Victor González Morote

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LinkedIn | GitHub | Google Scholar

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 EROICA (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.

EDUCATION

M.Sc. in Photonics 2022
Universitat Politècnica de Catalunya

- Thesis: *Comparison of the optical properties of metallic versus high-dielectric 2D metasurfaces* (Advisor: A. Mihi, ICMAB-CSIC).
- Focus: Optical Engineering; Materials & Nanophotonics.

B.Sc. in Physics 2021
Universitat de València

- Thesis: *Introduction to photonic fibre-optic biosensors* (*Introducción a los biosensores fotónicos de fibra óptica*) (Advisors: M. Delgado Pinar, A. Díez Cremades; ICMUV).
- Focus: Photonics; Quantum Optics.

PUBLICATIONS & PRESENTATIONS

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
2. **[Preprint]** González-Morote, V.; Cojocaru, C.; Mihi, A. *Comparison of the optical properties of metallic and high-dielectric 2D metasurfaces.* UPCommons, 2022.

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. **[Talk]** 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.

SKILLS

Programming & Data	Python (NumPy, SciPy, Pandas), MATLAB, LabVIEW, Excel; basic C++, Mathematica
Modeling & Design	COMSOL Multiphysics; optical spectroscopy; experiment automation
Fabrication	Cleanroom basics (RIE, e-beam evaporation), thin films (PVD), SPR chips
Prototyping	3D printing (TinkerCAD—adv., Fusion 360—int.), microfluidic flow cells (PDMS)
Office & Docs	Microsoft Office, Google Workspace, LaTeX
Teaching	University laboratory teaching; protocol supervision; student assessment
Languages	Spanish—Native; English—B2; Catalan—Professional use

CERTIFICATIONS & TRAINING

STRETCHBIO Project Summer School Jul 2025
Universitat de Barcelona, Barcelona, Spain
- Two-day training school within the EU H2020 FET-OPEN project STRETCHBIO (GA 964808).

Laser Safety Nov 2022
ProCareLight at ICN2 premises
- 4-hour course based on EN60825, EN207 and EN208; safety for class 3R/3B/4 lasers.

Micro- and Nanofabrication (Cleanroom)
ICN2 Nanofabrication Facility
- Competence operating equipment in cleanroom; RIE (Oxford PlasmaPro 100), e-beam evaporation (AJA ATC-8E Orion).

Data Acquisition with LabVIEW
LinkedIn Learning & self-learning
- 10h of coursework plus project: application for acquisition, processing and visualization of a photodetector array; NI DAQ integration.

3D Printing
ICN2 — Research Support Technician
- Designed and fabricated custom parts for plasmonic biosensor prototypes; integration with electronics and microfluidics.

Arduino
Self-learning
- Intermediate level; integration with LabVIEW.

Microfluidics
Self-learning
- Design and fabrication of PDMS-based flow cells; application to biosensing.