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Curriculum Vitae

My work spans the field of environmental chemistry, water quality issues, water technology and management, and broader approaches to the circular use of resources.

I make use of analytical tools to characterize pollutants in water, also to develop water treatment technology, namely nature-based solutions. I am part of different networks, consortiums, and forums dealing with water management issues and circularity.

Nowadays, I am working on different projects covering:

soil and biocides degradation and leaching;

water (surface, runoff, wastewater) and 1) micropollutants degradation processes; 2) development and implementation of nature-based solutions; 3) novel fixed biofilm reactors and bioelectrochemical systems; 4) water reuse and its implications, both energy and nutrient recovery and health protection.

modeling resources availability and co-benefits of nature-based solutions.

Ansættelse

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Institut for Miljøvidenskab - Environmental chemistry & toxicology
Aarhus Universitet
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16 apr. 2021 → present

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WATEC, Centre for Water Technology - WATEC Aarhus University Centre for Water Technology, Roskilde
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11 dec. 2018 → present

Publikationer

Peracetic acid treatment for removing steroid hormones in a pilot-scale wastewater installation

Dias, R., Sousa, D., Carvalho, P. N., Kisielius, V., Diniz, M. & Maurício, R., dec. 2024, I: Journal of Water Process Engineering. 68, 106453.

Suspect and non-target screening of chemicals of emerging Arctic concern in biota, air and human serum

Zhu, L., Bossi, R., Carvalho, P. N., Rigét, F. F., Christensen, J. H., Weihe, P., Bonefeld-Jørgensen, E. C. & Vorkamp, K., 1 nov. 2024, I: Environmental Pollution. 360, 11 s., 124605.

Global meta-analysis and machine learning reveal the critical role of soil properties in influencing biochar-pesticide interactions

Wang, J., Norgaard, T., Pugliese, L., Carvalho, P. N. & Wu, S., nov. 2024, I: Environment International. 193, 109131.

Phytoremediation of Mercury Contamination: Bibliometric Analysis

Mosquera Chaverra, L., Paredes Cuervo, D., López Gutiérrez, A., Arias, C. A. & Carvalho, P. N., nov. 2024, I: Sustainability. 16, 21, 9408.

Small-scale experiments: Using mesocosms and microcosms for testing hypotheses in treatment wetland research

Brisson, J., Carvalho, P., Stein, O., Weber, K., Brix, H., Zhao, Y. & Zurita, F., nov. 2024, I: Ecological Engineering. 208, 107378.

Saturated constructed wetlands for the remediation of cylindrospermopsin and microcystin-LR: Plants, microbes, and biodegradation pathways

Martinez i Quer, A., Arias, C. A., Ellegaard-Jensen, L., Johansen, A., Paulsen, M. L., Pastor, A. & Carvalho, P. N., 20 okt. 2024, I: Science of the Total Environment. 948, 174745.

Exploring the intensified catalytic role of biochar in facilitating advanced oxidation of tebuconazole

Wang, J., Norgaard, T., Kisielius, V., Wili, N., Muhmood, A., Wang, D., Carvalho, P. N., Nielsen, N. C. & Wu, S., 15 okt. 2024, I: Chemical Engineering Journal. 498, 155025.

Computational Tools to Facilitate Early Warning of New Emerging Risk Chemicals

Tariq, F., Ahrens, L., Alygizakis, N. A., Audouze, K., Benfenati, E., Carvalho, P. N., Chelcea, I., Karakitsios, S., Karakoltzidis, A., Kumar, V., Mora Lagares, L., Sarigiannis, D., Selvestrel, G., Taboureau, O., Vorkamp, K. & Andersson, P. L., okt. 2024, I: Toxics. 12, 10, 736.

Potential of nature-based solutions to reduce antibiotics, antimicrobial resistance, and pathogens in aquatic ecosystems. a critical review

Pastor-López, E. J., Escolà, M., Kisielius, V., Arias, C. A., Carvalho, P. N., Gorito, A. M., Ramos, S., Freitas, V., Guimarães, L., Almeida, C. M. R., Müller, J. A., Küster, E., Kilian, R. M., Diawara, A., Ba, S. & Matamoros, V., okt. 2024, I: Science of the Total Environment. 946, 174273.

Wetland systems for water pollution control

Nivala, J., Carvalho, P. N., Gourdon, R., Gautier, M., Molle, P. & Chazarenc, F., 1 aug. 2024, I: Water Science and Technology. 90, 3, s. iii-v

Fungal removal of cyanotoxins in constructed wetlands: The forgotten degraders

Álvarez, Á. G., Quer, A. M., Ellegaard-Jensen, L., Sapkota, R., Carvalho, P. N. & Johansen, A., jun. 2024, I: Science of the Total Environment. 929, 172590.

Eat seldom is better than eat frequently: Pharmaceuticals degradation kinetics, enantiomeric profiling and microorganisms in moving bed biofilm reactors are affected by feast famine cycle times

Liang, C., Svendsen, S. B., de Jonge, N., Carvalho, P. N., Nielsen, J. L. & Bester, K., apr. 2024, I: Journal of Hazardous Materials. 468, 133739.

Risk-based prioritization of Active Pharmaceutical Ingredients in Danish surface waters for future monitoring

Sanderson, H., Bengtström, L. I., Nanusha, M. Y., Bester, K., Carvalho, P. N., Fauser, P., Hansen, M. & Lassen, P., apr. 2024, Aarhus University, DCE - Danish Centre for Environment and Energy. 120 s. (Videnskabelig rapport fra DCE - Nationalt Center for Miljø og Energi; Nr. 601, Bind 2024).

Cyanobacterial blooms in surface waters – Nature-based solutions, cyanotoxins and their biotransformation products
Martinez I Quer, A., Larsson, Y., Johansen, A., Arias, C. A. & Carvalho, P. N., mar. 2024, I: *Water Research*. 251, 121122.

