

## CURRICULUM VITÆ

# Luis Fernando Bautista

## Summary

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I hold a bachelor's degree in chemistry, specialising in industrial chemistry, and a doctorate in chemistry from the Chemical Engineering program at the Complutense University of Madrid (UCM). My professional activity began in industrial companies, where I worked in the R&D Department at Probisa, the Process Department at Técnicas Reunidas, and as an independent consultant. My research and teaching career started at the Chemical Engineering Department at UCM (1996-2004). Since 2004, I have worked in the Department of Chemical and Environmental Technology at Rey Juan Carlos University. I also undertook a postdoctoral stay (1998-1999) with Prof. Jens Nielsen's Group at the Center for Process Biotechnology at DTU in Denmark. Between 2002 and 2004, I served as the Deputy Technical Director of a biodiesel plant, contributing to developing a patented process. In 2023, I was a visiting professor at UFSC in Brazil.

Since 2010, my main research focus has been the development of microalgae-based biorefinery processes aimed at the comprehensive use and transformation of microalgae biomass. This work targets biofuel production, including biodiesel, biokerosene, bio-oil, and biogas, and the extraction and purification of high-value-added bioproducts such as pigments, proteins, and lipids. Additionally, I conduct research in soil bioremediation and the biodegradation of organic contaminants using microorganisms and immobilised enzymes.

I have extensive teaching experience in numerous undergraduate and bachelor's courses and master's and doctoral programs in chemical, environmental, and energy engineering, chemistry, biotechnology, and environmental sciences. Throughout my academic career, I have held several notable positions, including Coordinator for the Environmental Engineering Degree (2010-2014), Overseer of research lines in the Doctoral Program in Industrial Technologies (2014-2020), and Coordinator for the Engineering and Architecture division within the Official Master's School (2020-2024). Since February 2024, I have been the Deputy Director of Internationalization, Employability, and Relationships with Companies at the Higher School of Experimental Sciences and Technology.

## Personal information

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Position: Full Professor  
Department of Chemical and Environmental Technology, ESCET  
Universidad Rey Juan Carlos (URJC)

Address: C/ Tulipán s/n  
28933 Móstoles, Madrid, Spain

E-mail: [fernando.bautista@urjc.es](mailto:fernando.bautista@urjc.es)

Web: <https://gestion2.urjc.es/pdi/ver/fernando.bautista>

ORCID: 0000-0002-6311-5310

Web of Science: F-8412-2010

Scopus: 7006046638

Google Scholar: Pr91xNcAAAAJ&hl

## Education

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- 1997 *PhD* in Chemistry (Chemical Engineering), Universidad Complutense de Madrid (UCM), Spain.
- 1990 BSc in Chemistry (Industrial Chemistry), UCM, Spain.

## Academic and Professional Positions

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- 2021-ongoing Full Professor. Department of Chemical and Environmental Technology, URJC, Spain.
- 2023 Visiting Professor. Laboratory of Phycology, Department of Botany, Universidade Federal de Santa Catarina (UFSC), Brazil (3 weeks).
- 2004-2021 Associate Professor. Department of Chemical and Environmental Technology, URJC, Spain.
- 2003-2004 Associate Professor. Department of Chemical Engineering, UCM, Spain.
- 2002-2004 Freelance translator (Patents, English-Spanish).
- 2001-2003 Lecturer. Department of Chemical Engineering, UCM, Spain.
- 1998-1999 Postdoctoral Researcher. Center for Process Biotechnology, Department of Biotechnology, Technical University of Denmark (DTU) (12 months).
- 1996-2001 Assistant Lecturer. Department of Chemical Engineering, UCM, Spain.
- 1994-1996 *PhD* student. Department of Chemical Engineering, UCM, Spain.
- 1993 Freelance Engineer.
- 1992 Process Engineer. Process Department, Técnicas Reunidas S.A., Spain.
- 1990 Chemist. R&D Department, Productos Bituminosos S.A., Spain.

## Academic Appointments and Merits

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- 2024-ongoing Deputy Director of Internationalisation, Employability and Relationships with Companies (School of Experimental Sciences and Technology, URJC).
- 2011-ongoing Member of the Commission of Final Year Project, Degree of Environmental Engineering, URJC.
- 2005-ongoing Coordinator of the Chromatography Laboratory (Group of Chemical and Environmental Engineering, URJC).
- 2024 Member of the Scientific Committee of the "VI Meeting of Young Researchers of the Spanish Society of Catalysis (SECAT)", 12-14 June 2024, Madrid, Spain.
- 2020-2024 Coordinator of the Academic Section "Engineering and Architecture" in the International Master's School, URJC
- 2019 Member of the Scientific Committee of the "2<sup>nd</sup> International Meeting on New Strategies in Bioremediation Processes (BioRemid-2019)", 24-25 October 2019, Porto, Portugal.
- 2018-2019 Elected member of the Faculty Board (School of Experimental Sciences and Technology, URJC)
- 2017 Member of the Scientific Committee of the "International Meeting on New Strategies in Bioremediation Processes (BioRemid-2017)", 9-10 March 2017, Granada, Spain.

2014-2021	Coordinator of two Research Areas ("Biomass and Bioenergy" and "Production and Storage of Hydrogen") of the Doctorate Program in Industrial Technologies (URJC).
2011-2014	Elected member of the Faculty Board (School of Experimental Sciences and Technology, URJC)
2010-2014	Coordinator of the Degree in Environmental Engineering (URJC).
2009-2019	Member of the Doctorate Commission of the URJC.
2008-2013	Coordinator of internships in companies for students of the Degree in Chemical Engineering.
2008	Member of the Organizing Committee of the "XXXII Reunión Ibérica de Adsorción (RIA-2008)", 22-24 September 2008, Móstoles, Spain.
2006-2009	Technical Director of the Laboratory of Spectroscopy, LABTE (URJC).
2005-2010	Coordinator of 4 <sup>th</sup> year of the Degree in Environmental Sciences (URJC).
2002-2004	Deputy Technical Director of a biodiesel plant (5000 t/y), owned by UCM and IDAE, Alcalá de Henares, Spain.

