MARCEL VILAPLANA

ACADEMIC BACKGROUND

PhD in Environmental Engineering, Universitat Autònoma de Barcelona **Jul 2006 - Jul 2011**

MsC in Environmental Engineering, Universitat Autònoma de Barcelona **Oct 2004 - Jul 2006**

BsC in Chemical Engineering, Universitat Autònoma de Barcelona **Sept 1999 - Sept 2004**

WORK EXPERIENCE

Senior Project Manager - Cetaqua - Water Technology Centre **Jul 2024 - Present**

- Line of Research: Zero Waste and Decarbonisation.
- R&D projects focused on increasing the efficiency and minimizing the risks from wastewater treatment plants, converting waste into high value-added products, producing green energy and minimizing carbon footprint.

For further information, please visit Cetaqua

Bioprocess Engineer - European Space Agency, MELiSSA Pilot Plant (Universitat Autònoma de Barcelona) **Jul 2020 - Present**

- Continuous operation at pilot plant scale, encompassing various bioreactors and compartments (i.e. photobioreactor, nitrifying bioreactor, plant compartment and animal compartment).
- Process scale-up and design to integrate liquid and gas phases among the different bioreactors and compartments.
- Development and performance of Clean Room operations.
- Lab-scale research, including supervision of technicians and MSc students.
- Adherence to ISO 9001 specifications and maintenance of GMP environment during lab and pilot plant operations.

Postdoctoral Researcher - Chemical Engineering Department, Universitat Autònoma de Barcelona **Feb 2020 - Jun 2020**

- Development of a pilot plant to produce hydrogen from urban wastewater by Microbial Electrolysis Cells.
- Writing of scientific project proposal for EU (H2020) public funding.

R&D Engineer, FUJIFILM Manufacturing Europe, Tilburg (The Netherlands) **Jun 2015 - Aug 2019**

- R&D at lab and production scale to develop new products on photographic paper.
- Development of coatings for photographic paper application.
- Business development of FUJIFILM products.
- Screening of patentability of new products.
- Optimization pilot plant testing of membranes for gas purification.

R&D Engineer, Ioniqa Technologies, Eindhoven (The Netherlands) **Oct 2012 - May 2015**

- Business development of company technologies:
  - Chemical recycling of PET using a novel patented technology
  - Custom-made ferrofluids with high stability under extreme conditions of temperature and pressure
  - Thermoplastic magneto rheological elastomers
- Supervision of the research team.
- Management of projects in consortiums involving private and public partners
- Writing of scientific project proposals for national and EU (H2020, FP7) public funding.
- Technical sales representative to acquire new customer research projects
- Screening of patentability of company novel research technologies and writing of patent documents, resulting on the publication of three patents (See annex).

Postdoctoral Researcher - Chemical Engineering Department, Universitat Autònoma de Barcelona **Sept 2011 - Sept 2012**

- Biodegradation of dye Orange G in a lab-scale simulation of a real aquifer using a biological barrier containing the fungus *Trametes versicolor*.
- Evaluation of degradation of different organic pollutants in liquid media by *T. versicolor* using the compound stable isotope analysis (CSIA).

PhD Student - Chemical Engineering Department, Universitat Autònoma de Barcelona **Aug 2006 - Jul 2011**

- Design and operation of a bioreactor to degrade halogenated organic solvent trichloroethylene in liquid media by *T. versicolor*.
- Biodegradation of different commercial mixtures of flame retardants named polybrominated diphenyl ethers (PBDE's) in liquid media and soil by *T. versicolor*.
- Description of novel PBDE's degradation pathways by *T. versicolor*.
- Development of detection method to determine PBDE's concentrations in liquid media at ppm level.
- Degradation of trichloroethylene and antiepileptic pharmaceutical product carbamazepine in liquid media by quinone redox cycling process with *T. versicolor*.

Visiting Researcher- UFZ Environmental Research Center, Leipzig (Germany) **Oct 2010 - Dec 2010**

- Application of CSIA technique to determine the degradation by *T. versicolor* in liquid media of organic fuel additives methyl-tert butyl ether and ethyl-tert butyl ether.

Teaching Assistant - Chemical Engineering Department, Universitat Autònoma de Barcelona **May 2005 - Sept 2010**

ADDITIONAL INFORMATION

- **Languages**
  - English (C2)
  - Spanish (Native)
  - Catalan (Native)
  - Dutch (B1)

- **Computer Skills**
  - High knowledge on Windows, Office (Excel, Word, Powerpoint), Sigma Plot and Microsoft Visio.
  - Experience on Matlab software, Aspen Hysys and Autocad.

