

PERSONAL INFORMATION **Federica De Luca**

Sex | Date of birth | Nationality

## WORK EXPERIENCE

3<sup>rd</sup> February 2024 – 8<sup>th</sup> July 2024**Research collaborator “SUNER-C”**

University of Messina Department of Chibiofaram - ERIC: European Research Institute of Catalysis; Research activities with a fellow in the frame of the European project SUNER-C (ID 101058481) “SUNERGY Community and eco-system for accelerating the development of solar fuels and chemicals”.

June – December 2023

**Collaboration with Nextchem S.p.A. (Rome)**

Research focused on the comparison of process simulation of a catalytical and an electrocatalytical process for the production of glycolic acid.

February – July 2022

**Research activity at University of Antwerp**

Research focused on modelling catalytic CO<sub>2</sub> reduction to methanol on Cu (111).

December 2018 – February 2021

**Research collaborator “Ocean Project”**

University of Messina Department of Chibiofaram - ERIC: European Research Institute of Catalysis; Research activities with a fellow in the frame of the European project OCEAN (ID 767798) “Oxalic acid from CO<sub>2</sub> using Electrochemistry At demonstration scale”. Synthesis, characterisation and testing of heterogeneous catalysts for electrocatalytic reactors for the reduction of oxalic acid to glycolic acid.

8<sup>th</sup> July – 18<sup>th</sup> July 2019**Collaboration with the Italian Institute of Technology (IIT)**

Italian Institute of Technology (IIT) - Turin (TO)

Testing of heterogeneous catalysts for electrocatalytic reactors for the reduction of oxalic acid to glycolic acid.

April - September 2018

**Internship**

University of Messina Department of Chibiofaram – Messina (ME) – Italy

Research activities in the chemical-analytical field: determination of speciation models and extent of interactions of As(III)- thiolic ligands systems through the use of potentiometers and UV-visible spectrophotometry.

October 2017 - January 2018

**Internship**

Institute for Chemical-Physical Processes, Messina (ME) – Italy

Research activities in the theoretical field through the use of the Gaussian09/GaussView5.0 program, and in the experimental field through the use of Raman spectroscopy, for the study of interactions of As(III)- thiolic ligands.

## EDUCATION

February 2021– April 2024

**PhD cotutelle in “Advanced catalytic processes for using renewable energy sources” (ACCESS) and “Chemistry”**

University of Messina Department of Chibiofaram, Messina - Italy and Universiteit Antwerpen Department of Chemistry, Antwerpen - Belgium

Electrified CO<sub>2</sub> conversion: integrating experimental, computational, and process simulation methods for sustainable chemical synthesis.

II session 2018

**Abilitation Exam**

University of Messina Department of Chibiofaram Messina (ME) - Italy

Qualification to work as Chemist.

September 2016 to October 2018

**Master’s degree in Chemistry**

University of Messina Department of Chibiofaram Messina (ME) – Italy

September 2012 to July 2016

**Bachelor’s degree in chemistry**

University of Messina Department of Chibiofaram Messina (ME) – Italy

## PERSONAL SKILLS

Mother tongue(s) Italian

Other language(s)

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	B2	B2	B2	B2	B2

Digital skills

SELF-ASSESSMENT				
Information processing	Communication	Content creation	Safety	Problem solving
Independent user	Independent user	Independent user	Independent user	Independent user

## ADDITIONAL INFORMATION

Publications  
Presentations  
Conferences  
Courses

Paper contributions:

- 1) Cai, Y., Michiels, R., De Luca, F., Neyts, E., Tu, X., Bogaerts, A., Gerrits N. "Improving Molecule-Metal Surface Reaction Networks Using the Meta-Generalized Gradient Approximation: CO<sub>2</sub> Hydrogenation." (Submitted)
- 2) Abramo, F. P., De Luca, F., Chiodoni, A., Centi, G., Giorgianni, G., Italiano, C., Perathoner, S., Abate, S. "Nanostructure-performance relationships in titania-only electrodes for the selective electrocatalytic hydrogenation of oxalic acid." *Journal of Catalysis*, 429, 115277 (2024).
- 3) T. Miah, P. Demoro, I. Nduka, F. De Luca, S. Abate, and R. Arrigo, "Orange Peel Biomass-derived Carbon Supported Cu Electrocatalysts Active in the CO<sub>2</sub>-Reduction to Formic Acid," *ChemPhysChem*, vol. 202200589, 2023, doi: 10.1002/cphc.202200589.
- 4) R. Passalacqua, S. Abate, F. De Luca, S. Perathoner, and G. Centi, "Graphitic Layered Structures Enhancing TiNT Catalyst Photo-Electrochemical Behaviour," pp. 1–18, 2023.
- 5) F. P. Abramo et al., "Electrocatalytic production of glycolic acid via oxalic acid reduction on titania debris supported on a TiO<sub>2</sub> nanotube array," *J. Energy Chem.*, vol. 68, pp. 669–678, 2021, doi: 10.1016/j.jechem.2021.12.034.
- 6) F. De Luca, R. Passalacqua, F. P. Abramo, G. Centi, and S. Abate, "g-C<sub>3</sub>N<sub>4</sub> Decorated TiO<sub>2</sub> Nanotube Ordered Thin Films as Cathodic Electrodes for the Selective Reduction of Oxalic Acid," vol. 84, no. 2019, pp. 37–42, 2021, doi: 10.3303/CET2184007.

Presentation:

- 1) g-C<sub>3</sub>N<sub>4</sub> Decorated TiO<sub>2</sub> Nanotube Ordered Thin Films as Cathodic Electrodes for the Selective Reduction of Oxalic Acid at "Nine2021 The 4th International Conference on Nanotechnology Based Innovative Applications for the Environment"
- 2) Reduction of CO<sub>2</sub> to Methanol on Cu (111): DFT study at "12<sup>th</sup> National Congress of the division of Industrial Chemistry"

Conferences:

- 1) "Nine2021 The 4<sup>th</sup> International Conference on Nanotechnology Based Innovative Applications for the Environment" 28<sup>th</sup>-31<sup>st</sup> March 2021 - Online (Oral contribution)
- 2) "Innovative Materials for Energy" (IME) 30<sup>th</sup> September -1<sup>st</sup> October 2021, Messina (ME) - Italy
- 3) "12<sup>th</sup> National Congress of the division of Industrial Chemistry" 7<sup>th</sup>-8<sup>th</sup> November 2022, Catania (CT) - Italy (Oral contribution)
- 4) 30 years of INSTM: past, present, and future of the Consortium, January 22<sup>nd</sup>-25<sup>th</sup>, 2023, Bressanone (BZ) – Italy (Postercontribution)
- 5) EUROPACAT2023 - 15<sup>th</sup> European Congress on Catalysis, Prague, Czech Republic, 27<sup>th</sup> August - 1<sup>st</sup> September 2023.

Data:

09/07/2024