### Research outputs (key figures)

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Web of Science:	h-Index = 26, citations >2300
Scopus:	h-index = 28, citations >2600
Google Scholar:	h-index = 33, citations > 3600

### Memberships and Societies

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From 2014	Society of Chemical Industry (SCI. <a href="http://www.soci.org">www.soci.org</a> ).
From 2010	Spanish Society of Microbiology (SEM. <a href="http://www.semicrobiologia.org">www.semicrobiologia.org</a> ).
From 2008	Spanish Society of Catalysis (SECAT. <a href="http://www.secat.es">www.secat.es</a> ).
From 2005	European Federation of Biotechnology (EFB. <a href="http://www.efbiotechnology.org">www.efbiotechnology.org</a> ).

### Research Grants

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#### Principal Investigator

2025	Circular endocrine disruptors wastewater treatment using microalgae for bioenergy and biofertilizers. Universidad Rey Juan Carlos (2024/SOLCON-137532), (16 k€).
2022-2024	Management and supervision of a laboratory technician fellowship. Comunidad de Madrid (PEJ-2021-TL/AMB-22945), (38 k€).
2022-2023	Management and supervision of a research fellowship. Comunidad de Madrid (2022/00193/039), (34 k€).
2022-2024	Advances in hydrothermal liquefaction of wastes. National Research Agency (TED2021-129747B-C21), (174 k€).
2021-2024	Innovative biorefinery from microalgae to bioproducts and biojet fuel. National Research Agency (PID2020-116780RB-I00), (111 k€).
2020	GRAS extraction of carotenoids from <i>Dunaliella salina</i> . Monzón Biotech S.L.

- 2019 Bacteriostatic performance of biocides in diesel fuel. Repsol S.A., (10 k€).
- 2019-2022 Development of advanced microalgae technologies for a circular economy. Comunidad de Madrid (P2018/BAA-4532), (749 k€).
- 2019-2021 Management and supervision of a laboratory technician fellowship. Comunidad de Madrid (PEJ-2018-AI/AMB-10263), (38 k€).
- 2019-2020 Management and supervision of a research fellowship. Comunidad de Madrid (PEJD-2018-PRE/AMB-9557), (25 k€).
- 2017-2019 Management and supervision of a postdoctoral fellowship. Comunidad de Madrid (PEJD-2016/AMB-3249), (35 k€).
- 2016-2018 Biodegradable electronics. Austrian Research Promotion Agency (# 851254), (48 k€).
- 2010-2012 Microbial growth in fuel tanks. Repsol S.A., (59 k€).
- 2006-2009 Green diesel through hydrogenation of biomass. Repsol S.A., (116 k€).
- 2008-2011 Bioremediation of soils polluted by polycyclic aromatic hydrocarbons: Identification of microorganisms and enzymes involved in the degradation processes. Fundación Alfonso Martín Escudero, (86 k€).
- 2003-2004 Design of the purification of immunological veterinary products. Laboratorios SYVA S.A., (43 k€).
- 2000-2001 Chromatographic purification of the plant growth hormone, 3-indoleacetic acid. Universidad Complutense de Madrid (PR52/00-8837), (6 k€).

### Researcher

- 2024-2025 Treatment of pig slurry using anoxygenic and oxygenic photosynthetic technologies to recover carbon and essential nutrients (19,5 k€).
- 2022-2024 Chair on circular economy for the sustainable management of wastes. Fuenlabrada City Council - URJC (2022/00042/001) (30 k€).
- 2020-2023 Ibero-American network for wastewater treatment with microalgae. CYTED (320RT0005).
- 2018-2020 Design of mesoporous silica nanoparticles for drug-controlled release. Spanish Government, National Research Plan (CTQ2017-88642-R) (93 k€).
- 2018 Microbial biodiversity in soil fertility additives for agriculture. Gaiambiente Environmental Consulting (2 k€).
- 2015-2017 Research in energy and environmental technology. Universidad Rey Juan Carlos (530 k€).
- 2015-2018 Silica nanoparticles with hierarchical porosity. Functional devices for drug-controlled release. Spanish Government, National Research Plan (CTQ2014-57858-R) (196 k€).
- 2014-2018 Industrial applications of Spirulina. Comunidad de Madrid (S2013/ABI-2783) (95 k€).
- 2013-2014 Enzymatic process for biodiesel from microalgae. Universidad Rey Juan Carlos (PRIN13 CC05) (4 k€).
- 2012-2014 Oxygenated biofuels from lignocellulosic biomass. Spanish Government, National Research Plan (CTQ2011-28216-C02-01) (173 k€).
- 2012-2013 Sustainable synthesis of biofuels from lignocellulosic biomass. Fundación Iberdrola (20 k€).

2010-2014	Green biofuels from wastes. Comunidad de Madrid (S2009/ENE-1743) (150 k€).
2009-2011	Intensification of biodiesel process. Spanish Government, National Research Plan (CTQ2008-01396) (164 k€).
2008-2011	Fungal genomics for biodiesel. Región de Murcia (BIO-BMC 07/01-0005) (147 k€).
2005-2008	Alternative catalytic processes for pharmaceutical and food intermediates. Spanish Government, National Research Plan (CTQ2005-02375/PPQ) (148 k€).
2005-2006	<i>In-situ</i> bioremediation of soils polluted with PAH. Spanish Government, National Research Plan (013/2006/2-1.1; 1.1-373/2005/3-B) (119 k€).
2005-2006	Cracks in polyethylene pipes. Repsol S.A. (32 k€).
2003-2004	Biotechnological production of bulk chemicals. European Union, V Framework Program (G5MA-CT-2002-00014) (452 k€).
2002-2004	Green technologies for biosurfactants production. Spanish Government, National Research Plan (PPQ2002-03466) (86 k€).
2002-2004	New raw materials for biodiesel production. Spanish Government, National Research Plan (PPQ2002-03468) (81 k€).
2002-2003	New surfactants from glycerol. Universidad Complutense de Madrid (PR78/02-10978) (5 k€).
2002	Biodiesel production from frying oils. Comunidad de Madrid (07M/0049/2001) (47 k€).
2001-2002	Development of a biodiesel pilot plant. Spanish Government, National Research Plan (PPQ 2000-2902-E) (67 k€).
2001-2003	Demonstration plant for biodiesel production. Spanish Government, Profit Program (FIT-120301-2001-2) (499 k€).
2000-2002	Triglycerides for animal feeding. Nutreco Servicios S.A. (45 k€).
2000-2002	Green technologies for fine chemicals. Spanish Government, National Research Plan (AMB 99-0417) (85 k€).
1999-2001	Inorganic membranes for separation processes. Universidad Complutense de Madrid (PR269/98-8198) (33 k€).
1999-2001	Purification and transformation of frying oils. Comunidad de Madrid (07/M/0045/1998) (71 k€).
1996-1997	Design and simulation of industrial bioprocesses. European Union, Alfa Program (ALR/B7 3-0229.7) (5 k€).
1994-1997	Design of biochemical processes. Comunidad de Madrid (AE 265/94) (11 k€).
1994-1997	Design and simulation of integrated biochemical processes. Spanish Government, National Research Plan (BIO 94-1508-CE) (24 k€).
1994-1997	Design and simulation of integrated biochemical processes. European Union, III Framework Program (BRE2-CT94-0623) (670 k€).
1994	Synthesis of $\beta$ -hydroxy- $\alpha$ -aminoesters. Universidad Complutense de Madrid (PR179/91-3473) (48 k€).

