



“RECOVERING CARBON FROM CONTAMINATED MATRICES BY EXPLOITING THE NITROGEN AND SULPHUR CYCLES”

Chemosphere 295 (2022) 133936



Contents lists available at ScienceDirect

Chemosphere

journal homepage: www.elsevier.com/locate/chemosphere



Successful sulphide-driven partial denitrification: Efficiency, stability and resilience in SRT-controlled conditions[☆]

Cecilia Polizzi^{a,*}, David Gabriel^b, Giulio Munz^a

^a Department of Civil and Environmental Engineering, University of Florence, Via di S. Marta, 3, 50139, Firenze, Italy

^b GENOCOV Research Group, Department of Chemical, Biological and Environmental Engineering, Escola D'Enginyeria, Universitat Autònoma de Barcelona, 08193, Bellaterra, Spain

Open access to the RECYCLES first scientific publication “Successful sulphide-driven partial denitrification: Efficiency, stability and resilience in SRT-controlled conditions”

We are glad to announce the publication of the **first RECYCLES scientific article**, which derives from the fruitful collaboration between our two project partners **Università degli Studi di Firenze** and **Universitat Autònoma de Barcelona**.

You have free access through the link below:

<https://www.sciencedirect.com/science/article/pii/S0045653522004295>

Congratulations to the authors!

Second RECYCLES workshop coming soon!

The RECYCLES Consortium is defining the details of the second project **workshop**, which will be held in a hybrid mode in **Università di Pisa (Italy)** during the **5th, 6th and 7th of July 2021**, entitled **Metagenomics and metabarcoding approaches to describe ecological systems and infer their development**



RECYCLES
Recovering carbon from contaminated matrices by exploiting the nitrogen and sulphur cycles
Metagenomics and metabarcoding approaches to describe ecological systems and infer their development
5th, 6th and 7th of July 2022



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 872053.



Stay tuned and follow all the updates of the RECYCLES project

The RECYCLES consortium manages different **tools for the promotion and dissemination** of all the activities and actions related to the project:



<https://recycles-h2020.eu/>



[@RecyclesEU](https://twitter.com/RecyclesEU)



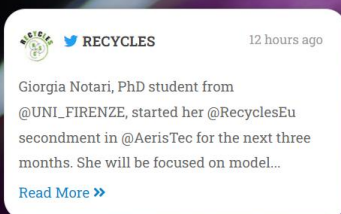
[@recycleseu](https://www.instagram.com/recycleseu)



[Recycles](https://www.facebook.com/Recycles)



[Recycles EU](https://www.linkedin.com/company/recycles-eu)



Professor Mireia Baeza seconded in Italprogetti Spa

Mireia Baeza, professor at the Department of Chemistry of the **Universitat Autònoma de Barcelona**, was seconded in **Italprogetti Spa** during October and November 2021. She was working together with staff from Italprogetti Spa and Università degli Studi di Firenze aiming at **integrating innovative analytical devices** that permits **chemical characterization of sulphur species** (SO_4^{2-} , S^{2-} and HS^-) and **nitrogen species** (NO_2^- , NO_3^- and NH_3) into different processes such as **wastewater treatment** or **anaerobic digestion of fleshing**, a task foreseen in **WP1**.

PUCV received the visit of Pilar Sánchez from UAB

Pilar Sánchez, PhD student from the research group GENOCOV at **Universitat Autònoma de Barcelona**, started her 4-months secondment in **Pontificia Universidad Católica de Valparaiso** during mid-September. During her stay, she addressed **WP1** tasks, working with different electrosynthesis cells and pure microbial cultures to produce **hydrogen gas**. In parallel, Pilar also worked towards the design and testing of **innovative reactors** that lead to achieve a proper escalation of these bioelectrochemical processes.



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 872053.



Research stay from Eric Valdés at Italprogetti SPA

Eric Valdés, PhD student from the research group GENOCOV at **Universitat Autònoma de Barcelona**, performed a two-month secondment in **Italprogetti Spa**, also collaborating with **Università degli Studi di Firenze**, aiming at

developing a **mathematical model** that is able to describe the dynamics of the **partial autotrophic denitrification** process occurring in a **CSTR fed with nitrate and sulphide**, as well as to predict **nitrite accumulation for different influent conditions**. This work will be helpful for **understanding** which conditions might be **optimal** for an **integrated biological treatment** of **sulphur- and nitrogen-containing liquid streams** such as tannery-like wastewaters

LCA of biological treatment trains by Professor Isabella Pecorini

Professor **Isabella Pecorini** from **Università di Pisa** is carrying out a split one-month secondment in **AERIS Tecnologies Ambientales S.L.** aiming at performing a **Life Cycle Analysis (LCA)** of a pilot-scale combined process to treat **combustion gases containing SO₂**, with a subsequent **recovering of biogas and biosulphur**. This concept works by coupling a classical absorption unit to **clean the combustion gases** with an UASB reactor for the **biological reduction of sulphate to sulphide**, finally followed by a CSTR for the **oxidation of sulphide into biosulphur**, **combining carbon and sulphur cycles into a biological treatment train**. This work will help identifying possible different scenarios for the application of this combined biotechnology to treat sulphur-containing gases.



Giorgia Notari research on bioplastics biodegradation modelling

Giorgia Notari, PhD student from **Università degli Studi di Firenze**, started her secondment in **AERIS Tecnologies Ambientales S.L.** at the beginning of May 2022. She will be there for 3 months working towards the development of **modelling approaches** for their application into **bioplastics biodegradation processes**. This work will be part of her PhD thesis, which will be developed during the next 3 years within a collaboration between **Università degli Studi di Firenze** and **Universitat Autònoma de Barcelona**.



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 872053.





The RECYCLES Consortium

Eight different international partners from both academia and industrial sectors conform the [RECYCLES Consortium](#), all with a high expertise in different fields, what enlarges the technical and scientific capabilities of the RECYCLES Consortium.

By clicking on the partners logos you will find out more information about them and their activities.



UNIVERSITÀ
DEGLI STUDI
FIRENZE



PONTIFICIA
UNIVERSIDAD
CATÓLICA DE
VALPARAÍSO



University
of Manitoba

Next RECYCLES newsletter

The next RECYCLES newsletter will be online in July-September 2022, gathering all the information related to the activities performed within the RECYCLES project, stay tuned!



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 872053.