





Oscar Yepez Ceron

Colombia > Ireland

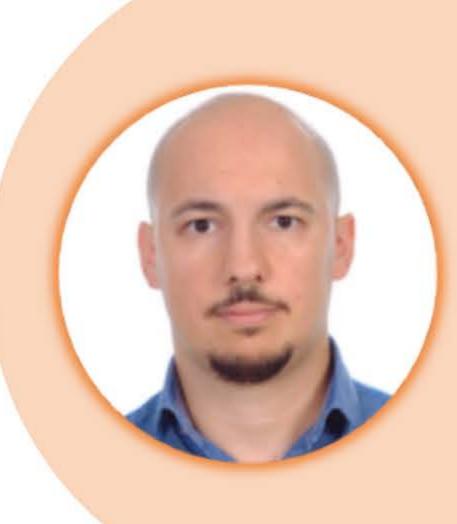
Increasing the efficiency of downstream processes that valorise dairy side streams



What's your project about?

The aim of my project is to **improve** the **efficiency** and **performance** of the **anaerobic digestion process** by mitigating the **challenges** posed by calcium carbonate **precipitation** that can lead to various **problems**, including the formation of **heavy sludge**, **scaling** on reactor walls and pipes, and **reduction** of biogas production. Through **experimental** tests on a **pilot scale** and the use of **software tools**, it is intended to **improve** the **sustainable** and reliable production of **biogas**, contributing to a more efficient and **environmentally friendly** wastewater treatment in the dairy industry.

Project Partners



UCD's School of Chemical and Bioprocess Engineering stands as a prominent hub for engineering education and research in Ireland. With a rich history spanning over 60 years, the school has consistently produced graduates who possess a strong foundation in technical, environmental, ethical, and social aspects of engineering. My supervisor is Professor Kaan Dereli



University College Dublin



Carbery



Carbery Group was founded in 1965 and is a renowned dairy company located in the West of Ireland, specializing in the production nutritional ingredients, flavours, natural cheeses, and bioethanol. With global presence, Carbery operates facilities not only in Ireland but also in the UK, China, and Brazil. One of the notable attributes of Carbery is its strong commitment to sustainability and the promotion of renewable energy sources. My supervisor is James Browne.









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What are you most excited about your project?

This project particularly **excites** me because it **combines** two approaches to **optimize renewable energy** production from **biogas** via **anaerobic digestion**. We're conducting **pilot-scale** experiments to gain **real-world data**, while also utilizing **mathematical simulation** as a powerful **optimization** tool. This complementary approach allows for a **more comprehensive understanding** and the potential for significant **improvements**

What do you find the most challenging in your project?

One of the main **challenges** in optimizing **biogas** production from dairy wastewater through anaerobic digestion is the high **calcium content**. This calcium **precipitates** as unwanted salts within the **reactors**, making the process **difficult** and requiring **frequent** and **expensive maintenance**. This is a known process but research is **limited**. Our project aims to **address** this **gap** by investigating methods to **control** and **prevent** these calcium precipitations, which will ultimately lead to a **more efficient** and **cost-effective biogas** production process.

What brought you to the Bioeconomy?

The **bioeconomy** offers a **promising** path to address **challenges** related to **global warming** by providing **renewable energy** sources such as **biogas**, reducing our **dependence** on **fossil fuels** and greenhouse gas **emissions**, implementing **more sustainable** and **green** practices in **industries**.

What does the Bioeconomy mean for you?

For me, the **bioeconomy** represents a **transformative approach** to harnessing the **potential** of **renewable** biological resources and **sustainable** processes.







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What did little Óscar want to be when he'd grow up?

I always wanted to be a doctor, however I found that I would enjoy being an engineer more.



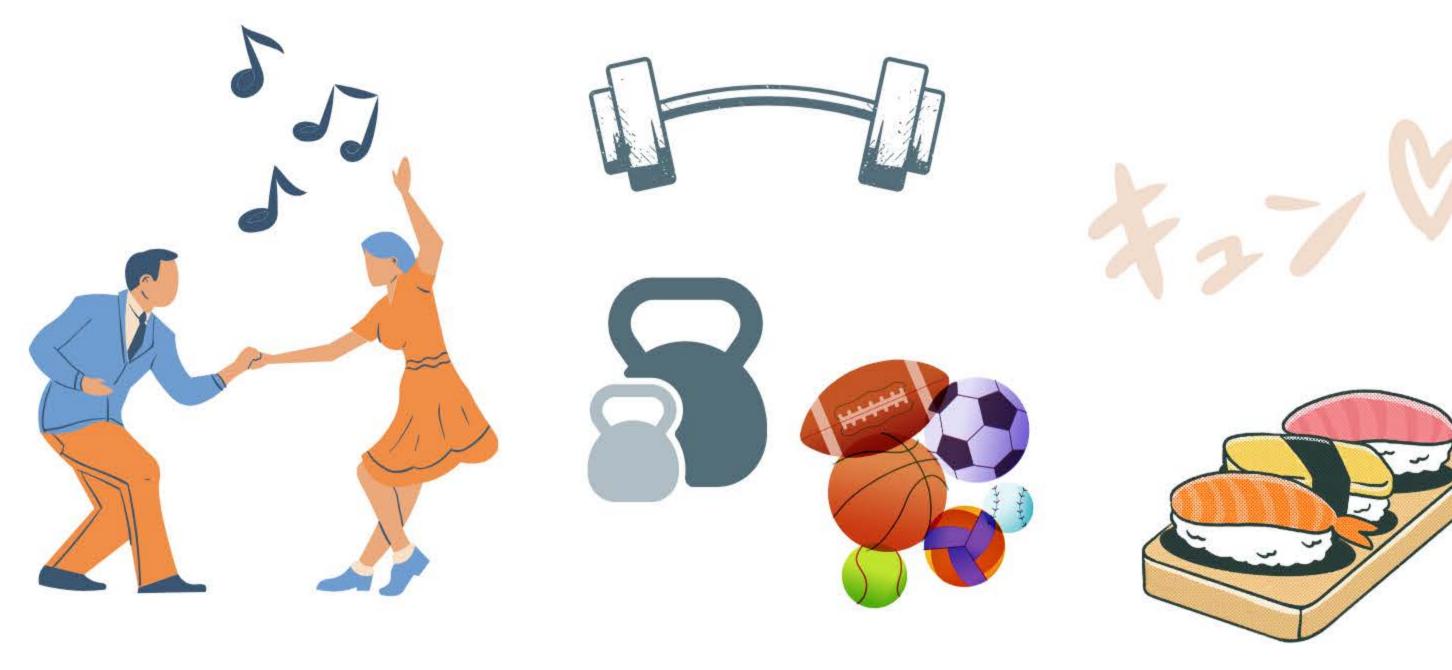


Something you love? And something you hate?

I love making people happy, Japanese food and football. I don't like humiliation and cooked liver.

Any hobbies outside of Science?

Sports, the gym, gastronomy, watching anime, electronic music and dancing



Short CV

2012-2017

B. Sc. in Chemical Engineering-Universidad Nacional de **Colombia**

2019-2021

★MSc. of Engineering - Chemical Engineering.
Universidad Nacional de **Colombia**

2018-2022

 Operational Director of Drinking Water Plant-Public services company, EMSERP E.S.P. Colombia

2022

★Operational director of the biomethane production pilot plant-Universidad Nacional de **Colombia**