Constructed wetlands to remediate cyanotoxins - a story of microbes, design, and transformation products.
Martinez I Quer, A., Johansen, A., Arias, C. A. & Carvalho, P. N., feb. 2024, *18th DWF Water Conference 2024: Program and abstract catalogue*. Danish Water Forum, s. 69-69

Constructed wetland mesocosms improve the biodegradation of microcystin-LR and cylindrospermopsin by indigenous bacterial consortia
Thyssen, L. A., Martinez I Quer, A., Arias, C. A., Ellegaard-Jensen, L., Carvalho, P. N. & Johansen, A., jan. 2024, I: *Harmful Algae*. 131, 102549.

Constructed wetlands for the remediation of cyanotoxins: microbes, transformation products and operational design.
Martinez I Quer, A., Thyssen, L. A., Larsson, Y., Johansen, A., Arias, C. A. & Carvalho, P. N., 2024.

Constructed wetlands for the remediation of cyanotoxins: unrevealing their microbial mechanisms
Martinez I Quer, A., Johansen, A., Arias, C. A. & Carvalho, P. N., 2024.

Constructed wetlands for the treatment of harmful algal blooms: a multidisciplinary approach.
Martinez I Quer, A., Thyssen, L. A., Larsson, Y., Johansen, A., Arias, C. A. & Carvalho, P. N., 2024.

Emerging contaminants in sludge treatment reed beds: degradation or accumulation?
Martinez I Quer, A., Plestenjak, G. & Carvalho, P. N., 2024, *ecoSTP2023 Conference Proceedings*. IWA Publishing, s. 66-66

Implementing Nature-Based Solutions for a Circular Urban Built Environment
Pineda-Martos, R., Atanasova, N., Calheiros, C. S. C., Junge, R., Nickayin, S. S., Paço, T. A., Dominici, L., Comino, E., Andreucci, M. B., Theochari, D., Pucher, B., González, A. G., Carvalho, P. N. & Langergraber, G., 2024, *Creating a Roadmap Towards Circularity in the Built Environment*. Bragança, L., Cvetkovska, M., Askar, R. & Ungureanu, V. (red.). Springer, s. 345-355 11 s. (Springer Tracts in Civil Engineering, Bind Part F1844).

Mechanistic studies on the effect of easy degradable carbon on pharmaceuticals removal in intermittently fed moving bed biofilm reactors
Svendsen, S. B., Rebień Jørgensen, L., Liang, C., Carvalho, P. N., Bendix Larsen, S. & Bester, K., jul. 2023, I: *Bioresource Technology*. 380, 10 s., 129084.

CONSTRUCTED WETLANDS FOR THE REMEDIATION OF CYANOTOXINS: A STORY OF BACTERIA, FUNGI AND TRANSFORMATION PRODUCTS
Martinez I Quer, A., Thyssen, L. A., Larsson, Y., González Álvarez, Á., Johansen, A., Arias, C. A. & Carvalho, P. N., 2023.

Effects of substrate loading on co-metabolic transformation pathways and removal rates of pharmaceuticals in biofilm reactors
Liang, C., Carvalho, P. N. & Bester, K., dec. 2022, I: *Science of the Total Environment*. 853, 10 s., 158607.

Editorial: Toxic effects and ecological risk assessment of typical pollutants in aquatic environments
Feng, C., An, C., Tan, Q. G., Bebianno, M. & Carvalho, P. N., okt. 2022, I: *Frontiers in Environmental Science*. 10, 1056654.

Renewable adsorbents from the solid residue of sewage sludge hydrothermal liquefaction for wastewater treatment
Saner, A., Carvalho, P. N., Catalano, J. & Anastasakis, K., sep. 2022, I: *Science of the Total Environment*. 838, Part 3, 12 s., 156418.

Nature-Based Solutions for the Mitigation of Persistent and Emerging Contaminants

Carvalho, P. N. & Matamoros, V., jul. 2022, I: *Water*. 14, 13, 2 s., 2105.

Constructed wetlands for the treatment of cyanotoxins: initial results

Martinez I Quer, A., Johansen, A., Arias, C. A. & Carvalho, P. N., apr. 2022.

Nature-based solutions coupled with advanced technologies: An opportunity for decentralized water reuse in cities

Castellar, J. A. C., Torrens, A., Buttiglieri, G., Monclús, H., Arias, C. A., Carvalho, P. N., Galvao, A. & Comas, J., 15 mar. 2022, I: *Journal of Cleaner Production*. 340, 130660.

Multi-Soil-Layering Technology: A New Approach to Remove *Microcystis aeruginosa* and Microcystins from Water

Mugani, R., Aba, R. P., Hejjaj, A., Khalloufi, F. E., Ouazzani, N., Almeida, C. M. R., Carvalho, P. N., Vasconcelos, V., Campos, A., Mandi, L. & Oudra, B., 1 mar. 2022, I: *Water*. 14, 5, 21 s., 686.

Nature-based solutions addressing the water-energy-food nexus: Review of theoretical concepts and urban case studies

Carvalho, P. N., Finger, D. C., Masi, F., Cipolletta, G., Oral, H. V., Tóth, A., Regelsberger, M. & Exposito, A., 1 mar. 2022, I: *Journal of Cleaner Production*. 338, 15 s., 130652.

Microbial community structure in a constructed wetland treating cyanotoxins in surface waters

Martinez I Quer, A., Johansen, A., Arias, C. A. & Carvalho, P. N., 2022.

Treatment wetlands using *Salix viminalis* as a source of biomass for biocrude production and as a treatment technology for the residual aqueous phase of the hydrothermal liquefaction reaction

Rodriguez-Dominguez, M. A., Ramirez-Vargas, C. A., Carvalho, P. N., Brix, H. & Arias, C. A., 10 dec. 2021, (Under udarbejdelse) I: *Water*.

Potential use of plant biomass from treatment wetland systems for producing biofuels through a biocrude green-biorefining platform

Rodriguez-Dominguez, M. A., Biller, P., Carvalho, P. N., Brix, H. & Arias, C. A., 5 dec. 2021, I: *Energies*. 14, 23, 8157.

