over 100 communications to mainly international conferences.

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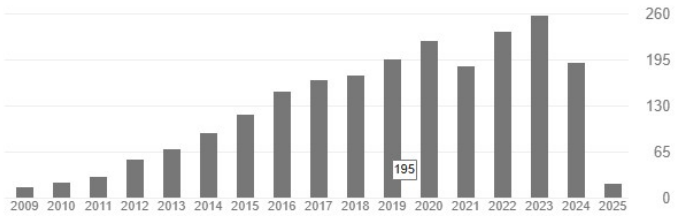
Bibliometric data

From Google Scholar (23 Jan 2025)
https://scholar.google.it/citations?user=fzgbck8AAAAJ&hl=it
Citations: 2242 (1112 dal 2020)
h-index: 24 (20 dal 2020)
i_{10}-index: 39



Last 10 Years publications

Electrocatalytic Production of a Liquid Organic Hydrogen Carrier with Anodic Valorization of the Process: Review and Outlook, Wang, J., Li, Y., Hummel, C., Huang, G., Ji, X., Demiroz, E., Urakawa, A., Huang, S., Zhao, R., Lercher, J., Lanzafame, P., Papanikolaou, G., Centi, G. *Energy and Fuels*, 2025, 39, 132-165

Green synthesis and sustainable processing routes, Papanikolaou, G., Centi, G., Perathoner, S., Lanzafame, P. *Current Opinion in Green and Sustainable Chemistry*, 2024, 47, 100918

Synergistic dye/photocatalyst interconnections for activating efficient light-induced degradation pathways, Conelli, D., Grandhi, G. K., Tewari, A., Hytönen, V. P., Lanzafame, P., Vivo, P., Suranna, G.P., Grisorio, R. *Journal of Materials Chemistry C*, 2024, Article number 03986f

Use of zeolites in green chemicals and bio-fuel production via HMF valorisation Papanikolaou, G., Chillè, D., Perathoner, S., ... Giordano, G., Lanzafame, P. *Microporous and Mesoporous Materials*, 2023, 358, 112330

Hydrothermal Synthesis and Catalytic Assessment of High-Silica (B,Fe)-beta Zeolites Marino, A., Catizzone, E., Migliori, M., ... Centi, G., Giordano, G. *Crystal Growth and Design*, 2023, 23(4), pp. 2988–3001

Optimisation of the electrochemical conversion of CO_2 into formate in a flow cell configuration using a bismuth-based electrocatalyst Miola, M., Chillé, D., Papanikolaou, G., Lanzafame, P., Pescarmona, P.P. *Green Chemistry*, 2023, 25(5), pp. 1875–1883

Large carbon dioxide adsorption in ZTC at medium pressure: Effects of surface functionalization Policicchio, A., Conte, G., Agostino, R.G., ... Giordano, G., Migliori, M. *Carbon*, 2023, 201, pp. 991–1000

Environmental behaviour of a pesticide metabolite, the AMPA. Sequestration of Ca^{2+}, Mg^{2+}, Cu^{2+}, Zn^{2+} and Al^{3+} Cigala, R.M., De Stefano, C., Irto, A., ... Papanikolaou, G., Crea, F. *Chemosphere*, 2022, 306, 135535

The Interplay between the Theories of Mode Coupling and of Percolation Transition in Attractive Colloidal Systems Mallamace, F., Mensitieri, G., de Luna, M.S., ... Mallamace, D., Lanzafame, P. *International Journal of Molecular Sciences*, 2022, 23(10), 5316

Transforming catalysis to produce e-fuels: Prospects and gaps Papanikolaou, G., Centi, G., Perathoner, S., Lanzafame, P. *Chinese Journal of Catalysis*, 2022, 43(5), pp. 1194–1203

Catalysis for e-Chemistry: Need and Gaps for a Future De-Fossilized Chemical Production, with Focus on the Role of Complex (Direct) Syntheses by Electrocatalysis Papanikolaou, G., Centi, G., Perathoner, S., Lanzafame, P. *ACS Catalysis*, 2022, 12(5), pp. 2861–2876

Zeolite templated carbon from Beta replica as metal-free electrocatalyst for CO_2 reduction Papanikolaou, G., Chillè, D., Abate, S., ... Giordano, G., Lanzafame, P. *Applied Materials Today*, 2022, 26, 101383