## Publications

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### Peer-reviewed research papers

- 72 García N, Rodríguez R, Vicente G, Espada JJ, Bautista LF. (2025) Comprehensive study on endocrine disruptor removal from wastewater using different microalgae species. *Applied Sciences*, 15(1), 132.  
<https://doi.org/10.3390/app15010132>
- 71 Águila-Carricondo P, de la Roche Cadavid JP, García-García R, Galán PL, Bautista LF, Vicente G. (2024) Can mild alkaline pretreatment simultaneously enhance the antioxidant capacity of beta-carotene extracts and biomethane yields in a sustainable *Dunaliella salina* biorefinery? *Biomass and Bioenergy*, 191, 107474.  
<https://doi.org/10.1016/j.biombioe.2024.107474>
- 70 Piera A, Espada JJ, Morales V, Rodríguez R, Vicente G, Bautista LF (2024) Optimised phycoerythrin extraction method from *Porphyridium* sp. combining imidazolium-based ionic liquids. *Heliyon*, 10(14), e34957.  
<https://doi.org/10.1016/j.heliyon.2024.e34957>
- 69 Delgado A, Vicente G, Bautista LF (2024) Assessing environmental sustainability of phytoremediation to remove copper from contaminated soils. *Sustainability*, 16(6), 2441.  
<https://doi.org/10.3390/su16062441>
- 68 Álvarez-Pozo AH, Parma-García MI, Ortiz-Marcos I, Bautista LF, Atanes-Sánchez E (2024) Analysis of causes of delays and cost overruns and mitigation measures to improve profitability and sustainability in turnkey industrial projects. *Sustainability*, 16(4), 1449.  
<https://doi.org/10.3390/su16041449>
- 67 Corral-García LS, Molina MC, Bautista LF, Simarro R, Espinosa CI, Gorines-Cordero G, González-Benítez N (2024) Bacterial diversity in old hydrocarbon polluted sediments of the Ecuadorian Amazon river basins. *Toxics*, 12(2), 119.  
<https://doi.org/10.3390/toxics12020119>
- 66 Uppinakudru AP, Martin-Somer M, Reynolds K, Stanley S, Bautista LF, Pablos C, Marugán J (2023) Wavelength synergistic effects in continuous flow-through water disinfection systems. *Water Research X*, 21, 100208.  
<https://doi.org/10.1016/j.wroa.2023.100208>
- 65 Águila-Carricondo P, de la Roche Cadavid JP, Galán PL, Bautista LF, Vicente G (2023) New green biorefineries from cyanobacterial-microalgal consortia: Production of chlorophyll-rich extracts for the cosmetic industry and sustainable biogas. *Journal of Cleaner Production*, 429, 139652  
<https://doi.org/10.1016/j.jclepro.2023.139652>
- 64 Fedeila M, Hachaïchi-Sadouk Z, Bautista LF, Simarro R (2023) Biodegradation of clopidogrel bisulfate by *Pseudomonas aeruginosa* and *Pseudomonas putida* strains isolated from Algerian wastewater. *Journal of Contaminant Hydrology*, 256:104198.  
<https://doi.org/10.1016/j.jconhyd.2023.104198>
- 63 Sánchez-Laso J, Espada JJ, Rodríguez R, Vicente G, Bautista LF (2023) Novel biorefinery approach for phycocyanin extraction and purification and biocrude production from *Arthrospira platensis*. *Industrial & Engineering Chemistry Research*, 62(12):5190-5198.  
<https://doi.org/10.1021/acs.iecr.2c03683>
- 62 Espada JJ, Rodríguez R, Gari V, Salcedo-Abraira P, Bautista LF (2022) Coupling phytoremediation of Pb-contaminated soil and biomass energy production: A comparative life cycle assessment. *Science of the Total Environment*, 840:156675.  
<https://doi.org/10.1016/j.scitotenv.2022.156675>



