

CURRICULUM VITAE MARTA CARBALLA

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Personal data

Full name: Marta Carballa **Born:** 22nd March 1977. **Nationality:** Spanish

Affiliation: Group of Environmental Engineering and Bioprocesses, Department of Chemical Engineering, School of Engineering, University of Santiago de Compostela.

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Education

- Chemical Engineering; University of Santiago de Compostela; January 2001
- Ph.D. in Chemical and Environmental Engineering; University of Santiago de Compostela; December 2005

Professional activities

- Doctoral grant from the European project *Assessment of Technologies for the Removal of Pharmaceuticals and Personal Care Products in Sewage and Drinking Water Facilities to Improve the Indirect Potable Water Reuse (POSEIDON, EVK1-CT-2000-00047)*; 01/2001-12/2005.
- Postdoctoral contract (C-13855) at the School of Biochemical Engineering (Pontifical Catholic University of Valparaíso, Chile); 03/2006 – 04/2007.
- Postdoctoral contract (EX2006-0963 and AA-065) at the Laboratory of Microbial Ecology and Technology (Ghent University); 05/2007 – 08/2009.
- Postdoctoral researcher (Tenured) at the Department of Chemical Engineering (University of Santiago de Compostela); 12/2008 – 12/2013.
- Postdoctoral researcher (Tenured) at the Department of Chemical Engineering (University of Santiago de Compostela); 12/2013-03/2014.
- Associate Professor at the Department of Chemical Engineering (University of Santiago de Compostela); 03/2014 – present.

Research

During the first years (2001-2005), the research has focused on the removal of micropollutants (mainly pharmaceuticals, cosmetics and estrogens) in sewage treatment plants (STPs) and during sludge anaerobic digestion. During the research stays in Chile and Belgium (2006-2009), in addition to further work on the anaerobic treatment of wastewaters and solid wastes and the elimination of micropollutants, research experience was extended to the removal and recovery of nutrients (mainly nitrogen and phosphorus). In recent years (2009-2014), research focused on two main topics: anaerobic (co-) digestion processes, analyzing not only the technical aspects but also the study of the microbial community in order to relate the digester functionality with the structure of the microbial community, and the identification and quantification of the removal mechanisms of micropollutants in biological wastewater and sludge treatment processes.

Research projects

MC has participated in 3 major international projects: “Assessment of Technologies for the Removal of Pharmaceuticals and Personal Care Products in Sewage and Drinking Water Facilities to Improve the Indirect Potable Water Reuse” (POSEIDON, 2001-2004), “Scheme to Provide Training and Assistance for Researchers for the Assessment of the Fate and Removal of Pharmaceuticals and Personal Care Products and Estrogenic Compounds (PPCPs) Released into the Environment” (TRITON, 2002-2004), “New sustainable concepts and processes for optimization and upgrading municipal wastewater and sludge treatment” (NEPTUNE, 2006-2009), 1 Integrated Action with Italy (IT2009-0038, 2010-2012); 7 national projects: “Advanced technologies for the elimination of cosmetic and pharmaceutical compounds in wastewaters” (FARM_EDAR, 2004-2007), “Evaluation of anaerobic technology for urban wastewaters treatment in cold-template climate: determination of limitations and process adaptation by using one and two-stage reactors” (FONDECYT, 2005-2008), “Production and optimization of acidogenesis process to obtain BIO-hydrogen as a renewable energy source within a global treatment system of organic wastes” (FONDECYT, 2006-2008), “Removal of ammonium nitrogen in aquaculture wastewaters by nitrification with immobilised biomass” (DI, 2006-2008), “Second life of sewage as a matrix for dilution of organic waste streams” (SEWAGE PLUS, 2007-2009), “Desarrollo de sistemas sostenibles de producción y uso de biogas

agroindustrial en España" (PROBIOGAS, 2007-2011), "Conception of the Sewage Treatment Plant of the XXI Century. Development, implementation and evaluation technologies for the treatment and resources recovery from wastewaters" (NOVEDAR, 2007-2013); 1 regional project: "Treatment strategies for pharmaceutical compounds in sewage treatment plants" (ESTRAFARM, 2008-2011) and 6 research contracts with companies: "Evaluation of advanced treatments by anaerobic digestion of sewage sludge" (2002-2003), "Determination of pharmaceutical compounds in urban and hospital wastewaters. Strategies to optimise their degradation in STPs" (HOSP_EDAR, 2003-2005), "Treatment strategies of pharmaceutical and cosmetic compounds in hospital effluents" (CHUS_EDAR, 2005-2006), "Energetic valorization of residual oil effluents from metalmechanic sector by anaerobic digestion" (METALGAS, 2009-2012), "Characterization and evaluation of methanogenic potential of agroindustrial wastes" (ENERGYLAB, 2011-2012), "Pilot plant for energy recovery from animal wastes by anaerobic digestion (UNIÓNS AGRARIAS, 2012). She is currently involved in 2 international projects (REWATER, 2012-2014 and ManureEcoMine, 2013-2016), 1 national project (COMDIGEST, 2011-2014) and 1 regional project (MicroDAN, 2012-2015), and has joined and is the secretary of WG3 (Environmental and Economic Impact) of COST Action Water_2020.