The Hydrophilic-Hydrophobic Correlations in Water Systems Mallamace, F., Corsaro, C., Lanzafame, P., Papanikolaou, G., Mallamace, D. *Properties of Water from Numerical and Experimental Perspectives*, 2022, pp. 130–165

Surface modified carbon vulcan based electrodes for electrocatalytic reduction of CO_2 to high value products Papanikolaou, G., Chille, D., Lanzafame, P., Caccamo, M.T., Magazu, S. *AAPP Atti della Accademia Peloritana dei Pericolanti, Classe di Scienze Fisiche, Matematiche e Naturali*, 2022, 100(1), A6

Water Thermodynamics and Its Effects on the Protein Stability and Activity Mallamace, F., Mallamace, D., Chen, S.-H., Lanzafame, P., Papanikolaou, G. *Biophysica*, 2021, 1(4), pp. 413–428

Synthesis, Characterization and Photocatalytic Behavior of SiO_2@nitrized-TiO_2 Nanocomposites Obtained by a Straightforward Novel Approach Gulino, A., Papanikolaou, G., Lanzafame, P., ... Khaskhoussi, A., Lo Schiavo, S. *ChemistryOpen*, 2021, 10(10), pp. 1033–1040

The Water Polymorphism and the Liquid–Liquid Transition from Transport Data Mallamace, F., Mallamace, D., Mensitieri, G., ... Lanzafame, P., Papanikolaou, G. *Physchem*, 2021, 1(2), pp. 202–214

Hydrophilic and hydrophobic effects on the structure and themodynamic properties of confined water: Water in solutions Mallamace, F., Mallamace, D., Chen, S.-H., Lanzafame, P., Papanikolaou, G. *International Journal of Molecular Sciences*, 2021, 22(14), 7547

High performance of Au/ZTC based catalysts for the selective oxidation of bio-derivative furfural to 2-furoic acid [1] Papanikolaou, G., Lanzafame, P., Perathoner, S., ... Migliori, M., Giordano, G. *Catalysis Communications*, 2021, 149, 106234

Comparing molecular mechanisms in solar nh_3 production and relations with co_2 reduction Mallamace, D., Papanikolaou, G., Perathoner, S., Centi, G., Lanzafame, P. *International Journal of Molecular Sciences*, 2021, 22(1), pp. 1–18, 139

Weakly acidic zeolites: A review on uses and relationship between nature of the active sites and catalytic behaviour Lanzafame, P., Papanikolaou, G., Perathoner, S., ... Giordano, G., Migliori, M. *Microporous and Mesoporous Materials*, 2020, 300, 110157

Highly selective bifunctional Ni zeo-type catalysts for hydroprocessing of methyl palmitate to green diesel Papanikolaou, G., Lanzafame, P., Giorgianni, G., ... Perathoner, S., Centi, G. *Catalysis Today*, 2020, 345, pp. 14–21

Etherification of HMF to biodiesel additives: The role of NH_4^+ confinement in Beta zeolites Lanzafame, P., Papanikolaou, G., Barbera, K., Centi, G., Perathoner, S. *Journal of Energy Chemistry*, 2019, 36, pp. 114–121

Reassembly mechanism in Fe-Silicalite during NH_4OH post-treatment and relation with the acidity and catalytic reactivity Lanzafame, P., Papanikolaou, G., Perathoner, S., ... Catizzone, E., Giordano, G. *Applied Catalysis A: General*, 2019, 580, pp. 186–196

Analytical assessment to develop innovative nanostructured BPA-free epoxy-silica resins as multifunctional stone conservation materials Gómez-Laserna, O., Lanzafame, P., Papanikolaou, G., ... Lo Schiavo, S., Cardiano, P. *Science of the Total Environment*, 2018, 645, pp. 817–826

Methanol conversion over ZSM-12, ZSM-22 and EU-1 zeolites: from DME to hydrocarbons production Catizzone, E., Cirelli, Z., Aloise, A., ... Migliori, M., Giordano, G. *Catalysis Today*, 2018, 304, pp. 39–50

Comparison of H^+ and NH_4^+ forms of zeolites as acid catalysts for HMF etherification Lanzafame, P., Barbera, K., Papanikolaou, G., ... Catizzone, E., Giordano, G. *Catalysis Today*, 2018, 304, pp. 97–102

Monodisperse magnetite nanoparticles with high sensitivity as MRI contrast agents Amato, E., Lanzafame, P., Italiano, A., ... Centi, G., Minutoli, F. *AAPP Atti della Accademia Peloritana dei Pericolanti, Classe di Scienze Fisiche, Matematiche e Naturali*, 2018, 96(2), A5