- 61 Sánchez-Laso J, Piera A, Vicente G, Bautista LF, Rodríguez R, Espada JJ (2021) A successful method for phycocyanin extraction from *Arthrospira platensis* using [Emim][EtSO<sub>4</sub>] ionic liquid. *Biofuels, Bioproducts & Biorefining*, 15:1638-1649.  
<https://doi.org/10.1002/bbb.2275>
- 60 del Álamo AC, Pariente MI, Sánchez-Bayo A, Puyol D, Rodríguez R, Morales V, Bautista LF, Vicente G, Melero JA, Molina R, Martínez F (2021) Assessment of *Trametes versicolor*, *Isochrysis galbana*, and purple phototrophic bacteria for the removal of pharmaceutical compounds in hospital wastewater. *Advances in Environmental Engineering Research*, 2(4):027.  
<https://doi.org/10.21926/aeer.2104027>
- 59 Sánchez-Bayo A, Megía-Hervás I, Rodríguez R, Morales V, Bautista LF, Vicente G (2021). Biocrude from *Nannochloropsis gaditana* by hydrothermal liquefaction: an experimental design approach. *Applied Sciences*, 11(10):4337.  
<https://doi.org/10.3390/app11104337>
- 58 González N, Bautista LF, Simarro R, Vargas C, Salmerón A, Murillo Y, Molina MC (2020). Bacterial diversity in aqueous/sludge phases within diesel fuel storage tanks. *World Journal of Microbiology and Biotechnology*, 36:180.  
<https://doi.org/10.1007/s11274-020-02956>
- 57 Megía-Hervás I, Sánchez-Bayo A, Bautista LF, Morales V, Witt-Sousa FG, Segura-Fornieles M, Vicente G (2020). Scale-up cultivation of *Phaeodactylum tricornutum* to produce biocrude by hydrothermal liquefaction. *Processes*, 8(9):1072.  
<https://doi.org/10.3390/pr8091072>
- 56 Sánchez-Bayo A, Morales V, Rodríguez R, Vicente G, Bautista LF (2020). Cultivation of microalgae and cyanobacteria: Effect of operating conditions on growth and biomass composition. *Molecules*, 25:2834.  
<https://doi.org/10.3390/molecules25122834>
- 55 Molina MC, Bautista LF, Catalá M, de las Heras MR, Martínez-Hidalgo P, San Sebastián J, González-Benítez N (2020). From laboratory tests to the ecoremedial system: the importance of microorganisms in the recovery of PPCPs-disturbed ecosystems. *Applied Sciences* 10(10):3391.  
<https://doi.org/10.3390/app10103391>
- 54 Sánchez-Bayo A, Rodríguez R, Morales V, Nasirian N, Bautista LF, Vicente G. (2020). Hydrothermal liquefaction of microalga using metal oxide catalyst. *Processes*, 8(1):15.  
<https://doi.org/10.3390/pr8010015>
- 53 Sánchez-Bayo A, López-Chicharro D, Morales V, Espada JJ, Martínez F, Astals S, Vicente G, Bautista LF, Rodríguez R (2020) Biodiesel and biogas production from *Isochrysis galbana* using dry and wet lipid extraction: A biorefinery approach. *Renewable Energy*, 146:188-195.  
<https://doi.org/10.1016/j.renene.2019.06.148>
- 52 Mendoza A, Morales V, Sánchez-Bayo A, Rodríguez-Escudero R, González-Fernández C, Bautista LF, Vicente G. (2020) The effect of the lipid extraction method used in biodiesel production on the integrated recovery of biodiesel and biogas from *Nannochloropsis gaditana*, *Isochrysis galbana* and *Arthrospira platensis*. *Biochemical Engineering Journal*, 154:107428.  
<https://doi.org/10.1016/j.BEJ.2019.107428>

- 51 Montero-Hidalgo M, Espada JJ, Rodríguez R, Morales V, Bautista LF, Vicente G (2019) Mild hydrothermal pretreatment of microalgae for the production of biocrude with a low N and O content. *Processes*, 7(9):630.  
<https://doi.org/10.3390/pr7090630>
- 50 Vargas C, Simarro R, Reina JA, Bautista LF, Molina MC, González N (2019) New approach for biological synthesis of reduced graphene oxide. *Biochemical Engineering Journal*, 151:107331.  
<https://doi.org/10.1016/j.bej.2019.107331>
- 49 Irimia-Vladu M, Kanbur Y, Camaioni F, Coppola ME, Yumusak C, Irimia CV, Vlad A, Operamolla A, Farinola GM, Suranna GP, González N, Molina MC, Bautista LF, Langhals H, Stadlober B, Głowacki ED, Sariciftci NS (2019) On the stability of selected hydrogen-bonded semiconductors in organic electronic devices. *Chemistry of Materials*, 31:6315-6346.  
<https://doi.org/10.1021/acs.chemmater.9b01405>
- 48 Sánchez-Bayo A, Morales V, Rodríguez R, Vicente G, Bautista LF (2019) Biodiesel production (FAEEs) by heterogeneous combi-lipase biocatalysts using wet extracted lipids from microalgae. *Catalysts*, 9:296.  
<https://doi.org/10.3390/catal9030296>
- 47 Espada JJ, Pérez-Antolín D, Vicente G, Bautista LF, Morales V, Rodríguez R (2019) Environmental and techno-economic evaluation of  $\beta$ -carotene production from *Dunaliella salina*. A biorefinery approach. *Biofuels, Bioproducts & Biorefining*, 14:43-54.  
<https://doi.org/10.1002/bbb.2012>
- 46 Fedeila M, Hachaïchi-Sadouk Z, Bautista LF, Simarro R, Nateche F (2018) Aerobic biodegradation of anionic surfactants by *Alcaligenes faecalis*, *Enterobacter cloacae* and *Serratia marcescens* strains isolated from industrial wastewater. *Ecotoxicology and Environmental Safety*, 163:629-635.  
<https://doi.org/10.1016/j.ecoenv.2018.07.123>
- 45 Martín A, Morales V, Ortiz-Bustos J, Pérez-Garnes M, Bautista LF, García-Muñoz RA, Sanz R (2018) Modelling the adsorption and controlled release of drugs from the pure and amino surface-functionalized mesoporous silica hosts. *Microporous and Mesoporous Materials*, 262:23-34.  
<https://doi.org/10.1016/j.micromeso.2017.11.009>
- 44 Rodríguez R, Espada JJ, Moreno J, Vicente G, Bautista LF, Morales V, Sánchez-Bayo A, Dufour J (2018) Environmental analysis of *Spirulina* cultivation and biogas production using experimental and simulation approach. *Renewable Energy*, 129:724-732.  
<https://doi.org/10.1016/j.renene.2017.05.076>
- 43 Bautista LF, Vargas C, González N, Molina MC, Simarro R, Salmerón A, Murillo Y (2016) Assessment of biocides and ultrasound treatment to avoid bacterial growth in diesel fuel. *Fuel Processing Technology*, 152:56-63.  
<https://doi.org/10.1016/j.fuproc.2016.06.002>
- 42 Molina MC, González Benítez N, Simarro R, Bautista LF, Vargas C, García-Camero JP, Díaz EM, Arrayás M, Quijano MA (2016) Bioremediation techniques for naproxen and carbamazepine elimination. Toxicity evaluation test. *Chimica Oggi/Chemistry Today*, 34(2):52-55.
- 41 Vasiliadou IA, Sánchez-Vázquez R, Molina R, Martínez F, Melero JA, Bautista LF, Iglesias J, Morales G (2016) Biological removal of pharmaceutical compounds using white-rot fungi with concomitant FAME production of the residual biomass. *Journal of Environmental Management*, 180:228-237.  
<https://doi.org/10.1016/j.jenvman.2016.05.035>