Publications and presentations

The research has resulted in more than 50 international publications in peer-review journals, such as Environmental Science and Technology, Water Research, Bioresource Technology, Water Science and Technology, Applied Microbiology and Biotechnology, etc, which have been cited more than 1820 times with an h-index of 19 (Scopus, 27-06-2014). She has attended more than 30 international conferences, and the research results have been presented in more than 75 national and international conferences, with more than 40 oral presentations.

Other professional involvements

MC has been Board Member of the Galician Society of Chemical Engineers. Currently, she is Member of the Galician Society of Chemical Engineers, of the International Water Association (IWA), and of IWA specialist group on Anaerobic Digestion, and of the Spanish Network of Composting. She is reviewer for Water Research, Chemosphere, Environmental Science and Technology, Applied Microbiology and Biotechnology, Water Science and Technology, New Biotechnology, Microbial Biotechnology, Bioresource Technology, etc. She has been expert for evaluating research projects from the National Commission for Scientific and Technological Research (FONDECYT, Chile) and from Spanish National Evaluation and Foresight Agency (ANEP, Ministry of Science and Innovation) and has been member of the scientific committee of several national and international conferences and co-chair of the Organizing Committee of the 13th World Congress on Anaerobic Digestion held in Santiago de Compostela in June 2013.

Teaching

MC is part of the Organization Teaching Plan of the Department of Chemical Engineering of the University of Santiago de Compostela from year 2009-2010 with 120 hours of class per year. She has also has (co-) directed 1 PhD theses, 13 Master Theses, 7 dissertations and more than 10 research visits. Currently, she is co-directing 5 PhD theses, 1 dissertation, 1 bachelor project and 1 research stay.

Selected of 10 relevant publications

Carballa, M., Omil, F., Alder, A.C. and Lema, J.M. (2006). Comparison between the conventional anaerobic digestion (CAD) of sewage sludge and its combination with a chemical or thermal pre-treatment concerning the removal of Pharmaceuticals and Personal Care Products (PPCPs). *Water Science and Technology* 53 (8), 109-117.

Carballa, M., Manterola, G., Larrea, L., Ternes, T.A., Omil, F. and Lema, J.M. (2007). Influence of ozone pre-treatment on sludge anaerobic digestion: removal of pharmaceutical and personal care products. *Chemosphere*, 67 (7), 1444-1452.

Carballa, M., Omil, F., Ternes, T. and Lema, J.M. (2007). Fate of Pharmaceutical and Personal Care Products (PPCPs) during anaerobic digestion of sewage sludge. *Water Research*, 41 (10), 2139-2150.

Ma, J., Van Wambeke, M., Carballa, M. and Verstraete, W. (2008). Improvement of the Anaerobic Treatment of Potato Processing Wastewater in a UASB reactor by co-digestion with glycerol. *Biotechnology Letters*, 30 (5), 861-867.

Ma, J., Mungony, L.J., Verstraete, W. y Carballa, M. (2009). Maximum removal rate of propionic acid as a sole carbon source in UASB reactors and the importance of macro- and micro-nutrients stimulation. *Bioresource Technology*, 100 (14), 3477-3482.

Carballa, M., Omil, F. and Lema, J.M. (2009). Influence of different pre-treatments on anaerobically digested sludge characteristics: suitability for final disposal. *Water, Air and Soil Pollution*, 199 (1-4), 311-321.

- Ma, J., Duong, T.H., Smits, M., Verstraete, W. and Carballa, M. (2011). Enhanced biomethanation of kitchen waste by different pretreatments. *Bioresource Technology*, 102 (2), 592-599.
- Carballa, M., Smits, M., Etchebehere, C., Boon, N. and Verstraete, W. (2011). Correlations between molecular and operational parameters in continuous lab-scale anaerobic reactors. *Applied Microbiology and Biotechnology*, 89 (2), 303-314.
- Regueiro, L., Veiga, P., Figueroa, M., Alonso-Gutierrez, J., Stams, A.J., Lema, J.M. and Carballa, M. (2012). Relationship between microbial activity and microbial community structure in six full-scale anaerobic digesters. *Microbiological Research* 167 (10), 581-589.
- Regueiro, L., Carballa, M., Álvarez, J.A. and Lema, J.M. (2012). Enhanced methane production from pig manure anaerobic digestion using fish and biodiesel wastes as co-substrates. *Bioresource Technology* 123, 507-513.

