

Alejandra Saavedra Moncada

Ph.D. Chemist



SCIENTIFIC COMPETENCES AND PRACTICAL EXPERIENCE

During my professional activity in different laboratories, I have acquired all the technical knowledge necessary for the synthesis, purification and photochemical, photophysical and morphological characterization of transition metal complexes and inorganic polymers. In particular, I have a strong experience in absorption spectroscopy, steady-state and time-resolved spectroscopy to establish the photophysical properties of organometallics and supramolecular fluorescent structures like cyclodextrin-based metal systems and polymers, what can be seen in my publications. I also acquired practical experience in FTIR, Laser Flash Photolysis and Pulse Radiolysis. Moreover, I also learned different techniques for morphological characterization such as TEM, AFM, and DLS. Besides, I am able to synthesize different molecules to be used as ligands and organometallics for studies on electron and energy transfer, solar energy conversion and catalysis, among many others.

EDUCATION

PhD in Chemistry

National University of La Plata - La Plata, Argentina

25/10/2018

Thesis: Photochemical and Photophysical properties of coordination compounds in polymeric supramolecular structures.

Bachelor's degree in Chemistry

University of Quindío - Armenia, Colombia

12/12/2011

Thesis: Conservation of fresh-cut Cantaloupe melon coated and stored in modified atmospheres.

PROFESSIONAL EXPERIENCE

Postdoctoral Researcher

Institute of Organic Synthesis and Photoreactivity (ISOF-CNR) - Bologna, Italy

01/09/2020 – Present

- Photophysical and photochemical characterization of new d10- metal complexes embedded in a rigid structural cavity, like cyclodextrin or rotaxane.
- Review literature and analyse data.
- Management and organization of the project.
- Writing papers and reports.

Postdoctoral Researcher - (Staff exchange position in the frame of the project H2020-MSCA-RISE 734834 INFUSION (Engineering optoelectronic interfaces: a global action intersecting fundamental concepts and technology implementation of self-organized organic materials)).

Institute of Organic Synthesis and Photoreactivity (ISOF-CNR) - Bologna, Italy

28/03/2019 - 31/08/2020

- Photophysical and photochemical characterization of transition metal complexes and supramolecular materials.
- Study of efficient photocatalysts for the reduction of CO₂.
- Review literature and analyse data.
- Management and organization of the project.

- Writing papers and reports.

Postdoctoral Researcher

National University of La Plata - Theoretical and Applied Physical Chemistry Research Institute (INIFTA) - La Plata, Argentina

26/11/2018 - 25/03/2019

- Development of research activities based on the design and synthesis of metal complexes with photocatalytic activities.
- Management and organization of the project.

Ph.D. Student

National University of La Plata - Theoretical and Applied Physical Chemistry Research Institute (INIFTA) - La Plata, Argentina

05/08/2013 - 25/10/2018

- Synthesis of novel Re(I) complexes and inorganic polymers.
- Photochemical, photophysical and morphological characterization of novel Re(I) complexes.
- Review literature and analyse data.
- Writing papers and reports.

University Professional

Government of Quindío, Health Secretary - Armenia, Colombia

09/10/2012 - 15/07/2013

- Control and supervision of solid waste of the region and development of the program "Healthy environment" for the community.
- Planning and organization of projects.

Chemical Analyst

CRQ (Corporación Autónoma Regional del Quindío) - Armenia, Colombia

05/06/2012 - 30/09/2012

- Assisting in the physical-chemical and bacteriological analysis of the water, in order to control the water quality of the region.
- Administration and classification of the reactants, according with the Globally Harmonized System of classification and Labelling of chemicals (GHS).

TEACHING EXPERIENCE

Professor Assistant - Inorganic Chemistry courses.

National University of La Plata, Faculty of Sciences - La Plata, Argentina

01/06/2015 - 01/04/2019

- Assisting the professor in the laboratory.
- Plan the activities of each chemical experience.
- Prepare the materials and reactants.
- Reinforcing the lessons and assisting the students.

Undergraduate Teaching Assistant

University of Quindío, Faculty of Sciences - Armenia, Colombia

09/08/2010 - 17/12/2010

- Assisting the professor and students in the laboratory.
- Prepare the materials and reactants.

Undergraduate Teaching Assistant

University of Quindío, Faculty of Sciences - Armenia, Colombia

10/08/2009 - 18/12/2009

- Assisting the professor and students in the laboratory.
- Prepare the materials and reactants.

