

Adrián Gallardo Loya

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Education

UNIVERSIDAD NACIONAL AUTÓNOMA DE MÉXICO CU, CDMX, México
FACULTAD DE QUÍMICA (FQ-UNAM)
Bachelor of Science in Chemistry *Expected May 2026*

Relevant coursework: Chemoinformatics, Solid State Chemistry, Organic Chemistry, Instrumental and Experimental Analytical Chemistry, Coordination Chemistry.

Publications

- [1] G. S. Anaya González, **A. Gallardo Loya**, et al., "Synthesis, phase transition, and band gap analysis of $\text{MorpH}_3\text{PbI}_5$ perovskite", *Journal of Solid State Chemistry*, 2025, DOI: 10.1016/j.jssc.2025.125521.
- [2] Work in progress: **A. Gallardo Loya**, E. Mayoral-Villa, and A. R. García Márquez, "High-throughput modeling of primary ammonium iodide compounds with potential liquid crystalline properties"

Presentations

- [1] Seminar: Classification Models for Anti-Diabetic Agents of Natural Origin. First Seminar Course, UNAM, Mexico City.
- [2] Poster: "Synthesis and Characterization of Mono-Dimensional Hybrid Perovskites". UNAM Short Research Internships Program Exposition, Mexico City.

Research Experience

García Márquez Group | FQ-UNAM Dpt. of Inorganic and Nuclear Chem. CU, CDMX, México
Collaborator *August 2025 – Present*

- Identified structure-activity relationships enabling **rational design** of liquid crystal ammonium salts.
- Performed electronic structure calculations of **over 10,000** molecular cations.
- Developed a central server for managing ORCA tasks on **several computer nodes**.

Group for Molecular Chemistry and Precursors Research | UNAH Tegucigalpa, FM, Honduras
Junior Researcher *October 2025 – Present*

- Brokered a **Partnership Agreement** between UNAH and UNAM for **international research collaboration** and institutional capacity building in chemical waste management and research-support instrumentation services.
- Created a database of molecules which inhibit a certain target enzyme and made a classifying model from their chemical descriptors, for use in **rational pesticide design**.

Rodríguez Romero's GAMER-Lab | FQ-UNAM Dpt. of Organic Chemistry CU, CDMX, México
Research Assistant *March 2021 – July 2025*

- Developed **mechanochemical methods** for low dimensional phase synthesis.
- Optimized liquid-assisted grinding protocols for **green synthesis of perovskites**.
- Engineered laboratory hardware using **3D printing**.

Martínez Mayorga's QUIBIC | UNAM Institute of Chemistry at Merida Mérida, Yucatán, México
Research Intern *February 2025 – July 2025*

- Engineered pipelines to audit and standardize **over 600** natural product entries.
- Queried and standardized inhibition data for **30 Type II diabetes-related targets**.
- Performed chemoinformatic analyses to identify **structure-activity relationships**.

Juaristi Group | Cinvestav-IPN Department of Chemistry Zacatenco, CDMX, México
Research Intern *January 2024 – February 2024*

- Conducted **asymmetric biocatalytic synthesis** of steroidal intermediates.
- Gained foundational insight into reaction mechanisms, stereochemical control, and the physicochemical principles underlying catalytic systems.
- Investigated mechanochemical approaches such as high-speed ball milling as green alternatives to conventional solution-phase reactions.

Leadership Activities & Teaching Experience

Honduran Chemistry Olympiad | Honduran Secretary of Education

Tegucigalpa, FM, Honduras

Academic Secretary

July 2021 – Present

- Coordinated **national and regional** chemistry competitions, managing a team of tutors and year-round training camps for the national selection.
- Designed training curricula covering Organic Chemistry, Instrumental Analysis, and Solid State Chemistry for **International Olympiad training**.
- Authored **over 30 selection exams** and delivered **over 450 hours** of advanced organic chemistry lectures.
- Mentored students to **Gold medals at OCACQ** and **Silver medals at OIAQ**; represented Honduras as delegate.

Virtual Chemistry Contest | N.A. of Faculties and Schools of Chemistry

Online

Founder & Vice-president

March 2020 – January 2022

- Founded and co-directed an international virtual chemistry competition connecting **over 7,000 students** across **20 Spanish-speaking countries**.
- Established a network of **nationally recognized researchers** to assess themed essays.
- Launched the **Wöhler Challenge of Organic Chemistry**, focusing on modern synthesis and spectroscopy.

Awards and Honors

Short Research Internships Program

UNAM Facultad de Química

Third place in the Chemistry and Materials Engineering category

2023

Mexico's XXIII National Mathematics Contest A. N. Kolmogórov

Universidad Anáhuac

Finalist

2020

Mexico's XXIX National Chemistry Olympiad

Academia Mexicana de Ciencias

International Selection Member (2020) Silver Medal (2019)

2019-2020

Skills

Computational: Linux, ORCA, Gaussian, VESTA, DataWarrior, Open Babel, Python, RDKit, high-throughput modeling, BASH, HTML, QSAR model development, PCA, DB APIs.

Laboratory & Instrumental: Mechanochemical & solution-phase synthesis, Schlenk line, thin-film fabrication & measurement, crystallization, NMR, P-XRD, UV-Vis, HPLC, Fluorescence Spectroscopy.

Communication: Science video production (TikTok, YouTube), on-camera presenter, 3D animation

References

Jesús Rodríguez Romero

Associate Professor

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