Management of urban waters with nature-based solutions in circular cities—exemplified through seven urban circularity challenges

Oral, H. V., Radinja, M., Rizzo, A., Kearney, K., Andersen, T. R., Krzeminski, P., Buttiglieri, G., Ayrál-Cinar, D., Comas, J., Gajewska, M., Hartl, M., Finger, D. C., Kazak, J. K., Mattila, H., Vieira, P., Piro, P., Palermo, S. A., Turco, M., Pirouz, B. & Stefanakis, A. & 3 flere, Regelsberger, M., Ursino, N. & Carvalho, P. N., 1 dec. 2021, I: *Water*. 13, 23, 28 s., 3334.

CONSTRUCTED WETLANDS FOR THE TREATMENT OF CYANOTOXINS: INITIAL RESULTS

Martinez I Quer, A., Johansen, A., Arias, C. A. & Carvalho, P. N., nov. 2021.

CONSTRUCTED WETLANDS FOR THE TREATMENT OF CYANOTOXINS: initial results

Martinez I Quer, A., Johansen, A., Arias, C. A. & Carvalho, P. N., okt. 2021.

CONSTRUCTED WETLANDS FOR THE TREATMENT OF CYANOTOXINS: INITIAL RESULTS

Martinez I Quer, A., Johansen, A., Arias, C. A. & Carvalho, P. N., sep. 2021.

Towards a cross-sectoral view of nature-based solutions for enabling circular cities

Langergraber, G., Castellar, J. A. C., Andersen, T. R., Andreucci, M. B., Baganz, G. F. M., Buttiglieri, G., Canet-Martí, A., Carvalho, P. N., Finger, D. C., Griessler Bulc, T., Junge, R., Megyesi, B., Milošević, D., Oral, H. V., Pearlmutter, D., Pineda-Martos, R., Pucher, B., van Hullebusch, E. D. & Atanasova, N., sep. 2021, I: *Water*. 13, 17, 19 s., 2352.

NOVANA screening, evaluering af udvalgte miljøfarlige forurenende stoffer

Lassen, P. & Carvalho, P. N., aug. 2021, Aarhus University, DCE - Danish Centre for Environment and Energy. 66 s. (Teknisk rapport). (Teknisk rapport fra DCE - Nationalt Center for Miljø og Energi; Nr. 210).

Biodegradation kinetics of organic micropollutants and microbial community dynamics in a moving bed biofilm reactor
Liang, C., de Jonge, N., Carvalho, P. N., Nielsen, J. L. & Bester, K., jul. 2021, I: *Chemical Engineering Journal*. 415, 11 s., 128963.

First Report on Cyanotoxin (MC-LR) Removal from Surface Water by Multi-Soil-Layering (MSL) Eco-Technology: Preliminary Results

Aba, R. P., Mugani, R., Hejjaj, A., de Fraissinette, N. B., Oudra, B., Ouazzani, N., Campos, A., Vasconcelos, V., Carvalho, P. N. & Mandi, L., maj 2021, I: *Water (Switzerland)*. 13, 10, 1403.

Constructed wetlands for the treatment of cyanotoxins: a multidisciplinary approach

Martinez I Quer, A., Ramirez-Vargas, C. A., Johansen, A. & Carvalho, P. N., apr. 2021.

Identification of more than 100 new compounds in the wastewater: Fate of polyethylene/polypropylene oxide copolymers and their metabolites in the aquatic environment

Tisler, S., Liang, C., Carvalho, P. N. & Bester, K., 20 mar. 2021, I: *Science of the Total Environment*. 761, 143228.

A review of the potential of nature-based solutions (NBS) to address the challenges of the water-energy-food nexus (WEF Nexus) in the coming decades

Carvalho, P. N., Finger, D. C., Masi, F., Cipolletta, G., Oral, H. V., Toth, A., Regelsberger, M. & Exposito, A., 2021.

Constructed Wetlands and Phytoremediation as a Tool for Pharmaceutical Removal

Carvalho, P. N., 2021, *Handbook of Environmental Chemistry*. Berlin: Springer, s. 377-413 37 s.

Constructed wetlands to mitigate cyanobacterial harmful algal blooms

Carvalho, P. N., 2021.

Removal of Pharmaceuticals by Nitrifying Moving Bed Biofilm Reactors - the effect of ammonium dose

Svendsen, S. B., Eggimann, S., Carvalho, P. N. & Bester, K., 2021, (Under udarbejdelse) I: Manuscript in preparation.

The effect of easy degradable carbon on pharmaceuticals removal in intermittently fed Moving Bed Biofilm Reactors

Svendsen, S. B., Jørgensen, L. R., Liang, C., Carvalho, P. N., Bregendahl, J., Larsen, S. B. & Bester, K., 2021, (Under udarbejdelse) I: Manuscript in preparation.

Vertical flow constructed wetlands to treat water contaminated with cyanotoxins

Carvalho, P. N., Potokar, A., Ramirez-Vargas, C. A. & Arias, C. A., 2021.

Leaching of herbicidal residues from gravel surfaces – A lysimeter-based study comparing gravels with agricultural topsoil

Albers, C. N., Jacobsen, O. S., Bester, K., Jacobsen, C. S. & Carvalho, P. N., nov. 2020, I: *Environmental Pollution*. 266, 3, 115225.

Hydrothermal liquefaction of sewage sludge; energy considerations and fate of micropollutants during pilot scale processing

Silva Thomsen, L. B., Carvalho, P. N., Dos Passos, J. S., Anastasakis, K., Bester, K. & Biller, P., sep. 2020, I: *Water Research*. 183, 116101.

A comparison of the fate of diflufenican in agricultural sandy soil and gravel used in urban areas

Svendsen, S. B., Carvalho, P. N., Bollmann, U. E., Ellegaard-Jensen, L., Albers, C. N., Strobel, B. W., Jacobsen, C. S. & Bester, K., 1 maj 2020, I: *Science of the Total Environment*. 715, 136803.

A review of nature-based solutions for urban water management in European circular cities: a critical assessment based on case studies and literature

Oral, H. V., Carvalho, P. N., Gajewska, M., Ursino, N. & Masi, F., 1 jan. 2020, I: *Blue-Green Systems*. 2, 1, s. 112-136 25 s.