FELLOWSHIPS

Scholarship for PhD students

National Scientific and Technical Research Council of Argentina (CONICET) - La Plata, Argentina

05/08/2013 - 31/03/2018

Scholarship for PhD students

University of Chile - Network of Macrouniversities of Latin America and the Caribbean:

Mobility program for PhD Students - Santiago de Chile, Chile

14/06/2017 - 11/09/2019

PUBLICATIONS IN PEER-REVIEWED SCIENTIFIC JOURNALS

1. **Journal:** Chemistry – A European Journal (Accepted Article)

Title: Stabilization of Luminescent Mononuclear Three-Coordinate Cu^I Complexes by Two Distinct Cavity-Shaped Diphosphanes Obtained from a Single α -Cyclodextrin Precursor

Authors: Tuan-Ahn Phan, Matthieu Jouffroy, Dominique Matt, Nicola Armaroli, Alejandra Saavedra Moncada, Elisa Bandini, Béatrice Delavaux-Nicot, Jean-François Nierengarten, Dominique Armspach.

Published: November 2023.

Volume: e202302750, **Pages:** 1 – 9

doi: 10.1002/chem.202302750

2. **Journal:** Angewandte Chemie International Edition (On the cover).

Title: Stable Luminescent [Cu(NN)(PP)]⁺ Complexes Incorporating a β -Cyclodextrin-Based Diphosphane Ligand with Metal-Confining Properties.

Authors: Tuan-Ahn Phan, Nicola Armaroli, Alejandra Saavedra Moncada, Elisa Bandini, Béatrice Delavaux-Nicot, Jean-François Nierengarten, Dominique Armspach.

Published: November 2022.

Volume: e202214638, **Pages:** 1 – 7

doi: 10.1002/anie.202214638

3. **Journal:** Molecules

Title: Rational Design of Mono- and Bi-Nuclear Cyclometalated Ir(III) Complexes Containing Di-Pyridylamine Motifs: Synthesis, Structure, and Luminescent Properties.

Authors: Hugo Sesolis, Geoffrey Gontard, Marie Noelle Rager, Elisa Bandini, Alejandra Saavedra Moncada, Andrea Barbieri, Hani Amouri.

Published: September 2022.

Volume: 27, **Pages:** 6003

doi: 10.3390/molecules27186003

4. **Journal:** Dalton Transactions

Title: Enantiopure, luminescent, cyclometalated Ir(III) complexes with N-heterocyclic carbenenaphthalimide chromophore: design, vibrational circular dichroism and TD-DFT calculations.

Authors: Antoine Groué, Eve Montier-Sorkine, Yaping Cheng, Marie Noelle Rager, Marion Jean, Nicolas Vanthuyne, Jeanne Crassous, Amalia C. Lopez, Alejandra Saavedra Moncada, Andrea Barbieri, Andrew L. Cooksy, Hani Amouri.

Published: January 2022

Volume: 51, **Pages:** 2750 – 2759
doi: 10.1039/D1DT04006E

5. Journal: Journal of Photochemistry and Photobiology A.

Title: Photochemical properties of a Re(I) polymer containing dppz in its structure. An interplay between dark and bright states of dppz.

Authors: Alejandra Saavedra Moncada, Eduart Andrés Gutiérrez-Pineda, Ivan Maisuls, Gustavo T. Ruiz, Alexander G. Lappin, Guillermo J. Ferraudi, Ezequiel Wolcan.

Published: February 2018

Volume: 353, **Pages:** 86 – 100.

doi: 10.1016/j.jphotochem.2017.11.007.

6. Journal: Journal of Photochemistry and Photobiology A.

Title: Photophysical properties of -Re(I)(CO)₃(phen) pendants grafted to a poly-4-vinylpyridine backbone. A correlation between photophysical properties and morphological changes of the backbone.

Authors: Alejandra Saavedra Moncada, Fernando S. García Einschlag, Eduardo D. Pietro, Gustavo T. Ruiz, Alexander G. Lappin, Guillermo J. Ferraudi, Ezequiel Wolcan.

Published: May 2016

Volume: 321, **Pages:** 284 – 296.

doi: 10.1016/j.jphotochem.2016.01.001.

PARTICIPATION AND COMMUNICATIONS TO SCIENTIFIC MEETINGS

Research secondment

Laboratory of Chemistry of Molecular Materials, University of Strasbourg – CNRS - Strasbourg, France

03/11/2022 – 13/11/2022

Meeting Project

Research secondment

Laboratory of Chemistry of Molecular Materials, University of Strasbourg – CNRS - Strasbourg, France

14/11/2022 – 29/11/2022

Oral presentation and meeting project: Fundamentals of Photochemistry and Photophysics.

Hydrogen: what is the role in the energy transition

The Institute of Bologna Academy of Sciences - Bologna, Italy

27/05/2022

Assistant

Supramolecular Chemistry Days for Young Researchers (Virtual edition)

University of Bologna, ISOF – CNR - Bologna, Italy

13/10/2021 - 15/10/2021

Organizing Committee

School of Electrochemistry, Photochemistry and Photophysics of Organic, Inorganic and Hybrid materials

NOAH-INFUSION Joint online school - Bologna, Italy

26/10/2020 - 29/10/2020

Poster presentation: “Correlation between photophysical properties and morphological changes of -Re(CO)₃(phen) pendants grafted to a poly-4-vinylpyridine backbone”.