

Part A. PERSONAL INFORMATION

CV date

15/12/2023

First and Family name	Gara Villalba Méndez		
Social Security, Passport, ID number	46411103R	Age	47
Researcher codes	WoS Researcher ID (*)	B-1379-2009	
	SCOPUS Author ID(*)	16308135200	
	(ORCID) **	0000-0001-6392-0902	

A.1. Current position

Name of University/Institution	Universitat Autònoma de Barcelona		
Department	Dept d'Enginyeria Química, Biològica i Ambiental		
Address and Country	Campus UAB, Escola d'Enginyeria, Bellaterra, Spain		
Phone number	935868372	E-mail	gara.villalba@uab.cat
Current position	Full Professor	Since	February 2021
Key words	Chemical Engineering, Industrial Ecology, atmospheric modeling		

A.2. Education

Degree/PhD	University	Year
PhD Chemical engineering	Universitat de Barcelona	2003
Chemical engineering	Massachusetts Institute of Technology	1998

A.3. JCR articles, h Index, thesis supervised...

- 3 "Sexenios de recerca": (2002-08, 2009-14, 2015-21)
- PhD thesis: 11 completed; 7 ongoing
- Total citations/in documents: 3,393 by 2,984 documents (Scopus)
- (2017-20) citation average: 280/year (Scopus)
- Publications in Q1 journals: 75 (Scopus)
- h-index: 30 (Scopus)
- Total funding received in past 5 years:
 - 3.2 million € as PI
 - 3 million € as collaborator
- 3 "tramos docencia" (2002-2007; 2010-2015; 2016-2022)
- 2000+ hours of grad and undergrad teaching

Part B. CV SUMMARY (max. 3500 characters, including spaces)

Dr. Gara Villalba is Full Professor of the Department of Chemical, Biological, and Environmental Engineering and Senior Researcher at the Maria de Maeztu-awarded Institute for Environmental Science and technology (ICTA), at the Universitat Autònoma de Barcelona. She is also Research Associate at the Department of Env. Engineering, University of California Merced. She was awarded an ERC Advanced Grant in 2018, and more recently ICREA Academia in 2021. Her bachelor's degree is from the Massachusetts Institute of Technology (1998), and her PhD from the University of Barcelona (2003), both in chemical engineering.

Her research is dedicated to the study and optimization of resource metabolism from a systemic approach based on Industrial Ecology tools such as Material Flow Analysis and Life Cycle Analysis. Recent studies focus on analyzing and optimizing the food-energy-water nexus of urban systems. She was a Marie S. Curie fellow (2015-2018) at UC Merced School of Engineering, during which she led the project URBANCO2FLUX "Quantifying the impact of the urban biosphere on the net flux of CO₂ from cities into the atmosphere." She was recently awarded an ERC Consolidator grant from Horizon 2020 of the European Commission called Integrated System Analysis of Urban Vegetation and Agriculture (2019-2024). She teaches in the undergraduate program of Chemical Engineering, as well as the Master's Degree in Interdisciplinary Studies in Environmental, Economic and Social Sustainability (where she coordinates the specialty of Industrial Ecology), and the Master's Degree of Biological and Environmental engineering.



She is a senior member of the research group SosteniPra, recognized by the Spanish I+D+I plan and the Catalan SGR and has led over 15 national and international research projects including her ERC funded URBAG project and her Marie Curie funded URBANCO2Flux project.

Her teaching activities include both undergraduate and graduate courses in Chemical Engineering, Industrial Ecology in three different MSc programs. She acted as coordinator of ICTAS' Joint European Masters Program in Environmental Studies (Erasmus Mundus). She has successfully supervised six PhD students and currently supervises eight more.

