

# Victor González Morote

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## PROFILE

Physicist and PhD candidate specializing in integrated photonics, optomechanics, and plasmonic biosensing. Hands-on experience in device design (COMSOL), optical characterization, and data analysis (Python/MATLAB). Laboratory teaching experience supervising practical sessions, experimental protocols, and student assessment. Used to working cross-functionally (electronics, microfluidics, micro/nanofabrication) to deliver robust prototypes and clear, data-driven results.

## EXPERIENCE

*Predoctoral Researcher* Sep 2024 – Present  
University of Barcelona (IN2UB, MIND Group), Barcelona, Spain

- PhD project: *Strategies for optimizing and combining plasmonic–polariton and cavity optomechanical sensors* (supervisors: Dr. D. Navarro-Urrios, M. Moreno-Sereno).
- Designed and simulated optomechanical and plasmonic devices in COMSOL for sensing.
- Performed experimental characterization of 1D optomechanical nanocavities and miniaturized SPR platforms for gas sensing.
- Project participation: ALLEGRO (PID2021-124618NB-C22, MICINN/AEI).

*Research Support Technician* Sep 2022 – Aug 2024  
Catalan Institute of Nanoscience and Nanotechnology (ICN2), Barcelona, Spain

- Member of NanoB2A (Prof. L. M. Lechuga). Contributed to EROIKA (PID2019-105132RB-I00) and POINTED (PDC2021-121325-I00).
- Built a new plasmonic device for multiplexed, real-time biomarker detection; integration across electronics, photonics, microfluidics and nanofabrication.
- Developed data acquisition and control workflows (LabVIEW/Python).

*Research Initiation Grant* Jun 2021 – Aug 2021  
Castelló Optics Research Group (GROC-UJI), Universitat Jaume I, Castelló, Spain

- Fiber interferometric systems with electro-optic modulators for sensing and spectroscopy.

## TEACHING & ACADEMIC SERVICE

*Laboratory Instructor* Academic year 2025–2026  
*Disseny Digital Bàsic* (Basic Digital Design) — B.Eng. in Computer Engineering, Barcelona, Spain

- 2 groups; 6 sessions/group; 2 h/session (24 h total).
- Digital design labs: VHDL (hardware description language) + ModelSim (simulation), combinational/sequential logic, FSMs; debugging and assessment.

*PAU 2025 (University Entrance Exams)* — Physics Evaluation Board Member 2025  
*Tribunals de Correccions i Vigilància* (Catalonia, Spain)

- Participated in invigilation and grading of the Physics exam; ensured compliance with exam protocols.

<b>EDUCATION</b>	<i>M.Sc. in Photonics</i>	2022
	Universitat Politècnica de Catalunya	
	<ul style="list-style-type: none"> <li>• Thesis: <i>Comparison of the optical properties of metallic versus high-dielectric 2D metasurfaces</i> (Advisor: A. Mihi, ICMAB-CSIC).</li> <li>• Focus: Optical Engineering; Materials &amp; Nanophotonics.</li> </ul>	
	<i>B.Sc. in Physics</i>	2021
	Universitat de València	
	<ul style="list-style-type: none"> <li>• Thesis: <i>Introduction to photonic fibre-optic biosensors (Introducción a los biosensores fotónicos de fibra óptica)</i> (Advisors: M. Delgado Pinar, A. Díez Cremades; ICMUV).</li> <li>• Focus: Photonics; Quantum Optics.</li> </ul>	

**PUBLICATIONS  
&  
PRESENTA-  
TIONS**

**Publications**

1. [Proceedings] Alonso-Tomás, D.; González-Morote, V.; Gomis-Bresco, J.; Capuj, N. E.; Navarro-Urrios, D. *Multimode mechanical lasing and synchronization in silicon optomechanical crystal oscillators* (paper + presentation). Proc. SPIE 13578, Active Photonic Platforms (APP) 2025, 135780F (16 Sep 2025). doi:10.1117/12.3063135

**Selected conference presentations**

1. [Poster] Moreno-Sereno, M.; *et al.* *SPR-grating sensor functionalised with ZIF-8 for ethanol detection*. I3S 2025, Barcelona, Spain, Nov 2025.
2. [Talk] Romano-Rodríguez, A.; *et al.* *Laser-based optical detection of volatile organic compounds using ZIF-8-functionalized grating-coupled SPR sensors*. IMCS 2025, Freiburg, Germany, Jun 2025.
3. [Poster] González-Morote, V.; *et al.* *Comparing thermal dissipation in monolithic and hybrid silicon/silicon dioxide nanopillars*. META 2025, Torremolinos, Spain, Jul 2025.
4. [Poster] González-Morote, V.; *et al.* *Photonic sensors based on fiber devices: Narrow-bandwidth long-period gratings*. International Workshop on Sensors and Molecular Recognition, Valencia, Spain, Jul 2021.

<b>SKILLS</b>	<i>Programming &amp; Data Modeling &amp; Design Fabrication Prototyping Office &amp; Docs Teaching Languages</i>	Python (NumPy, SciPy, Pandas), MATLAB, LabVIEW, Excel; basic C++, Mathematica COMSOL Multiphysics; optical spectroscopy; experiment automation Cleanroom basics (RIE, e-beam evaporation), thin films (PVD), SPR chips 3D printing (TinkerCAD—adv., Fusion 360—int.), microfluidic flow cells (PDMS) Microsoft Office, Google Workspace, L <sup>A</sup> T <sub>E</sub> X University laboratory teaching; protocol supervision; student assessment Spanish—Native; English—B2; Catalan—Professional use
<b>CERTIFICATIONS &amp; TRAINING</b>	<b>STRETCHBIO Project Summer School</b> <i>Universitat de Barcelona, Barcelona, Spain</i>	Jul 2025
	• Two-day training school within the EU H2020 FET-OPEN project STRETCHBIO (GA 964808).	
	<b>Laser Safety</b> <i>ProCareLight at ICN2 premises</i>	Nov 2022
	• 4-hour course based on EN60825, EN207 and EN208; safety for class 3R/3B/4 lasers.	
	<b>Micro- and Nanofabrication (Cleanroom)</b> <i>ICN2 Nanofabrication Facility</i>	
	• Competence operating equipment in cleanroom; RIE (Oxford PlasmaPro 100), e-beam evaporation (AJA ATC-8E Orion).	
	<b>Data Acquisition with LabVIEW</b> <i>LinkedIn Learning &amp; self-learning</i>	
	• 10h of coursework plus project: application for acquisition, processing and visualization of a photodetector array; NI DAQ integration.	
	<b>3D Printing</b> <i>ICN2 — Research Support Technician</i>	
	• Designed and fabricated custom parts for plasmonic biosensor prototypes; integration with electronics and microfluidics.	
	<b>Arduino</b> <i>Self-learning</i>	
	• Intermediate level; integration with LabVIEW.	
	<b>Microfluidics</b> <i>Self-learning</i>	
	• Design and fabrication of PDMS-based flow cells; application to biosensing.	