

Vitor Almeida

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Employment History

- 2023 –  **PhD Candidate** Universitat Politècnica de València - UPV.
- 2018 - 2021  **Co-founder** Zaoki startup.
- Development of a carbon nanostructured catalyst for biogas treatment in the UFMG chemistry department.
 - Participation of pre-acceleration, acceleration, and scaling program.
 - Receipt of R\$50,000 reais in prize money that is being used in the installation and operation of a pilot plant located at Escalab-SENAI.
 - Designed a rotary kiln project specifically for technology scaling.
- 2016 - 2019  **Research intern** Chemistry department - UFMG.
- During this period he was responsible for the laboratory's gas line, doing maintenance on the gas lines and flow controllers.
 - Worked on the organization of the 19th CBCat/IX Mercocat.
 - In this period, he published two articles and filed two patents.
- 2015 - 2016  **Research intern** Athlone Institute of Technology - Ireland.
- At the university's research center, accompanied master's students, helping to choose the analysis methods and executing the defined tests.
 - Trained using Raman spectroscopy equipment, gel permeation chromatography, and thermal analysis.
 - Performed, for two months, analysis services to healthcare equipment companies.

Education

- 2023 – ongoing  **Ph.D. in Chemistry, Universitat Politècnica de València - UPV.**
- Photocatalytic reactions for CO₂ reduction using MOF's
 - Photocatalytic reactions for Hydrogen evolution (HER), Overall Water-splitting reaction (OWS) and Oxygen Evolution Reaction (OER).
 - MOF's synthesis and post-synthetic modifications such as co-catalyst photodeposition
- 2021 - 2021  **Research Internship at Max Planck Institute of Colloids and Interfaces - MPIKG**
- Photocatalytic tests for CO₂ reduction using Metal-PHI.
 - Photochlorination of propane using FeCl₃.
 - Rare Earth selective adsorption/desorption photo modulation.
- 2020 – 2022  **M.Sc. in Technological Innovation and Intellectual property, Federal University of Minas Gerais - UFMG.**
- Thesis title: *Scaling and proof of concept of a carbon-based catalyst for biogas desulfurization.*
- Test of different commercial reagents for the synthesis of carbon nanomaterials.
 - Development of novel carbon materials from the iron mining industries waste.
 - Commissioning of a rotary kiln for the synthesis of carbon nanomaterials
- 2011 – 2019  **B.Sc.in Chemistry, Federal University of Minas Gerais - UFMG.**
- Thesis title: *Development of an automated water treatment plant model with Arduino: a project for the technical course in Chemistry.*

Research Publications

Journal Articles

- 1 V. Fernandes de Almeida, S. Navalón, A. Dhakshinamoorthy, and H. Garcia, "Revisiting photocatalytic CO₂ reduction to methanol: A perspective focusing on metal-organic frameworks," *Angewandte Chemie*, vol. 137, no. 17, e202424537, 2025.  DOI: /10.1002/ange.202424537.
- 2 E. P. Gómez-Oliveira et al., "Inducing reactivity by cluster strain in titanium frameworks," *Journal of the American Chemical Society*, 2025.  DOI: /10.1021/jacs.5c16069.
- 3 J. J. Ramírez-Hernández et al., "Photo-thermal catalytic CO₂ methanation by RuO_x@ MIL-101 (Cr) with 9.2% apparent quantum yield under visible light irradiation," *ACS Applied Materials & Interfaces*, vol. 17, no. 35, pp. 49 485–49 499, 2025.  DOI: /10.1021/acsami.5c10215.
- 4 I. F. Silva, V. F. de Almeida, M. G. Rosmaninho, and F. C. Moura, "Wavelength and irradiation time: Modulation between CO₂ photoreduction and H₂ evolution reaction," *Journal of Environmental Chemical Engineering*, p. 117 594, 2025.  DOI: /10.1016/j.jece.2025.117594.
- 5 R. L. de Freitas Filho, L. C. de Oliveira, I. F. Silva, V. F. Almeida, and A. P. de Carvalho Teixeira, "Sustainable hierarchically porous carbons from bio-oil to remove emerging contaminants," *New Journal of Chemistry*, vol. 48, no. 8, pp. 3676–3694, 2024.  DOI: /10.1039/D3NJ05047E.
- 6 F. C. Ballotin et al., "New magnetic Fe oxide-carbon based acid catalyst prepared from bio-oil for esterification reactions," *Journal of the Brazilian Chemical Society*, vol. 31, no. 8, pp. 1714–1724, 2020.  DOI: /10.21577/0103-5053.20200057.
- 7 L. E. Milagre et al., "Nitrogen-doped carbonaceous materials obtained by CVD process from mesoporous silica for sulfides oxidation," *Catalysis Today*, vol. 344, pp. 32–40, 2020.  DOI: /10.1016/j.cattod.2018.10.025.