Part C. RELEVANT MERITS

C.1. Sample of relevant Publications

1. An energy future beyond climate neutrality: Comprehensive evaluations of transition pathways; Applied Energy; CONTRIBUTORS: Nick Martin; Laura Talens-Peiró; Gara Villalba-Méndez; Rafael Nebot-Medina; Cristina Madrid-López; 2023-02 ; DOI: 10.1016/j.apenergy.2022.120366.
2. Displaying geographic variability of peri-urban agriculture environmental impacts in the Metropolitan Area of Barcelona: A regionalized life cycle assessment; Science of The Total Environment; CONTRIBUTORS; Angelica Mendoza Beltran; Roc Padró; María José La Rota-Aguilera; Joan Marull; Matthew J. Eckelman; Jacob Cirera; Annalisa Giocoli; Gara Villalba; 2023-02 DOI: 10.1016/j.scitotenv.2022.159519Part of ISSN: 0048-9697.
3. How do street trees affect urban temperatures and radiation exchange? Observations and numerical evaluation in a highly compact city; Urban Climate; CONTRIBUTORS: Ricard Segura; Scott Krayenhoff; Alberto Martilli; Alba Badia; Carme Estruch Puig; Sergi Ventura Caballe; gara Villalba; 2022-12 | journal-article; DOI: 10.1016/j.uclim.2022.101288.
4. Preliminary results on N2O emission factor calculation in hydroponic struvite fertilization of lettuce production; Acta Horticulturae; CONTRIBUTORS: Verónica Arcas Pilz; Gaia Stringari; R. Gonzalez; gara villalba; Xavier Gabarrell Durany; 2022-12; DOI: 10.17660/ActaHortic.2022.1356.36.
5. Social assessment of rooftop farming projects; Acta Horticulturae; CONTRIBUTORS: Susana Toboso-Chavero; J. V. Lioba Gansen; F. Francardo; Verónica Arcas Pilz; gara villalba; Xavier Gabarrell Durany; 2022-12; DOI: 10.17660/ActaHortic.2022.1356.18.
6. Increasing resource circularity in wastewater treatment: Environmental implications of technological upgrades; Science of the total environment; CONTRIBUTORS: Martí Rufí Salís; Anna Petit Boix; Sina Leipold; gara villalba; rieradevall; Eduard Moliné; Xavier Gabarrell Durany; Julián Carrera; María Eugenia Suárez-Ojeda; 2022-09-10 <https://doi.org/10.1016/j.scitotenv.2022.156422>.
7. Exploring Methods for Developing Local Climate Zones to Support Climate Research; Climate; CONTRIBUTOR: Laurence Sigler; Joan Gilabert; Gara Villalba; 2022-07 DOI: 10.3390/cli10070109
8. Mapping direct N2O emissions from peri-urban agriculture; Science of the total environment; CONTRIBUTORS: Angelica Mendoza Beltran; Kelzy Jepsen; Martí Rufí Salís; Sergi Ventura; Cristina Madrid-Lopez; 2022-05; <https://doi.org/10.1016/j.scitotenv.2022.153514>.
9. Extended use and optimization of struvite in hydroponic cultivation systems; Resources, Conservation and Recycling; CONTRIBUTORS: Verónica Arcas Pilz; Felipe Parada; Martí Rufí Salís; Gaia Stringari; Ramiro González; gara villalba; Xavier Gabarrell Durany; 2022-04-01 | journal-article; DOI: <https://doi.org/10.1016/j.resconrec.2021.106130>.
10. The meaning of life ... cycles: lessons from and for safe by design studies; Green Chemistry; CONTRIBUTORS: Jeroen B. Guinée; Reinout Heijungs; Martina G. Vijver; Willie J. G. M. Peijnenburg; Gara Villalba Mendez; 2022; DOI: 10.1039/D2GC02761E.

C.2. Sample of R&D&I projects

1. "NUTRISOIL"- Healthy Soil for Urban Agriculture through Nutrient and Carbon Circularity, **ERC Proof-of-Concept** (2024-2025). 150,000€.
2. "URBAG" - Integrated System Analysis of Urban Vegetation and Agriculture. **ERC Consolidator Grant**. (2019-2025) 1.9 million €.



3. "SENTINEL": Sustainable Energy Transitions Laboratory. Funding source: European Commission H2020 LC-SC3-CC-2-2018, 4,9 million €, UAB: 396.000 €. In preparation of GA.
4. "UrbanCO2Flux- Analysis of CO2 fluxes in urban areas. **Marie Curie Outgoing Fellowship**. Funded by the European Commission. UAB: 257.191€, Reference: 653950. 9/2015-9/2018
5. "Fertile Cities- contribution of greenhouse roofs to urban sustainability." Role: co-investigator. Funded by the **Spanish Ministry of a Competitive Economy**, UAB: 130,000€. Reference: CTM2013-47067-C2-1-R, 10/2014-11/2017
6. "PROSUITE: Development and application of a standardized methodology for the PROspective SUstainability assessment of Technologies" Role: Principal Investigator for the UAB, Co-Investigator in overall collaborative project. Funding source: **European Commission**, 6.3 million €, UAB: 240,000€, November 2009-November 2013.
7. "AQUAENVEC: Assessment and improvement of the urban water cycle eco-efficiency using LCA and LCC." Role: Co-Investigator. Funding source: **LIFE + Environment** Policy and Governance of European Commission. 749,486€ total (594,413€ direct), UAB: 120,000€, Jan 2012-Dec 2014.
8. "Pluvisost: Environmental analysis of rain water harvesting systems." Reference: CTM 2010-17365. Role: Co-Investigator. Funding source: **Spanish Ministry of Science and Innovation**. 96,800€, January 2011-December 2013.
9. "Ecotech- SUDOE: Environmental & Integrated Assessment of Complex Systems- Biosystems - Water - Land Management." Role: Co-Investigator. Funding source: **Interreg Sudoe European Commission**, 1,104,506€ total, UAB: 345,000€, January 2011-October 2013.
10. "ZERO WASTE- Low cost zero waste municipality" Role: Co-investigator. Reference: 1G-MED08-533. Funding source: European Commission, 220,367€: November 2010-November 2013.