A snapshot of organic micropollutants in Danish surface waters

Carvalho, P. N., Liang, C., Tisler, S. K., Lassen, P. & Bester, K., 2020.

Concentration dependent degradation of pharmaceuticals in WWTP effluent by biofilm reactors

Svendsen, S. B., El-taliawy, H., Carvalho, P. N. & Bester, K., 2020, I: Water Research. 186, 10 s., 116389.

Enhanced removal of pharmaceuticals in a biofilter: Effects of manipulating co-degradation by carbon feeding

Zhang, L., Carvalho, P. N., Bollmann, U. E., El-taliawy, H., Brix, H. & Bester, K., 1 dec. 2019, I: Chemosphere. 236, 10 s., 124303.

Dose-dependent effects of acetate on the biodegradation of pharmaceuticals in moving bed biofilm reactors

Liang, C., Zhang, L., Nord, N. B., Carvalho, P. N. & Bester, K., aug. 2019, I: Water Research. 159, s. 302-312 11 s.

Co-metabolism or competitive inhibition between acetate and pharmaceuticals in post-treatment moving bed biofilm reactors (MBBR)?

Liang, C., Zhang, L., Nord, N. B., Carvalho, P. N. & Bester, K., 28 apr. 2019, s. 87-87. 1 s.

Electroactive biofilm-based constructed wetland (EABB-CW): A mesocosm-scale test of an innovative setup for wastewater treatment

Ramírez-Vargas, C. A., Arias, C. A., Carvalho, P., Zhang, L., Esteve-Núñez, A. & Brix, H., 1 apr. 2019, I: Science of the Total Environment. 659, s. 796-806 11 s.

Microbial community metabolic profiles in saturated constructed wetlands treating iohexol and ibuprofen

Zhang, Y., Lyu, T., Zhang, L., Button, M., Arias, C. A., Weber, K. P., Shi, J., Chen, Z., Brix, H. & Carvalho, P. N., 15 feb. 2019, I: Science of the Total Environment. 651, s. 1926-1934 9 s.

NoNewBAM: diflufenican degradation and potential leaching

Carvalho, P. N., Svendsen, S. B., Albers, C. N., Jacobsen, O. S., Bester, K. & Jacobsen, C. S., 31 jan. 2019.

Biodegradation of pharmaceuticals in post-treatment moving bed biofilm reactor (MBBR): enantioselectivity and controlled co-degradation

Liang, C., Zhang, L., Nord, N. B., Carvalho, P. N. & Bester, K., 2019.

Constructed wetlands for organic pollutants treatment: linking design factors with microbial community function

Carvalho, P. N., Arias, C. A., Weber, K. P., Bester, K. & Brix, H., 2019.

Electric Potential in Electroactive Biofilm-based Constructed Wetlands: Current flow density as a performance indicator

Ramírez Vargas, C. A., Arias, C. A., Carvalho, P. N. & Brix, H., 2019, s. 121. 1 s.

Electroactive biofilms for persistent organic pollutants degradation

Carvalho, P. N., 2019.

Nature-based solutions and urban waters

Carvalho, P. N., 2019.

Sorption and degradation of diflufenican in the urban environment

Svendsen, S. B., Carvalho, P. N., Bollmann, U. E., Ellegaard-Jensen, L., Albers, C. N., Strobel, B. W., Jacobsen, C. S. & Bester, K., 2019.

New insights into the effects of support matrix on the removal of organic micro-pollutants and the microbial community in constructed wetlands

Zhang, L., Lyu, T., Ramírez Vargas, C. A., Arias, C. A., Carvalho, P. N. & Brix, H., 1 sep. 2018, I: Environmental Pollution. 240, s. 699-708 10 s.

Microbial electrochemical technologies for wastewater treatment: Principles and evolution from microbial fuel cells to bioelectrochemical-based constructed wetlands

Ramírez-Vargas, C. A., Prado, A., Arias, C. A., Carvalho, P. N., Esteve-Núñez, A. & Brix, H., 24 aug. 2018, I: *Water* (Switzerland). 10, 9, 1128.

Methodologies for the analysis of pesticides and pharmaceuticals in sediments and plant tissue

Carvalho, P. N., Zhang, Y., Lyu, T., Arias, C. A., Bester, K. & Brix, H., 14 aug. 2018, I: *Analytical Methods*. 10, s. 3791-3803 13 s.

Intracellular nitrate in sediments of an oxygen-deficient marine basin is linked to pelagic diatoms

Kamp, A., Petro, C., Røy, H., Nielsen, S., Carvalho, P. N., Stief, P. & Schramm, A., 1 aug. 2018, I: *FEMS Microbiology Ecology*. 94, 8, 12 s., fiy122.

Aerated Constructed Wetlands for Treatment of Municipal and Food Industry Wastewater

Pascual, A., de la Varga, D., Soto, M., van Oirschot, D., Kilian, R., Alvarez, J. A., Carvalho, P. N., Brix, H. & Arias, C. A., jul. 2018, *Constructed Wetlands for Industrial Wastewater Treatment*. Stefanakis, A. I. (red.). Wiley, s. 65-93 29 s. (Challenges in Water Management).

Impacts of design configuration and plants on the functionality of the microbial community of mesocosm-scale constructed wetlands treating ibuprofen

Zhang, L., Lyu, T., Zhang, Y., Button, M., Arias, C. A., Weber, K. P., Brix, H. & Carvalho, P. N., 15 mar. 2018, I: *Water Research*. 131, s. 228-238 11 s.

Removal of the pesticide tebuconazole in constructed wetlands: Design comparison, influencing factors and modelling

Lyu, T., Zhang, L., Xu, X., Arias, C. A., Brix, H. & Carvalho, P. N., 1 feb. 2018, I: *Environmental Pollution*. 233, s. 71-80 10 s.

Biodegradation of organic micropollutants in constructed wetlands: comparison of design and operational parameters

Carvalho, P. N., Zhang, Y., Lyu, T., Zhang, L., Arias, C. A., Bester, K. & Brix, H., 2018.