- 40 Bautista LF, Morales G, Sanz R (2015) Biodegradation of polycyclic aromatic hydrocarbons (PAHs) by laccase from *Trametes versicolor* covalently immobilized on amino-functionalized SBA-15. *Chemosphere*, 136:273-280.  
<https://doi.org/10.1016/j.chemosphere.2015.05.071>
- 39 Mendoza A, Vicente G, Bautista LF, Morales V (2015) Opportunities for *Nannochloropsis gaditana* biomass through the isolation of its components and biodiesel production. *Green Processing and Synthesis*, 4:97-102.  
<https://doi.org/10.1515/gps-2014-0094>
- 38 Melero JA, Bautista LF, Morales G, Iglesias J, Sánchez-Vázquez R (2015) Acid-catalyzed production of biodiesel over arenasulfonic SBA-15: Insights into the role of water in the reaction network. *Renewable Energy*, 75:425-432.  
<https://doi.org/10.1016/j.renene.2014.10.027>
- 37 Melero JA, Sánchez-Vázquez R, Vasiliadou IA, Martínez Castillejo F, Bautista LF, Iglesias J, Morales G, Molina R (2015) Municipal sewage sludge to biodiesel by simultaneous extraction and conversion of lipids. *Energy Conversion and Management*, 103:111-118.  
<https://doi.org/10.1016/j.enconman.2015.06.045>
- 36 Bautista LF, Vicente G, Mendoza A, González S, Morales V (2015) Enzymatic Production of biodiesel from *Nannochloropsis gaditana* microalgae using immobilized lipases in mesoporous materials. *Energy & Fuels* 29:4981-4989.  
<https://doi.org/10.1021/ef502838h>
- 35 Melero JA, Bautista LF, Iglesias J, Morales G, Sánchez-Vázquez R (2014) Production of biodiesel from waste cooking oil in a continuous packed bed reactor with an agglomerated Zr-SBA-15/bentonite catalyst. *Applied Catalysis B: Environmental*, 145:197-204.  
<https://doi.org/10.1016/j.apcatb.2013.02.050>
- 34 Iglesias J, Melero JA, Bautista LF, Morales G, Sánchez-Vázquez R (2014) Continuous production of biodiesel from low grade feedstock in presence of Zr-SBA-15: Catalyst performance and resistance against deactivation. *Catalysis Today*, 234:174-181.  
<https://doi.org/10.1016/j.cattod.2014.01.004>
- 33 Bautista LF, Vargas C, González N, Molina MC, Simarro R, Salmerón A, Murillo Y (2014) Physical and chemical treatments to prevent the growth of microorganisms in diesel fuel storage tanks. *Chimica Oggi/Chemistry Today*, 32(3):56-61.
- 32 Melero JA, Bautista LF, Iglesias J, Morales G, Sánchez-Vázquez R, Wilson K, Lee AF (2014) New insights in the deactivation of sulfonic modified SBA-15 catalysts for biodiesel production from low-grade oleaginous feedstock. *Applied Catalysis A: General*, 488:111-118.  
<http://doi.org/10.1016/j.apcata.2014.09.023>
- 31 Simarro R, González N, Bautista LF, Molina MC (2013) Biodegradation of high-molecular-weight polycyclic aromatic hydrocarbons by a wood-degrading consortium at low temperatures. *FEMS Microbiology Ecology*, 83:438-49.  
<https://doi.org/10.1111/1574-6941.12006>
- 30 González N, Bautista LF, Molina MC, Simarro R, Vargas C, Flores R (2013) Efecto de la concentración de surfactante y de la temperatura en la biodegradación de naftaleno, antraceno y fenantreno por *Enterobacter* sp., *Pseudomonas* sp. y *Stenotrophomonas* sp. aislados de un consorcio degradador de HAP. *Anales de Química*, 109:182-187.
- 29 Simarro R, González N, Bautista LF, Molina MC (2013) Assessment of the efficiency of in situ bioremediation techniques in a creosote polluted soil: change in bacterial community. *Journal of Hazardous Materials*, 262:158-167.  
<https://doi.org/10.1016/j.jhazmat.2013.08.025>