- **Courses**
  - *Natural Attenuation of Groundwater Contaminants: New Paradigms, Technologies, and Applications*. On-line course from Rice University (USA). Sept-Dec 2019.
  - *Effective Communication Skills for Technology Professionals*. High Tech Institute (Eindhoven, The Netherlands). 2018.
  - *Basic Elements of Safety VCA* (Validity 10 years). CBEX (The Netherlands). Oct 2015.

- **Driving License**
  - Type B

ANNEX

Patents

- *Improved Reusable Capture Complex*. Van Berkum, S.; Phillipi, V.; **Vilaplana, M.**; De Groot, R.; Hooghoudt, T. Info publicación: NL2014048 (B1), 03-10-2016.

- *Polymer degradation*. **Vilaplana, M.**; Mestrom, L.; De Groot, R.; Philippi, V.; Guerrero-Sanchez, C.; Hooghoudt, T. Info publicación: WO2014209117 (A1), 31-12-2014.

- *Magnetic Fluid*. Timonen, J; Hooghoudt, T.; **Vilaplana, M.**; Philipse, A.P.; Guerrero-Sanchez, C.; Casamada, J.; Philippi, V.; De Groot, R. Info publicación: WO2014142661, 18-09-2014.

Publications

- *Stable ferrofluids of magnetite nanoparticles in hydrophobic ionic liquids*. Mestrom L.; Lenders, J.; de Groot, R.; Hooghoudt, T.; Sommerdijk, N.; **Vilaplana, M.** Nanotechnology (2015). 26:285602.

- *Biodegradation of Polybrominated Diphenyl Ethers in Liquid Media and Sewage Sludge by Trametes versicolor*. **Vilaplana, M.**; Rodríguez-Rodríguez, C.E.; Baró, E., Gorga, M.; Sarrà, M.; Caminal, G.; Eljarrat, E.; Barceló, D. International Journal of Environmental Research (2015). 9:273.

- *Fungal reactive permeable barrier to remediate groundwater in an artificial aquifer*. Folch, A; **Vilaplana, M.**; Amado, L.; Vicent, T.; Caminal, G. Journal of Hazardous Materials (2013). 262:554.

- *Biodegradation of Technical Products of Brominated Flame Retardant by Fungi*. **Vilaplana, M.**; Caminal, G.; Sarrà, M.; Baron, E.; Gorga, M.; Thienpont, B.; Raldúa, D.; Eljarrat, E.; Barceló, D. Chapter book of "Emerging Organic Contaminants in Sludges" (2013). Editor: Springer. 24:241.

- *Optimisation of the operational conditions of trichloroethylene degradation using Trametes versicolor under quinone redox cycling conditions using central composite design methodology*. **Vilaplana, M.**; García, B.A.; Caminal, G.; Guillén, F.; Sarrà, M. Biodegradation (2012). 23: 333.

- *Required equilibrium studies for designing a three-phase bioreactor to degrade trichloroethylene (TCE) and tetrachloroethylene (PCE) by Trametes versicolor*. **Vilaplana, M.**; Marco-Urrea, E.; Gabarrell, X.; Sarra, M.; Caminal, G. Chemical Engineering Journal (2008). 144:21

Congress Attendance

- *Alternative biological treatment for degrading micropollutants in water using ligninolítics fungi*. **Vilaplana, M.**; Blánquez, P.; Caminal, G.; Cruz, C.; Gabarrell, X.; Marco-Urrea, E.; Sarrà, M.; Vicent, T. "INNOVA-MED Conference", Girona, 10/2009. Poster.

- *Degradation of Benzo(a)anthracene and Benzo(k)fluoranthene by Trametes versicolor*. Borràs, E.; **Vilaplana, M.**; Marco-Urrea, E.; Casas, N.; Hernández, L.; Moreno, M.; Blánquez, P.; Caminal, G.; Gabarrell, X.; Sarrà, M.; Vicent, T. "Third International Meeting on Environmental Biotechnology and Engineering", Palma de Mallorca, 09/2008. Oral Communication.

- *Use of white-rot fungi Trametes versicolor for bioremediation of industrial pollutants*. **Vilaplana M.**; Borràs, E.; Casas, N.; Hernández, L.; Lagos, C.; Marco-Urrea, E.; Moreno, M.; Palmarola, B.; Blánquez, P.; Sarrà, M.; Gabarrell, X.; Caminal, G.; Vicent, T. "Congress of Soil and Wetland Ecotoxicology", Barcelona, 11/2007. Oral Communication.

- *Bioreactor design to degrade chlorinated aliphatic hydrocarbons by Trametes versicolor*. **Vilaplana, M.**; Caminal, G.; Gabarrell, X.; Marco-Urrea, E.; Sarrà, M.; Vicent, T. "13th European Congress of Biotechnology", Barcelona, 09/2007. Poster.