Constructed wetlands support matrix: effects on the removal of organic micropollutants and microbial community function

Carvalho, P. N., Zhang, L., Lyu, T., Ramírez Vargas, C. A., Arias, C. A., Bester, K. & Brix, H., 2018.

Eco-technologies for the removal of organic contaminants

Carvalho, P. N., Lyu, T., Zhang, L., Zhang, Y., Arias, C. A., Bester, K. & Brix, H., 2018.

Effects of carbon feeding on pharmaceutical removal from wastewater effluent in a sand filtration

Zhang, L., Carvalho, P. N., Bollmann, U. E., El-taliawy, H., Brix, H. & Bester, K., 2018.

Impacts of design configuration on the functionality of the microbial community and ibuprofen removal of constructed wetlands

Carvalho, P. N., 2018.

Phragmites australis enantioselectively uptake, translocate and degrade the chiral pesticides tebuconazole and imazalil

Lyu, T., Carvalho, P. N., Casas, M. E., Bollmann, U. E., Arias, C. A., Brix, H. & Bester, K., 2018.

“WETWALL” — an innovative design concept for the treatment of wastewater at an urban scale

da Cunha, J. A. C., Arias, C. A., Carvalho, P., Rysulova, M., Canals, J. M., Pérez, G., Bosch, M. G. & Morató, J. F., 2018, I: *Desalination and Water Treatment*. 109, March, s. 205-220 16 s.

Effects of constructed wetland design on ibuprofen removal – A mesocosm scale study

Zhang, L., Lyu, T., Zhang, Y., Stein, O. R., Arias, C. A., Brix, H. & Carvalho, P., dec. 2017, I: *Science of the Total Environment*. 609, s. 38-45 8 s.

Electroactive Biofilm-based Constructed Wetland (EABB-CW): Testing of an innovative setup for domestic wastewater treatment.

Ramírez Vargas, C. A., Arias, C. A., Carvalho, P., Zhang, L., Esteve-Núñez, A. & Brix, H., 22 okt. 2017.

Ten years of Vertical Flow Constructed Wetlands the experience after the Danish EPA guidelines

Arias, C. A., Kilian, R., Ramírez Vargas, C. A., Carvalho, P. & Brix, H., 22 okt. 2017.

Constructed wetlands and solar-driven disinfection technologies for sustainable wastewater treatment and reclamation in rural India: SWINGS project

Alvarez, J. A., Avila, C., Otter, P., Kilian, R., Darja, I., Rolletscheck, M., Molle, P., Khalil, N., Amersek, I., Mishra, V., Jorgensen, C., Garfi, A., Carvalho, P., Brix, H. & Arias, C. A., sep. 2017, I: *Water Science & Technology*. 76, 6, s. 1474-1484 16 s.

Constructed wetlands for the treatment of organic micropollutants: lessons learned across five experimental studies

Carvalho, P., Zhang, Y., Lyu, T., Zhang, L., Arias, C. A. & Brix, H., aug. 2017.

Electric Potential in Electroactive Biofilm-based Constructed Wetlands: Current flow density as a performance indicator

Ramírez Vargas, C. A., Arias, C. A., Carvalho, P., Damgaard, L. R., Nielsen, L. P. & Brix, H., aug. 2017.

Electroactive Biofilm-based Constructed Wetland (EABB-CW): Testing of an innovative setup for wastewater treatment

Ramírez Vargas, C. A., Arias, C. A., Carvalho, P., Esteve-Núñez, A. & Brix, H., aug. 2017.

System design or plant presence: Which has more influence on the microbial community in constructed wetlands?

Zhang, L., Lyu, T., Zhang, Y., Button, M., Arias, C. A., Weber, K., Brix, H. & Carvalho, P., aug. 2017.

Enantioselective uptake, translocation and degradation of the chiral pesticides tebuconazole and imazalil by *Phragmites australis*

Lv, T., Carvalho, P. N., Casas, M. E., Bollmann, U. E., Arias, C. A., Brix, H. & Bester, K., 10 jun. 2017, I: *Environmental Pollution*. 229, s. 362-370 9 s.

Constructed wetlands for water treatment: New developments

Carvalho, P. N., Arias, C. A. & Brix, H., 2 jun. 2017, I: *Water*. 9, 6, 397.

Functionality of microbial communities in constructed wetlands used for pesticide remediation: Influence of system design and sampling strategy

Lv, T., Carvalho, P. N., Zhang, L., Zhang, Y., Button, M., Arias, C. A., Weber, K. P. & Brix, H., 1 mar. 2017, I: *Water Research*. 110, March, s. 241-251 11 s.

Ibuprofen and iohexol removal in saturated constructed wetland mesocosms

Zhang, Y., Lv, T., Carvalho, P. N., Zhang, L., Arias, C. A., Chen, Z. & Brix, H., 1 jan. 2017, I: *Ecological Engineering*. 98, s. 394-402 9 s.

Microbial community metabolic function in constructed wetland mesocosms treating the pesticides imazalil and tebuconazole

Lv, T., Zhang, Y., Carvalho, P. N., Zhang, L., Button, M., Arias, C. A., Weber, K. P. & Brix, H., 1 jan. 2017, I: *Ecological Engineering*. 98, s. 378-387 10 s.

Contaminants of emerging concern in low-tech eco-technologies: efficiency, fate and processes

Carvalho, P., Arias, C. A. & Brix, H., 2017.

Electric Potential in Electroactive Biofilm-based Constructed Wetlands

Ramírez Vargas, C. A., Arias, C. A., Carvalho, P. N. & Brix, H., 2017, *7th International Symposium for Wetland Pollutant Dynamics and Control (WETPOL): Conference Proceedings*.

Microbial electrochemical technologies: an emerging alternative for wastewater treatment using constructed wetlands
Arias, C. A., Ramirez Vargas, C. A., Carvalho, P. & Brix, H., 2017.

Stabilization of Preliminary Anaerobically Digested Slurry in Post-Storage: Dynamics of Chemical Characteristics and Hygienic Quality

Luo, H., Lv, T., Shi, M., Wu, S., Carvalho, P. N. & Dong, R., 2017, I: *Water, Air and Soil Pollution*. 228, 8, 10 s., 306.