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- 52 Diseño de catalizadores ácidos heterogéneos tolerantes a la presencia de impurezas para la producción de biodiésel de segunda generación. Congreso de la Sociedad Española de Catálisis 2013 (SECAT 2013). 26-28 June 2013, Seville, Spain. (Oral).
- 51 Sustainable routes for the production of energy-dense oxygenated biofuels from lignocellulosic biomass. Workshop "Últimos avances en la producción de combustibles limpios a partir de residuos agroforestales y oleaginosos". 23-24 May 2013, Móstoles, Spain. (Poster).
- 50 Prevención de riesgos y seguridad laboral en áreas contaminadas con HAP. 11<sup>o</sup> Congreso Internacional de Prevención de Riesgos Laborales (ORP2013). 3-5 April 2013, Santiago de Chile, Chile. (Poster).
- 49 Biodiesel from spent coffee grounds: oil extraction and transformation with solid acid catalysts. 7<sup>th</sup> International Conference on Environmental Catalysis (ICEC 2012). 2-6 September 2012, Lyon, France. (Oral).
- 48 Continuous production of biodiesel from low grade feedstock in a fixed bed reactor by heterogeneous acid catalysis. Advances in Catalysis for Biomass Valorization (Cat4Bio). 8-11 July 2012, Thessaloniki, Greece. (Poster).
- 47 Selective dehydration of xylose to furfural over sulfonic acid heterogeneous catalysts in DMSO. Catalysis for Clean Energy and Sustainable Chemistry (CCESC 2012). 27-29 June 2012, Madrid, Spain. (Poster).
- 46 Zr-SBA-15 acid catalyst: Optimization of the synthesis and operating conditions for biodiesel production from low-grade oils and fats. 1<sup>st</sup> International Congress on Catalysis for Biorefineries (CatBior). 2-5 October 2011, Málaga, Spain. (Oral).
- 45 Assessment of bioremediation techniques (biostimulation, bioaugmentation and natural attenuation) in a creosote polluted soil and restoration of the microbial community. 15<sup>th</sup> International Biodegradation and Biodeterioration Symposium (IBBS-15). 19-24 September 2011, Viena, Austria. (Oral).
- 44 Effect of surfactants on PAH biodegradation process by a bacterial consortium and dynamics of the bacterial community during the process. 15<sup>th</sup> International Biodegradation and Biodeterioration Symposium (IBBS-15). 19-24 September 2011, Viena, Austria. (Poster).
- 43 Biodegradation of high molecular weight PAHs under cold and warm temperatures. XXIII Congreso Nacional de Microbiología. 11-14 July 2011, Salamanca, Spain. (Poster).
- 42 Modified sulfonic acid-functionalised SBA-15 as robust catalyst for the processing of FFA/water-containing feedstocks for biodiesel production. 5th International FEZA Conference (FEZA 2011). 3-7 July 2011, Valencia, Spain. (Poster).
- 41 Producción de biodiesel a partir de materias primas de bajo coste mediante catálisis ácida heterogénea. Congreso de la Sociedad Española de Catálisis 2011 (SECAT'11). 29 June-1 July 2011, Zaragoza, Spain. (Poster).
- 40 Acid heterogeneous catalysts for FAME production using low-cost oleaginous feedstock. Use of agro-forest and oily residues to produce clean transportation fuels (Workshop ResToEne). 8-10 June 2011, Madrid, Spain. (Oral).
- 39 Biodiesel production from low-cost feedstocks using heterogeneous acid catalysis. 17<sup>th</sup> Rideal Conference. 19-21 April 2011, Cardiff, UK. (Oral).
- 38 Zirconia-silica mixed mesostructured oxides as catalysts for biodiesel. 2<sup>nd</sup> International Conference on Multifunctional, Hybrid and Nanomaterials (Hybrid Materials 2011). 6-10 March 2011, Strasbourg, France. (Poster).

- 37 Optimización del proceso directo de producción de biodiésel a partir del hongo *Mucor circinelloides*. III Congreso de Microbiología Industrial y Biotecnología Microbiana. 17-19 November 2010, Alcalá de Henares, Spain. (Poster).
- 36 Zr-SBA-15 and related materials. Efficient acid catalysts for biodiesel production from FFA-containing feedstocks. Engineering of New Micro- and Mesosstructured Materials (IZC16 & IMMS7). 4-9 July 2010, Sorrento, Italy. (Poster).
- 35 Zr-SBA-15: Acid catalyst for biodiesel production. Utilisation of Biomass for Sustainable Fuels & Chemicals (Ubiochem I). 13-15 May 2010, Córdoba, Spain. (Poster).
- 34 Optimization of reaction conditions for crude palm oil methanolysis using arenesulfonic acid-modified mesostructured catalysts. 2<sup>nd</sup> International Congress on Biodiesel. The Science and the Technologies. 15-17 November 2009, Munich, Germany. (Poster).
- 33 Biodegradación de HAPs de alto peso molecular a bajas temperaturas. XXII Congreso de la Sociedad Española de Microbiología. 21-24 September 2009, Almería, Spain. (Oral).
- 32 Estudio y optimización de factores abióticos y descripción de poblaciones microbianas implicadas en procesos de biorremediación de suelos contaminados por hidrocarburos aromáticos policíclicos. XXII Congreso de la Sociedad Española de Microbiología. 21-24 September 2009, Almería, Spain. (Oral Keynote).
- 31 Biodiesel production over sulfonic acid-modified mesoporous silica catalysts. 6<sup>th</sup> World Congress on Catalysis by Acids and Bases (ABC-6). 10-14 May 2009, Geneve, Italy. (Oral Keynote).
- 30 Catalizadores ácidos mesoestructurados con grupos sulfónico para la producción de biodiésel. Congreso de la Sociedad Española de Catálisis 2009 (SECAT'09). 29 June-1 July 2009, Ciudad Real, Spain. (Oral).
- 29 Isolation and genetic identification of PAH degrading microorganisms. 14<sup>th</sup> International Biodeterioration and Biodegradation Symposium (IBBS-14). 6-10 October 2008, Messina, Italy. (Poster).
- 28 Cultivated bacterial community dynamics during polycyclic aromatic hydrocarbon degradation. 14<sup>th</sup> International Biodeterioration and Biodegradation Symposium (IBBS-14). 6-10 October 2008, Messina, Italy. (Oral).
- 27 Effect of different non-ionic surfactants on the biodegradation of PAH by diverse bacteria isolated from hydrocarbon polluted soils. 14<sup>th</sup> International Biodeterioration and Biodegradation Symposium (IBBS-14). 6-10 October 2008, Messina, Italy. (Oral).
- 26 Inmovilización de laccasa sobre materiales mesoestructurados. Evaluación de la actividad enzimática en la oxidación de fenol y degradación de naftaleno. XXI Simposio Iberoamericano de Catálisis (SICAT 2008). 22-27 June 2008, Benalmádena, Spain. (Poster).
- 25 Producción de biodiésel a partir de biomasa del hongo *Mucor circinelloides* sin extracción previa de lípidos. VI Reunión del Grupo de Microbiología Industrial y Biotecnología Microbiana de la SEM (CMIBM2008). 12-14 November 2008, Barcelona, Spain. (Oral).
- 24 Adsorption of indole-3-acetic acid derivatives by hydrophobic interaction chromatography. 7<sup>th</sup> World Congress of Chemical Engineering. 10-14 July 2005, Glasgow, UK. (Poster).
- 23 Estudio de la purificación por adsorción del ácido 6-aminopenicilánico. Congreso Nacional de Biotecnología (Biotec'2004). 19-23 July 2004, Oviedo, Spain. (Poster).