Direct versus acetalization routes in the reaction network of catalytic HMF etherification Lanzafame, P., Papanikolaou, G., Perathoner, S., ... Aloise, A., Giordano, G. *Catalysis Science and Technology*, 2018, 8(5), pp. 1304–1313

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Grand challenges for catalysis in the Science and Technology Roadmap on Catalysis for Europe: Moving ahead for a sustainable future Lanzafame, P., Perathoner, S., Centi, G., Gross, S., Hensen, E.J.M. *Catalysis Science and Technology*, 2017, 7(22), pp. 5182–5194

Effect of the Structure and Mesoporosity in Ni/Zeolite Catalysts for n-Hexadecane Hydroisomerisation and Hydrocracking Lanzafame, P., Perathoner, S., Centi, G., ... Triantafyllidis, K.S., Lappas, A.A. *ChemCatChem*, 2017, 9(9), pp. 1632–1640

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Multifunctional HDO/selective cracking Ni/HBEA catalysts to produce jet fuel and diesel from bio-oils Abate, S., Giorgianni, G., Lanzafame, P., Perathoner, S., Centi, G. *Chemical Engineering Transactions*, 2016, 50, pp. 259–264

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The role of acid sites induced by defects in the etherification of HMF on Silicalite-1 catalysts Lanzafame, P., Barbera, K., Perathoner, S., ... Nagy, J.B., Giordano, G. *Journal of Catalysis*, 2015, 330, pp. 558–568

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The energy-chemistry nexus: A vision of the future from sustainability perspective Abate, S., Centi, G., Lanzafame,

P., Perathoner, S. *Journal of Energy Chemistry*, 2015, 24(5), pp. 535–547

New Sustainable Model of Biorefineries: Biofactories and Challenges of Integrating Bio- and Solar Refineries Abate, S., Lanzafame, P., Perathoner, S., Centi, G. *ChemSusChem*, 2015, 8(17), pp. 2854–2866

The role of oxide location in HMF etherification with ethanol over sulfated ZrO_2 supported on SBA-15 Barbera, K., Lanzafame, P., Pistone, A., ... Perathoner, S., Centi, G. *Journal of Catalysis*, 2015, 323, pp. 19–32

Catalysis for Biomass and CO_2 Use Through Solar Energy: Opening New Scenarios for a Sustainable and Low-Carbon Chemical Production Lanzafame, P., Centi, G., Perathoner, S. *Climate Change Mitigation: Greenhouse Gas Reduction and Biochemicals*, 2015, pp. 95–146

Catalysis for biomass and CO_2 use through solar energy: Opening new scenarios for a sustainable and low-carbon chemical production Lanzafame, P., Centi, G., Perathoner, S. *Chemical Society Reviews*, 2014, 43(22), pp. 7562–7580

Evolving scenarios for biorefineries and the impact on catalysis Lanzafame, P., Centi, G., Perathoner, S. *Catalysis Today*, 2014, 234, pp. 2–12

A sustainable production of h2 by water splitting and photo-reforming of organic wastes on Au/TiO_2nanotube arrays Ampelli, C., Genovese, C., Lanzafame, P., Perathoner, S., Centi, G. *Chemical Engineering Transactions*, 2014, 39(Special Issue), pp. 1627–1632

Novel electrochemical sensors for safety and control in fermentation processes Ampelli, C., Leonardi, S.G., Genovese, C., ... Centi, G., Neri, G. *Chemical Engineering Transactions*, 2014, 36, pp. 319–324

AWARDS

2022: Elsevier Top downloaded open access article linked to the United Nations (UN) Sustainable Development Goals (SDGs), SDG 7: Ensure access to affordable, reliable, sustainable and modern energy for all. Paper: High performance of Au/ZTC based catalysts for the selective oxidation of bio-derivative furfural to 2-furoic acid Catal. Commun., 2021, Vol. 149, 106234

2020: Individual funding FABBR Unime2020 II ed. funding for Research Activity, Univ. of Messina (1500 euros)

2017: National funding of research activity FFABR 2017, ANVUR n. 20/2017 (3000 euros)

2014: Award Catalysis Today - Elsevier Top Cited Papers 2011 and 2012 for the Paper Etherification of 5-Hydroxymethyl-2-furfural (HMF) with ethanol to biodiesel components using mesoporous solid acidic catalysts Catal. Today, 2011, Vol. 175, pp 435-441

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