Removal Kinetics of Organic Matter and Nitrogen Using Microbial Electrochemical Based - Constructed Wetlands (iMETland)

Ramírez Vargas, C. A., Arias, C. A., Carvalho, P. & Brix, H., 15 maj 2016. 1 s.

Phytoremediation of imazalil and tebuconazole by four emergent wetland plant species in hydroponic medium

Lv, T., Zhang, Y., Escola, M., Carvalho, P. N., Arias, C. A., Bester, K. & Brix, H., 1 apr. 2016, I: *Chemosphere*. 148, s. 459-466 8 s.

Microbial density and diversity in constructed wetland systems and the relation to pollutant removal efficiency

Zhang, Y., Carvalho, P. N., Lv, T., Arias, C., Brix, H. & Chen, Z., 15 feb. 2016, I: *Water Science and Technology*. 73, 3, s. 679-686 8 s.

Removal of the pharmaceuticals ibuprofen and iohexol by four wetland plant species in hydroponic culture: plant uptake and microbial degradation

Zhang, Y., Lv, T., Carvalho, P. N., Arias, C. A., Chen, Z. & Brix, H., feb. 2016, I: *Environmental Science and Pollution Research*. 23, 3, s. 2890-2898 8 s.

Pathways of nitrobenzene degradation in horizontal subsurface flow constructed wetlands: Effect of intermittent aeration and glucose addition

Kirui, W. K., Wu, S., Kizito, S., Carvalho, P. N. & Dong, R., 15 jan. 2016, I: *Journal of Environmental Management*. 166, s. 38-44 7 s.

Sanitation in constructed wetlands: A review on the removal of human pathogens and fecal indicators

Wu, S., Carvalho, P. N., Müller, J. A., Manoj, V. R. & Dong, R., 15 jan. 2016, I: *Science of the Total Environment*. 541, s. 8-22 15 s.

Removal of the pesticides imazalil and tebuconazole in saturated constructed wetland mesocosms

Lv, T., Zhang, Y., Zhang, L., Carvalho, P. N., Arias, C. A. & Brix, H., 7 jan. 2016, I: *Water Research*. 91, s. 126-136 11 s.

Constructed wetlands for livestock wastewater treatment: Antibiotics removal and effects on CWs performance

Almeida, C. M. R., Carvalho, P. N., Fernandes, J. P., Basto, M. C. P. & Mucha, A. P., 1 jan. 2016, *Phytoremediation: Management of Environmental Contaminants*. Springer Publishing Company, Bind 4. s. 267-281 15 s.

Biodegradation of biocides in soils, soil filters and other biofilm reactors

Bester, K., Bollmann, U. E., Casas, M. E., Brandt, K. K., Lyu, T., Carvalho, P. & Brix, H., 2016.

Can plant species and system design influence the microbial community metabolic function in constructed wetland mesocosms treating pesticides?

Lyu, T., Carvalho, P., Zhang, L., Zhang, Y., Button, M., Arias, C. A., Weber, K. & Brix, H., 2016.

Combined technologies, HUSB and aerated treatment wetlands for the treatment of urban and industrial wastewaters

Alvarez, J. A., de la Varga, D., Pascual, A., van Oirschot, D., Killian, R., Carvalho, P., Brix, H. & Arias, C. A., 2016.

Comparison of the pesticides imazalil and tebuconazole mitigation in hydroponic microcosms and mesocosm-scale constructed wetlands

Lyu, T., Carvalho, P., Zhang, Y., Arias, C. A. & Brix, H., 2016.

Comparison of the pesticide tebuconazole removal in unsaturated and saturated constructed wetland mesocosms
Lyu, T., Carvalho, P., Zhang, L., Zhang, Y., Arias, C. A. & Brix, H., 2016.

Constructed wetland design effects on ibuprofen removal – a mesocosm scale study
Zhang, L., Carvalho, P., Lyu, T., Zhang, Y., Arias, C. A. & Brix, H., 2016.

Kinetics and Hydrodynamics of Microbial Electrochemical-based Constructed Wetlands (iMETland) for domestic wastewater treatment.

Ramírez Vargas, C. A., Arias, C. A., Carvalho, P. N., Zhang, L. & Brix, H., 2016, *15th IWA International Conference on Wetland Systems for Water Pollution Control: Conference Proceedings*. Gdansk, Bind 2. s. 908 1 s.

Removal and transformation of ibuprofen in constructed wetlands systems

Carvalho, P., Zhang, Y., Lyu, T., Zhang, L., Escola, M., Arias, C. A., Bester, K. & Brix, H., 2016.

Removal kinetics of organic matter and nitrogen using Microbial Electrochemical based – Constructed Wetlands (iMETland)

Ramírez Vargas, C. A., Arias, C. A., Carvalho, P. & Brix, H., 2016.

SWINGS, constructed wetlands combined with solar powered disinfection technology for treating wastewaters to provide safe water for reuse in Aligarh, India

Arias, C. A., Avila, C., Otter, P., Jørgensen, C., Killian, R., Khalil, N., Carvalho, P., Brix, H. & Alvarez, J. A., 2016.

Design and performance evaluation of a highly loaded aerated treatment wetland managing effluents from a food processing industry in Denmark

Arias, C. A., Oirschot, D. V., Kilian, R., Pascual, A., Carvalho, P., Lv, T., Zhang, Y., Brix, H. & Alvarez, J. A., 1 dec. 2015, *I: Water Practice and Technology*. 10, 4, s. 644-651 8 s.

Response of a tidal operated constructed wetland to sudden organic and ammonium loading changes in treating high strength artificial wastewater

Wu, S., Dong, X., Chang, Y., Carvalho, P. N., Pang, C., Chen, L. & Dong, R., 1 sep. 2015, *I: Ecological Engineering*. 82, s. 643-648 6 s.

Microbial community dynamics associated with veterinary antibiotics removal in constructed wetlands microcosms

Fernandes, J. P., Almeida, C. M. R., Pereira, A. C., Ribeiro, I. L., Reis, I., Carvalho, P., Basto, M. C. P. & Mucha, A. P., 1 apr. 2015, *I: Bioresource Technology*. 182, s. 26-33 8 s.