Under revision

- 1 J. Ferrando-Ferrero et al., "Enhanced green hydrogen generation via photocatalytic water splitting using V-doped Ti-squarate MOFs," *Journal of the American Chemical Society*, 2026.

Patents

- BR10201806888  Title: "CATALYST PRODUCTION PROCESS CONTAINING NITROGEN-DOPED CARBON NANOSTRUCTURES, CATALYST AND USE OF CATALYST FOR REMOVAL OF H₂S AND SULFIDES FROM LIQUID AND GASEOUS EFFLUENTS", Property of the National Institute of Registration: Industrial. Deposit: 09/17/2018; **Granted: 07/11/2023**
- BR10201807620  Title: "PROCESSES FOR THE PRODUCTION OF CARBON NANOSTRUCTURES WITH ACID AND MAGNETIC PROPERTIES, FROM BIO-OIL, PRODUCTS AND USE" Registration institution: INPI - National Institute of Industrial Property. Deposit: 12/17/2018; **Granted: 25/06/2024**

Skills

- Languages  Strong reading, writing and speaking competencies for Portuguese, English and Spanish.
- Coding  Python, L^AT_EX, C++.

Miscellaneous Experience

Congress presentations

- July, 2024  **PhotoIUPAC, Valencia, Spain**
 - Poster: MIL-125-NH₂ supported metal or metal oxide nanoparticles for photocatalytic production of solar fuels from CO₂ or H₂O.
- June 2024  **EUROMXENE Congress, Valencia Spain**
 - Poster: Synthesis and photocatalytic activity study of layered *TiN* α nanosheets as emerging materials towards greener N₂ fixation to ammonia.
- April 2021  **ACS Spring Virtual Meeting.**
 - Oral presentation: Development of a new catalyst applied to biogas treatment: From the laboratory to the farm.
- August 2020  **Fall 2020 Virtual Meeting & Expo.**
 - Oral presentation: The scale-up process of hard science technologies: a case study of a catalyst for biogas treatment.

Complementary Training

- 2024  **IV Theoretical-practical School of Fluorescence Techniques and Laser Flash Photolysis. CFP/UPV.**
 - Introduction to Fluorescence and Laser Flash Photolysis techniques; (40h)
- 2023  **Laboratory Applied Techniques course, ITQ/UPV.**
 - Introduction to characterization techniques available on ITQ infrastructure, such as XRD, XPS, Solids NMR, Liquid NMR, and Dry Box. (50h)
- 2019  **MIDAS Scale-up Laboratory - Escalab/UFGM**
 - Training and mentoring focused on business development, product design, and technology scaling. (85h)
- 2018  **1st Round of the Midas Business Laboratory -INCT MIDAS**
 - Innovation and entrepreneurship training. (120h)

Volunteer work

- 2021 - ongoing  **Portal Ciência na Web - UFGM.**
 - Mentoring undergraduate students from different areas producing podcasts about science in an accessible way.
 - Producing experiments kits for donation to public school teachers.