DR. VANINA MABEL CAYÓN

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Date of birth:	01.01.1989 in La Plata
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Researchgate-Profil	www.researchgate.net/profile/Vanina-Cayon

WORK EXPERIENCE

Current position
2019-present

Postdoctoral Researcher in the Soft Matter Laboratory, Research Institute of Theoretical and Applied Physical Chemistry, National University of La Plata – CONICET, Argentina. Website: https://softmatter.quimica.unlp.edu.ar/
Advisor: Prof. Dr. Omar Azzaroni

Project: Design of functional biomimetic nanodevices based on modified solid-state nanopores with electroactive and bioactive molecular systems.

Design and construction of nanofluidic devices based on track-etched nanochannels with applications in nanoelectronic and biosensing. The preparation involves the surface modification of asymmetric nanochannels through different mechanisms and the integration of polyelectrolites, enzymes or building-blocks into single-pore track-etched solid-state nanochannels to build devices displaying a wide variety of functional features (i.e. ability to control and manipulate the ionic transport).

ACADEMIC CAREER

2014-2019
Ph.D.

Ph.D. in Chemistry, Faculty of Exacts Sciences, National University of La Plata, Argentina.
Center of Inorganic Chemistry (CEQUINOR)

2007-2014
Degree

Chemist
Faculty of Exacts Sciences, National University of La Plata, Argentina.

2007-2013
Degree

Chemical Technician
Faculty of Exacts Sciences, National University of La Plata, Argentina.

LIST OF PUBLICATIONS

Book chapter:

"Next-generation Tiny Sensing Devices: Advances Towards Miniaturization and Fabrication Strategies, Ion track-based nanofluidic biosensors" Springer Editorial. Yamili Toum Terrones, Vanina M. Cayón, Gregorio Laucirica, M. Lorena Cortez, María, Eugenia Toimil-Molares, Christina Trautmann, Waldemar A. Marmisollé and Omar Azzaroni, (Accepted).

Articles:

1. ***"Biomimetic Solid-State Nanochannels for Chemical and Biological Sensing Applications"*** Gregorio Laucirica, Yamili Toum Terrones, Vanina M. Cayón, María Lorena Cortez, Maria Eugenia, Toimil-Molares, Christina Trautmann, Waldemar Marmisollé and Omar Azzaroni. Trends in Analytical Chemistry, September 2nd, 2021, DOI: 10.1016/j.trac.2021.116425.

2. ***"Borate-driven ionic rectifiers based on sugar-bearing single nanochannels"*** Vanina M. Cayón, Gregorio Laucirica, Yamili Toum Terrones, M. Lorena Cortez, Gonzalo Pérez-Mitta, Jun Shen, Christian Hess, María Eugenia Toimil-Molares, Christina Trautmann, Waldemar A. Marmisollé and Omar Azzaroni. Nanoscale, 2021, DOI: 10.1039/D0NR07733J.

3. ***"High-sensitivity detection of dopamine by biomimetic nanofluidic diodes derivatized with poly(3-aminobenzylamine)"***. G. Laucirica, Y. Toum Terrones, Vanina M. Cayón, M. Lorena Cortez, M. E. Toimil-Molares, C. Trautmann, W. A. Marmisollé and O. Azzaroni. Nanoscale, 2020, DOI: 10.1039/D0NR03634J.

4. ***"Electrochemically Addressable Nanofluidic Devices Based on PET Nanochannels Modified with Electropolymerized Poly-o-Aminophenol Films"*** Laucirica, G.; Cayón, Vanina M; Toum Terrones, Y.; Cortez, M. L.; Toimil-Molares, M. E.; Trautmann, C.; Marmisollé, W. A.; Azzaroni, O. Nanoscale, 2020, doi.org/10.1039/C9NR10336H.

5. ***"Structure, Conformational Properties and Matrix Photochemistry of S-(tert-Butyl)trifluorothioacetate $CF_3C(O)SC(CH_3)_3$"*** Vanina M. Cayón, Mauricio F. Erben, Rosana M. Romano, Hans-Georg Stammler, Norbert W. Mitzel and Carlos O. Della Védova. New Journal of Chemistry, RSC, DOI: 10.1039/D0NJ03173A.