h index (Scopus, 27-06-2014)

27/06/2014		Period 2004-2014	h-index = 19		
Ranking	Year	Paper	Authors	Journal	Nº quotes
1º	2004	Behavior of pharmaceuticals, cosmetics and hormones in a sewage treatment plant	Carballa M., Omil F., Lema J.M., Llompert M., Garcia-Jares C., Rodriguez I., Gomez M., Ternes T.	Water Research	591
2º	2008	Minimizing losses in bio-electrochemical systems: The road to applications	Clauwaert P., Aelterman P., Pham T.H., De Schampelaire L., Carballa M., Rabaey K., Verstraete W.	Applied Microbiology and Biotechnology	134
3º	2008	Determination of the solid-water distribution coefficient (Kd) for pharmaceuticals, estrogens and musk fragrances in digested sludge	Carballa M., Fink G., Omil F., Lema J.M., Ternes T.	Water Research	97
4º	2005	Removal of cosmetic ingredients and pharmaceuticals in sewage primary treatment	Carballa M., Omil F., Lema J.M.	Water Research	89
5º	2007	Fate of pharmaceutical and personal care products (PPCPs) during anaerobic digestion of sewage sludge	Carballa M., Omil F., Ternes T., Lema J.M.	Water Research	88
6º	2008	How are pharmaceutical and personal care products (PPCPs) removed from urban wastewaters?	Suarez S., Carballa M., Omil F., Lema J.M.	Re-views in Environmental Science and Biotechnology	87
7º	2010	Aggregate size and architecture determine microbial activity balance for one-stage partial nitrification and anammox	Vlaeminck S.E., Carballa M., Verstraete W., Terada A., Smets B.F., De Clippeleir H., Schaubroeck T., Bolea S., ...	Applied and Environmental Microbiology	56
8º	2008	Comparison of predicted and measured concentrations of selected pharmaceuticals, fragrances and hormones in Spanish sewage	Carballa M., Omil F., Lema J.M.	Chemosphere	55
9º	2007	Influence of ozone pre-treatment on sludge anaerobic digestion: Removal of pharmaceutical and personal care products	Carballa M., Manterola G., Larrea L., Ternes T., Omil F., Lema J.M.	Chemosphere	49
10º	2009	Nitrogen removal from digested black water by one-stage partial nitrification and anammox	Vlaeminck S.E., Terada A., Smets B.F., Van Der Linden D., Boon N., Verstraete W., Carballa M.	Environmental Science and Technology	46
11º	2006	Comparison between the conventional anaerobic digestion of sewage sludge and its combination with a chemical or thermal pre-treatment concerning the removal of pharmaceuticals and personal care products	Carballa M., Omil F., Alder A.C., Lema J.M.	Water Science and Technology	43
12º	2007	Calculation methods to perform mass balances of micropollutants in sewage treatment plants. Application to pharmaceutical and personal care products (PPCPs)	Carballa M., Omil F., Lema J.M.	Environmental Science and Technology	41
13º	2005	Behaviour of pharmaceuticals and personal care products in a sewage treatment plant of northwest Spain	Carballa M., Omil F., Lema J.M., Llompert M., Garcia C., Rodriguez I., Gomez M., Ternes T.	Water Science and Technology	35
14º	2009	Granular biomass capable of partial nitrification and anammox	Vlaeminck S.E., Cloetens L.F.F., De Clippeleir H., Carballa M., Verstraete W.	Water Science and Technology	35
15º	2009	Phosphate removal in agro-industry: Pilot- and full-scale operational considerations of struvite crystallization	Moerman W., Carballa M., Vandekerckhove A., Derycke D., Verstraete W.	Water Research	35
16º	2010	Environmental assessment of anaerobically digested sludge reuse in agriculture: potential impacts of emerging micropollutants	Hospido, A., Carballa, M., Moreira, M., Omil, F., Lema, J.M., Feijoo, G.	Water Research	32
17º	2008	Improvement of the anaerobic treatment of potato processing wastewater in a UASB reactor by co-digestion with glycerol	Ma J., Van Wambeke M., Carballa M., Verstraete W.	Biotechnology Letters	29
18º	2011	Correlations between molecular and operational parameters in continuous lab-scale anaerobic reactors	Carballa, M., Smits, M., Etchebehere, C., Boon, N., Verstraete, W.	Applied Microbiology and Biotechnology	20
19º	2009	Influence of manganese and ammonium oxidation on the removal of 17 α -ethinylestradiol (EE2)	Forrez, I., Carballa, M., Noppe, H., De Brabander, H., Boon, N., Verstraete, W.	Water Research	19