Effects of hydraulic loading rates on the removal of pharmaceuticals in mesocosm constructed wetlands with five different plant species

Zhang, Y., Lyu, T., Carvalho, P., Arias, C. A., Chen, Z. & Brix, H., 2015.

Emerging organic contaminants adsorption in five substrate types used in constructed wetlands systems

Zhang, L., Zhang, Y., Lyu, T., Carvalho, P., Arias, C. A. & Brix, H., 2015.

Influence of plant species on catabolic profiles of microbial communities in constructed wetland mesocosms treating emerging organic contaminants

Zhang, Y., Carvalho, P., Button, M., Lyu, T., Arias, C. A., Chen, Z., Weber, K. & Brix, H., 2015.

Micropollutants metabolism in constructed wetland systems

Carvalho, P., Lyu, T., Zhang, Y., Arias, C. A. & Brix, H., 2015.

Removal of imazalil and tebuconazole in saturated constructed wetland mesocosms

Lyu, T., Zhang, Y., Carvalho, P., Arias, C. A. & Brix, H., 2015.

A review of plant-pharmaceutical interactions: from uptake and effects in crop plants to phytoremediation in constructed wetlands

Carvalho, P. N., Basto, M. C. P., Almeida, C. M. R. & Brix, H., 2014, I: Environmental Science and Pollution Research. 21, s. 11729-11763

Can wetland plants take up two pharmaceutical compounds under hydroponic conditions?

Zhang, Y., Lv, T., Carvalho, P., Arias, C. A. & Brix, H., 2014.

Characterization and bioremediation of meat industry wastewaters

Pirra, A., Lucas, M., Carvalho, P. & Peres, J., 2014.

Design and performance evaluation of highly loaded aerated treatment wetland managing effluents from a food processing industry in Denmark

Arias, C. A., Oirschot, D. V., Kilian, R., Carvalho, P., Lv, T., Zhang, Y., Brix, H. & Alvarez, J. A., 2014.

Emergent macrophytes for emergent micropollutants removal from aquatic systems

Carvalho, P., Lv, T., Zhang, Y., Arias, C. A. & Brix, H., 2014.

Growth characteristics of five wetland plants in water contaminated with imazalil and their phytoremediation capability

Lv, T., Zhang, Y., Carvalho, P., Arias, C. A. & Brix, H., 2014.

Removal of veterinary antibiotics in constructed wetlands microcosms: Impact in bacterial communities

Fernandes, J. P., Almeida, C. M. R., Carvalho, P. N., Reis, I., Basto, M. C. P. & Mucha, A. P., 2014.

Response of microorganisms from constructed wetlands to veterinary drugs

Fernandes, J. P., Almeida, C. M. R., Pereira, A. C., Lourinha, I., Reis, I., Carvalho, P. N., Basto, M. C. P. & Mucha, A. P., 2014.

Review on constructed wetlands for the removal of emerging organic micro-pollutants

Carvalho, P., Lv, T., Zhang, Y., Arias, C. A. & Brix, H., 2014.

Screening of five emergent wetland plant species for phytoremediation of tebuconazole (TBU) from contaminated water

Lv, T., Zhang, Y., Carvalho, P., Arias, C. A. & Brix, H., 2014.

Stability of chlorophenols and their acetylated derivatives in water: Sample storage procedures

de Moraes, P., Stoichev, T., Basto, M. C. P., Carvalho, P. & Vasconcelos, M. T. S. D., 2014, I: Journal of AOAC International. 97, 1, s. 179-182 4 s.

The fate of two pharmaceuticals in hydroponic monoculture: five different plants comparison

Zhang, Y., Lv, T., Carvalho, P., Arias, C. A. & Brix, H., 2014.

Winery effluents treatment in Portugal: an uncomfortable overview

Pirra, A., Oliveira, A., Carvalho, P. & Alves, J., 2014.

Multi-family methodologies for the analysis of veterinary pharmaceutical compounds in sediment and sludge samples: Comparison among extraction techniques

Carvalho, P., Pirra, A., Basto, M. C. P. & Almeida, C. M. R., 21 nov. 2013, I: Analytical Methods. 5, 22, s. 6503-6510 8 s.

Potential of constructed wetlands microcosms for the removal of veterinary pharmaceuticals from livestock wastewater

Carvalho, P., Araújo, J. L., Basto, M. C. P., Mucha, A. P. & Almeida, C. M. R., 1 apr. 2013, I: Bioresource Technology. 134, s. 412-416 5 s.

Activated sludge systems removal efficiency of veterinary pharmaceuticals from slaughterhouse wastewater
Carvalho, P., Pirra, A., Basto, M. C. P. & Almeida, C. M. R., 1 jan. 2013, I: Environmental Science and Pollution Research. 20, 12, s. 8790-8800 11 s.

Priority substances in a SW European coastal lagoon - Ria Formosa, Portugal. Twenty years of temporal evolution of metals and butyltins

Moreira da Silva, M., Carvalho, P. N., Paquete, R., Nuno Duarte, D. & Chícharo, L., 2013.

Resposta de microrganismos de fito-ETARs a drogas veterinárias

Fernandes, J. P., Pereira, A. C., Lourinha, I., Reis, I., Carvalho, P. N., Almeida, C. M., Bastos, M. C. & Mucha, A. P., 2013.

Potential of *Phragmites australis* for the removal of veterinary pharmaceuticals from aquatic media

Carvalho, P., Basto, M. C. P. & Almeida, C. M. R., 1 jul. 2012, I: Bioresource Technology. 116, s. 497-501 5 s.

Simultaneous determination of several veterinary pharmaceuticals in effluents from urban, livestock and slaughterhouse wastewater treatment plants using a simple chromatographic method

Cavenati, S., Almeida, C. M. R., Vasconcelos, M. T. S. D., Carvalho, P. & Basto, M. C. P., 1 jan. 2012, I: Water Science and Technology. 66, 3, s. 603-611 9 s.

Aerobic biological treatment of chestnut processing wastewater

Pirra, A., Lucas, M., Carvalho, P. N. & Peres, J., 2012.