6. ***"Phenyl and Pentafluorophenyl Trifluorothioacetate, and Pentafluorophenyl Trifluoroacetate, $CF_3C(O)SC_6H_5$, $CF_3C(O)SC_6F_5$ and $CF_3C(O)OC_6F_5$"*** Vanina M. Cayón, Mauricio F. Erben, Rosana M. Romano, Hans-Georg Stammler, Norbert W. Mitzel and Carlos O. Della Védova (im Schreibprozess)

7. ***"Structure of O-alkyl-N-ethoxycarbonyl thiocarbamate and imidothiocarbonate derivatives"*** Vanina M. Cayón, Sonia E. Torrico Vallejos, Carlos O. Della Védova, Oscar E. Piro, Gustavo A. Etcheverría and Mauricio F. Erben, Trends in Organic Chemistry, Vol. 19, 43 – 73 (2018).

Ph.D. – Thesis:

"Síntesis, estudio conformacional y estructural de ésteres, tioésteres y disulfuros halogenados" (2019).

RESEARCH STAY ABROAD

April - June 2018

Group: Anorganische Chemie und Strukturchemie, Faculty of Chemistry, Bielefeld University, Germany - Supervisor: Prof. Dr. Norbert Mitzel
www.uni-bielefeld.de/chemie/arbeitsbereiche/ac3-mitzel/

GRANTS

2014 - 2019

Ph.D. Fellowship by the National Scientific and Technical Research Council – Argentina (CONICET). Duration: 5 years.

2012 – 2014

Training Scholarship Grant – Scientific Research Commission of Buenos Aires Province, (CICPBA).

TEACHING EXPERIENCE

4.2019 - Present

Graduated teaching assistant (Full-time),
Teaching and Research Position of the Physical Chemistry Area, Department of Chemistry, Faculty of Exacts Sciences, National University of La Plata.

4.2013 - 10.2019

Graduated teaching assistant
Inorganic Chemistry – Faculty of Exacts Sciences and Faculty of Engineering, National University of La Plata.

10.2013 - 4.2014

Ungraduated Teaching assistant
Inorganic Chemistry – Faculty of Engineering, National University of La Plata.

KNOWLEDGE AND SKILLS

Analytic and characterization of materials

- Spectroscopy (UV/VIS, IR-RAMAN, NMR, XPS, PES, synchrotron)
- Mass spectrometry (GC-MS)
- Chromatography (GC, LC, HPLC)
- Investigation of the electronic states by photoelectron spectroscopy (PES).
- Study of structural and conformational properties.
- Determination of crystalline structures (X-Ray).
- Electrochemical measurements (I-V)
- Modification of ion track membranes
- Functionalization and characterization of nanostructures

Preparative Chemistry

- Organic and inorganic synthesis, purification and characterization
- Vacuum manometric techniques
- Silane chemistry
- Electropolymerization
- Integration of (bio)recognition elements in material surfaces

Teaching

- Student tutoring/accompaniment
- Supervision and guidance of the students in the laboratory

Quality

- IRAM ISO 9000-9001
- GMP and GPL
- Training in sampling techniques – Argentine Chemical Foundation
- Validation Analysis Method (SAFYBI)
- Knowledge of environmental regulations (NIOSH, ASTM, ISO)
- Monitoring and physical-chemical quality control of drinking water and wastewater.

Languages

- Spanish (Native)
- English (intermediate)
- German (elementary level - A2.2)

IT-Skills

- Microsoft Office (Word, Excel, PowerPoint, Outlook) (good)
- Analysis software (ChemDraw, MestReNova, Origin, Olex, Gamry) (good)
- Reference management (Mendeley) (good)
- Graphics/drawing program (Adobe Illustrator CS and Corel Draw) (good)
- Quantum chemical programs (GaussianView, CrystalExplorer) (good)
- X-ray data analysis (Mercury, SHELX, OLEX2) (good)
- IR and Raman data analysis (OPUS, OMNIC) (good)