- 22 Purification process of 6-aminopenicillanic acid and phenylacetic acid by simultaneous adsorption in a fixed bed. Fundamentals of Adsorption (FOA 8). 23-28 May 2004, Sedona, USA. (Poster).
- 21 Biodiesel: current trends and technical developments in Spain. 25<sup>th</sup> World Congress of the International Society for Fat Research. 12-15 October 2003, Bordeaux, France. (Oral).
- 20 Adsorption of phenol and cresols on a polymeric hydrophobic resin. IV Congress on Added Value and Recycling of Industrial Waste. 24-27 June 2003, L'Aquila, Italy. (Poster).
- 19 Integrated process for Biodiesel production using different raw materials. 9<sup>th</sup> Mediterranean Congress of Chemical Engineering. 26-29 November 2002, Barcelona, Spain. (Poster).
- 18 Removal of phenolic compounds in aqueous solution. Thermodynamic and kinetic study of the monocomponent adsorption. 9<sup>th</sup> Mediterranean Congress of Chemical Engineering. 26-29 November 2002, Barcelona, Spain. (Poster).
- 17 Estimation of design parameters for the separation of 6-aminopenicillanic acid and phenylacetic acid by hydrophobic adsorption. International Congress on the Process Industries. 18-20 March 2002, Mexico City, Mexico. (Poster).
- 16 Kinetic modeling of the adsorption of aspartame on functionalised XAD-2 resins in batch stirred tank. 5<sup>th</sup> International Symposium on Biocatalysis and Biotransformation (BioTrans 2001). 2-7 September 2001, Darmstadt, Germany. (Poster).
- 15 Modeling of the adsorption kinetics of aspartame in a fixed bed using functionalized resins. 6<sup>th</sup> World Congress of Chemical Engineering. 18-21 September 2001, Melbourne, Australia. (Oral).
- 14 Purification of indole-3-acetic acid from *Rhizobium sp.* by adsorption on a hydrophobic resin. 3<sup>rd</sup> European Symposium on Biochemical Engineering Science (ESBES-3). 10-13 September 2000, Copenhagen, Denmark. (Poster).
- 13 Use of anion exchangers for the separation and purification of two isoenzymes of glucoamylase from *Aspergillus niger*. Ion Exchange at the Millenium (IEX2000). 16-21 July 2000, Cambridge, UK. (Oral).
- 12 Valorisation of vegetable oils. Product development using chemical and biochemical processes. Biotechnology and Industrial Utilisation of Vegetable Oils. 20-21 June 2000, Bonn, Germany. (Poster).
- 11 Study of the immobilization of glucoamylase I from *Aspergillus niger* on the anion exchanger DEAE-Toyopearl 650 and its use as biocatalyst. 8<sup>th</sup> Mediterranean Congress of Chemical Engineering. 10-12 November 1999, Barcelona, Spain. (Poster).
- 10 Partial derepression of heterologous  $\alpha$ -amylase gene in a strain of *Aspergillus nidulans* expressing antisense *creA* RNA. Danish Biotechnology Conference V. 20-21 May 1999, Vejle, Denmark. (Poster).
- 9 Transcription of antisense *creA* RNA in *Aspergillus nidulans* causes partial derepression of *creA*-controlled genes. 20<sup>th</sup> Fungal Genetics Conference. 23-28 March 1999, Pacific Grove, USA. (Poster).
- 8 Adsorption isotherms of the *Aspergillus niger* glucoamylases I and II on the anion-exchanger DEAE-Toyopearl 650. 4<sup>th</sup> International Conference on Separations for Biotechnology. 29-31 March 1999, Reading, UK. (Oral).



- 7 Study of the adsorption and desorption of the isoenzymes of glucoamylase using an ion-exchanger in a packed bed. 4<sup>th</sup> International Conference on Separations for Biotechnology. 29-31 March 1999, Reading, UK. (Poster).
- 6 Phenomenological modelling of chromatographic processes in biotechnology. International Symposium on Preparative and Industrial Chromatography and Allied Techniques (SPICA 98). 23-25 September 1998, Strasbourg, France. (Oral).
- 5 Kinetics of ion-exchange adsorption of  $\alpha$ -amylase. Fundamentals of Adsorption (FOA6). 24-28 May 1998, Presqu'île de Giens, France. (Oral).
- 4 Determination of design parameters for the adsorption of  $\alpha$ -amylase in a fixed-bed. 7<sup>th</sup> Mediterranean Congress of Chemical Engineering. 22-24 October 1996, Barcelona, Spain. (Poster).
- 3 Process synthesis, design, and simulation of integrated biochemical processes. 5<sup>th</sup> World Congress of Chemical Engineering. 14-18 July 1996, San Diego, USA. (Poster).
- 2 Modelling of hydrophobic and ion-exchange adsorption of  $\alpha$ -amylase. 5<sup>th</sup> World Congress of Chemical Engineering. 14-18 July 1996, San Diego, USA. (Poster).
- 1 Optimización de la síntesis de análogos de ésteres naturales utilizando catalizadores ácidos. Reunión Anual del Grupo Especializado de Catálisis (RAGEC'91). 1-5 July 1991, Bilbao, Spain. (Oral).