Multi-residue method for the analysis of veterinary pharmaceutical compounds in sludge

Carvalho, P. N., Basto, M. C. P. & Almeida, C. M. R., 2012.

Sample storage and analysis procedure for determination of chlorophenols in water

de Morais, P., Stoichev, T., Basto, M. C. P., Carvalho, P. N. & Vasconcelos, M. T. S. D., 2012.

Can salt marsh plants influence levels and distribution of DDTs in estuarine areas?

Carvalho, P., Rodrigues, P. N. R., Evangelista, R., Basto, M. C. P. & Vasconcelos, M. T. S. D., 20 jul. 2011, I: Estuarine, Coastal and Shelf Science. 93, 4, s. 415-419 5 s.

A headspace SPME-GC-ECD method suitable for determination of chlorophenols in water samples

De Morais, P., Stoichev, T., Basto, M. C. P., Carvalho, P. & Vasconcelos, M. T. S. D., 1 mar. 2011, I: Analytical and Bioanalytical Chemistry. 399, 7, s. 2531-2538 8 s.

Simultaneous Survey Of Five Veterinary Pharmaceuticals In Effluents Of Treated Wastewaters

Carvalho, P. N., Cavenati, S., Almeida, C. M. R., Basto, M. C. P. & Vasconcelos, M. T. S. D., 2011.

Can some estuarine salt marsh plants influence distribution and remediation of DDT and its metabolites?

Carvalho, P. N., Evangelista, R., Basto, M. C. P. & Vasconcelos, M. T. S. D., maj 2010.

Ability of salt marsh plants for TBT remediation in sediments

Carvalho, P., Basto, M. C. P., Bordalo, A. A., Vasconcelos, M. T. S. D., Silva, M. F. G. M. & Machado, A., 1 jan. 2010, I: Environmental Science and Pollution Research. 17, 6, s. 1279-1286 8 s.

A Simple Method for Quantification of Tetracyclines in Wastewater samples

Cavenati, S., Carvalho, P. N., Almeida, C. M. R., Basto, M. C. P. & Vasconcelos, M. T. S. D., 2010.

Can the veterinary drugs ivermectin, enrofloxacin, penicillin and ceftiofur be analyzed by gas chromatography?

Carvalho, P. N., Almeida, C. M. R., Basto, M. C. P. & Vasconcelos, M. T. S. D., 2010.

Organochlorine pesticides levels in Portuguese coastal areas

Carvalho, P., Rodrigues, P. N. R., Basto, M. C. P. & Vasconcelos, M. T. S. D., 1 maj 2009, I: *Chemosphere*. 75, 5, s. 595-600 6 s.

Butyltin levels in several Portuguese coastal areas

Carvalho, P., Rodrigues, P. N. R., Basto, M. C. P. & Vasconcelos, M. T. S. D., 1 jan. 2009, I: *Environmental Monitoring and Assessment*. 159, 1-4, s. 183-190 8 s.

Mutual interactions between roots of salt marsh plants and sediments and their relevance for toxicity endpoints and rhizoremediation

Almeida, C. M. R., Mucha, A. P., Carvalho, P., Basto, M. C. P. & Vasconcelos, M. T. S. D., 2009, *River Sediments: Environmental Science, Engineering and Technology Series*. Nova Science Publishers, s. 103-127

Role of salt marsh plants on TBT biological remediation in sediments

Carvalho, P. N., Basto, M. C. P., Moreira da Silva, M., Machado, A., Bordalo, A. A. & Vasconcelos, M. T. S. D., 2009.

An expeditious method for the determination of organochlorine pesticides residues in estuarine sediments using microwave assisted pre-extraction and automated headspace solid-phase microextraction coupled to gas chromatography-mass spectrometry

Carvalho, P., Rodrigues, P. N. R., Alves, F., Evangelista, R., Basto, M. C. P. & Vasconcelos, M. T. S. D., 15 sep. 2008, I: *Talanta*. 76, 5, s. 1124-1129 6 s.

Application of SPME to the determination of alkylphenols and bisphenol A in cyanobacteria culture media

Stoichev, T., Baptista, M. S., Basto, M. C. P., Carvalho, P. & Vasconcelos, M. T. S. D., 1 maj 2008, I: *Analytical and Bioanalytical Chemistry*. 391, 1, s. 425-432 8 s.

An expeditious method for determination of residues of organochlorine pesticides in sediments and its application to Portuguese estuarine areas

Rodrigues, P. N. R., Carvalho, P. N., Alves, F., Evangelista, R., Basto, M. C. P. & Vasconcelos, M. T. S. D., 2008.

Application of SPME for the determination of alkylphenols in cyanobacteria culture media

Stoichev, T., Batista, M. S., Basto, M. C. P., Carvalho, P. N. & Vasconcelos, M. T. S. D., 2008.

Interactions of alkylphenols with cyanobacterium *Microcystis aeruginosa*

Stoichev, T., Batista, M. S., Basto, M. C. P., Carvalho, P. N. & Vasconcelos, M. T. S. D., 2008.

Levels of butyltins in sediments of different Portuguese coastal areas

Carvalho, P. N., Rodrigues, P. N. R., Basto, M. C. P. & Vasconcelos, M. T. S. D., 2008.

Headspace solid-phase micro-extraction and gas chromatography-ion trap tandem mass spectrometry method for butyltin analysis in sediments: Optimization and validation

Carvalho, P., Pinto, L. F., Basto, M. C. P. & Vasconcelos, M. T. S. D., 1 dec. 2007, I: *Microchemical Journal*. 87, 2, s. 147-153 7 s.

Remediation of butyltin compounds from sediments of Sado river estuary by the salt marsh plant *Halimione Portulacoides*

Carvalho, P. N., Pinto, L. S., Basto, M. C. P. & Vasconcelos, M. T. S. D., 2007.

Pesquisa de Pesticidas Organoaclarados em Sedimentos do Rio Minho

Carvalho, P. N., Lyra, F., Antunes, J. C., Vasconcelos, M. T. S. D. & Basto, M. C. P., 2006.