C.3. Relevant contracts, technological merits and transfer

1. X. Gabarrell, X. Font, ME Suarez, **G. Villalba**, R. Farreny, C. Martínez, J. Rieradevall, X. Font; chapter: Residus i Recursos (Waste and Resources), in Tercer Informe sobre el canvi climàtic a Catalunya. Barcelona: Generalitat de Catalunya i Institut d'Estudis Catalans, coordinated by Martín Vide, J. (2016).
2. Member of the Steering Committee of the "Maria de Maeztu Unit of Excellence (MDM-2015-0552), funded by Ministry of Science and Innovation of Spain, 2 million €, reference MDM-2015-0552. 2016-2019.
3. "Development and Implementation of a Master Course "Energy Management" in three Libyan Universities", jointly with Hamburg University of Technology. Role: Principal Investigator for the UAB. Funded by the European Commission TEMPUS program. Overall budget: 772,503€; UAB: 57,000€. 544603-TEMPUS-1-2013-1-DE-TEMPUS-JPCR. January 2014- December 2016.
4. "MECOSIND: funding for establishing a master's program in Industrial Ecology in Southern Europe." Reference: FBG-3856. Role: co-principal investigator. Funding: Interreg of the European Commission, 401,000€ total, UAB: 97,000€, 2004-2006.

C.4 Patents

C.5. Sample of outreach and invited talks

1. "Integrating anthropogenic and natural CO2 budgets for effective emissions management at Yosemite National Park." Invited guest speaker in seminar series of the School of Engineering, UC Merced, May 2012.
2. Invited speaker for Spanish national radio show Radio Cadena Ser, to discuss the role of cities in Climate Change.



3. Interviewed for three different regional television programs (broad audience): 1) the use of used cooking oils for the production of biodiesel, 2) the role of biofuels in our economy, and 3) GHG emissions of the city of Barcelona and future scenarios.

C.6 Sample of Academic and Professional Awards and Distinctions

1. ICREA professor 2020-2024.
2. Advanced Research recognition (acreditació Recerca Avançada), Catalan University Quality Assurance Agency (2014)
3. 2013 TMS Light Metals Division JOM Best Paper Award for “Lithium: Sources, Production, Uses, and Recovery Outlook”, published in the August 2013 edition of JOM
4. Visiting Scholar: a) Resources Division, National Park Service of the US, Yosemite National Park (2012), b) UC Bren School of Environmental Science and Management, UC Santa Barbara (2009)
5. Graduated cum laude (BS degree), MIT 1998 & National Merit Scholar, MIT (1994-1998)

C.7, Institutional responsibilities & Service

1. Coordinator. Joint European Masters Program in Environmental Studies- Cities and Sustainability (JEMES-CiSu), a highly competitive two-year Erasmus Mundus program (2011-2016)
2. Coordinator of ICTA’s Master’s Program in Environmental Studies, Industrial Ecology (2010-2016)
3. Editor of *Resources, Conservation and Recycling*.

C.8. Sample of PhD Theses

Completed

1. “Alternative Fertilizers for Urban Agriculture within the Circular Economy Framework” Veronica Arcas. FPI Grant (MINECO) associated to the Fertilecity II project; date January 2018- June 2022.
2. “Urban Agriculture: Estimation of the environmental impacts associated with different water sources, at the building and neighborhood scale.” Felipe Parada, funding: Agencia Nacional de Investigación y Desarrollo (ANID) de Chile; start date September 2018, defense June 2022.
3. “A mosaic approach to explore the food-energy-water nexus in urban areas” Susana Toboso. Start date September 2017, defense September 2021 (FPU competitive grant).
4. “Community Metabolism and Carbon Footprint Impact in developing regions” Irais Vasquez. Start date: September 2017, defense date: January 2021.
5. “Urban agriculture from a circular economy perspective- optimizing urban metabolism with integrated rooftop greenhouse crop production” Martí Rufí. Start date September 2017, defense December 2020.

In progress

1. “Study of the effect of green infrastructures on the urban carbon footprint and urban microclimate using an atmospheric chemistry model” Ricard Segura, funded by URBAG project; start date: September 2019, expected year of defense: 2023.
3. “Using regional and urban meteorological models to determine how green infrastructure influences the impact of urban climate now and in the future.” Sergi Ventura, start date September 2020.

C.9. Sample of teaching duties

More than **2000 hours** of teaching in: *MSc program in Environmental Studies*: Industrial Ecology (2006-present). *MSc program in Chemical Engineering*: Sustainability in chemical processes (2014-present). *BS degree in Chemical Engineering*: Chemical Engineering Processes (2013-present); Chemical Engineering Process Safety (2008-present), Industrial Processes (2009-12); Unit Operations (2008-present); Chemical Engineering Process Control (2008- 11).