## Mentoring and supervision

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### PhD Students

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|--------------|---|
| 2021-ongoing | Noelia García-Vázquez. <i>PhD</i> project on "Development of new microalgae-based wastewater treatment processes". URJC.  |
| 2021-ongoing | Alejandro Piera-Ruiz. <i>PhD</i> project on "High-added value products and biojet fuel from microalgae and cyanobacteria". URJC.  |
| 2020-ongoing | Antonio Héctor Álvarez-Pozo. <i>PhD</i> project on "Good practices to avoid delays and cost overruns in industrial projects. Universidad Politécnica de Madrid (UPM).   |
| 2019-2023    | Jennifer Sánchez-Laso. <i>PhD</i> Thesis "Towards a circular economy: Development of a microalgae biorefinery for the sustainable extraction of phycocyanin and the energy recovery of residual biomass,". URJC (12 July 2023). Qualification: <i>Summa cum Laude</i> .   |
| 2016-2019    | Alejandra Sánchez-Bayo-Álvarez. <i>PhD</i> Thesis "Microalgal biorefinery for biofuel production". URJC (29 April 2019). Qualification: <i>Summa cum Laude</i> (International Mention). Award "Best <i>PhD</i> Thesis on Engineering 2019", URJC. Award "Best <i>PhD</i> Thesis 2020", Smart Energy International Excellence Campus URJC-UAH. |
| 2016-2019    | Mourad Fedela. <i>PhD</i> Thesis "Study of the biodegradation of organic pollutants in domestic and/or industrial wastewaters". University of Science and Technology-Houari Boumediene, Algeria (19 March 2019). Qualification: <i>Summa cum Laude</i> .  |
| 2013-2017    | Álvaro Mendoza-Sevilla. <i>PhD</i> Thesis "Study of a biorefinery from oleaginous microorganisms". URJC (30 June 2017). Qualification: <i>Summa cum Laude</i> (European Mention).   |
| 2011         | Nicklas Bengtsson. <i>PhD</i> Thesis "Photocatalytic contaminant abatement by TiO <sub>2</sub> enriched construction materials: from a parametric study to an attempt to predict  |

the photocatalytic activity". URJC (22 July 2011). Qualification: *Summa cum Laude*. (Academic Tutor).

2008-2013 Rebeca Sánchez-Vázquez. *PhD* Thesis "Design of heterogeneous acid catalysts for the production of second-generation biodiesel". URJC (6 May 2013). Qualification: *Summa cum Laude* (European Mention).

2000-2004 Juan Francisco Escobedo Robles. *PhD* Thesis "Purification and immobilization of glucoamylase of *Aspergillus niger* and its use as bioreactor". UCM (26 November 2004). Qualification: *Summa cum Laude*.

### Researchers

2023-ongoing Jennifer Sánchez-Laso (Postdoctoral). Research hydrothermal liquefaction of organic wastes.

2022-ongoing Carlos Sainz-Urruela (Postdoctoral). Research on microalgae biorefinery processes and hydrothermal liquefaction of organic wastes.

2019-2020 Pilar Águila-Carricondo (Postgraduate). Research on synthesis of enzyme-based biocatalysts.

2017-2020 Miriam Montero-Hidalgo (Postgraduate). Research on hydrothermal liquefaction of microalgal biomass.

2006-2010 Antonio Alcázar-Martínez (Postgraduate). Research on green diesel synthesis from vegetable oils and animal fats.

2005-2008 Raquel Sanz-Ortega (Postgraduate). Research on biodegradation of PAH using bacteria and enzymes.

### Technicians and Administrative Staff

2022-ongoing Patricia Laguna-Pariente (Laboratory Technician).

2022-2023 Marlén Navarro-Boulandier (Project Manager)

2019-2022 Raquel Simarro-Doblado (Project Manager)

2019-2021 Jorge William Parra-Tauriz (Laboratory Technician).

### Master Students

2009-ongoing 9 Master Thesis supervised, corresponding to Master's in Chemical Engineering, Master's in Energy Technologies and Resources and Master's in Chemical and Environmental Process Engineering.

### Undergraduate Students

1998-ongoing 65 Final Year Projects supervised, corresponding to Degrees in Chemical Engineering, Environmental Engineering, Energy Engineering, Industrial Engineering, Environmental Sciences, and Biology.

## Teaching

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Teaching at UCM (1996-2004) and URJC (2004-continue) at Undergraduate, Master, and Doctorate levels.

### Undergraduate (Bachelor's)

2020-ongoing Applied informatics (Degree in Environmental Engineering, URJC).

2012-ongoing	Remediation technologies in polluted soils (Degree in Environmental Engineering, URJC).
2012-ongoing	Transport of pollutants: modelling and associated environmental risks (Degree in Environmental Engineering, URJC).
2011-ongoing	Food biotechnology (Degree in Food Science and Technology, URJC).
2010-2014	Chemical engineering (Degree in Energy Engineering, URJC).
2004-2012	Management and conservation of soils and waters (Degree in Environmental Sciences, URJC).
2004-2009	Air pollution (Degree in Environmental Sciences, URJC).
2004-2017	Separation processes (Degree in Chemical Engineering, URJC).
2001-2004	Chemical engineering (Degree in Chemistry, UCM).
2000-2003	Process control (Degree in Chemical Engineering, UCM).
1999-2002	Applied chemical thermodynamics (Degree in Chemical Engineering, UCM).
1999-2004	Control & instrumentation of biological processes (Degree in Chemical Engineering, UCM).
1998-2004	Experimental design (Degree in Chemical Engineering, UCM).
1997-2004	Introduction to research (Degree in Chemical Engineering, UCM).
1997-2004	Research project (Degree in Chemical Engineering, UCM).
1997-2002	Chemical reactors (Degree in Chemical Engineering, UCM).
1997-1998	Control & instrumentation (Degree in Chemistry, UCM).
1996-2001	Chemical kinetics engineering (Degree in Chemical Engineering, UCM).
1996-1997	Chemical reactor engineering (Degree in Chemistry, UCM).

### **Master**

2013-ongoing	Industrial and environmental biotechnology (Master's in Chemical Engineering, URJC).
2009-2012	Environmental biotechnology (Master's in Chemical and Environmental Engineering, URJC)
2009-2010	Pollution treatment by biological processes (Master's in Environmental Science and Technology, URJC).
2006-2010	Fossil fuels: reservoirs, prospection, and extraction (Master's in Energy Technology and Resources, URJC)

### **Doctoral**

2014-ongoing	Advanced experimental design (Doctoral program in Industrial Technologies: Chemical, Environmental, Energy, Electronic, Mechanic and Materials, URJC).
2006-2008	Catalysis for energy and environment (Doctoral program in Chemical, Environmental and Materials Engineering, URJC)
2000-2004	Methodology and development of fine chemicals (Doctoral program in Chemical Engineering, UCM).