



Get to know the corrosion fighters

They have told us their story, how will yours be?



JOSHUA OWEN

Winner of the
2021 EFC Young Scientist Grant

Give us a little presentation of yours. What did you study?

I studied Automotive Engineering at the University of Leeds, graduating in 2013, before starting my PhD in Mechanical Engineering at the University of Leeds in 2014. The aim of my PhD was to study erosion-corrosion of carbon steel in aqueous CO₂-saturated environments, collaborating with Shell UK.



What is your job title? What does it consist of?

I'm a Research Fellow in the Institute of Functional Surfaces at the University of Leeds and am the postdoctoral researcher on a project called 'EnviroCoat'. The aim of this project is to modify corrosion product layers that form naturally on carbon steel in aqueous CO₂-saturated environments to enhance how much protection they can provide to the underlying carbon steel. I am currently on secondment at IFP Energies Nouvelles in France, one of our project partners, completing experiments to characterize the modified layers using electrochemical techniques which will enable us to optimize them for corrosion protection. Using the EFC Young Scientist grant I was awarded, I will visit the University of Iceland to compare the corrosion resistance of our modified layers with corrosion-resistant alloys commonly used in geothermal energy infrastructure.

How did you get here?

Since finishing my Ph.D. I've been involved in a number of corrosion research projects at the University of Leeds, mainly specializing in CO₂ corrosion, erosion-corrosion, electrochemistry, and computational fluid dynamics.

Who has helped? Was networking important?

My Ph.D. supervisors, Prof Anne Neville and Dr. Rick Barker have been a massive help getting me through my Ph.D. and into academic research. Working with different researchers and industrial partners has been very helpful to my research career

What do you like most about your profession?... Is there something you don't like?

Getting to work on projects using state-of-the-art equipment for corrosion science research and developing ideas that could solve future corrosion challenges is a great part of the job. Sometimes though, experiments fail!

Something curious that has happened to you within your career and that you remember with a smile?

Attending Eurocorr conferences with colleagues are always good experiences and good memories.

If you didn't dedicate yourself to this field, what would you have liked to be?

I studied Automotive Engineering originally at university, so I was interested in working as an engineer in the automotive industry.

Do you think this field needs more visibility?

Yes, I don't think is always appreciated how significant the problem of corrosion is. The challenge of net-zero and renewable energy means corrosion will potentially become more of a problem in the future.

What do you think about the incorporation of new Technologies for corrosion detection? Are they necessary or could we live without them?

One of the main areas of my research uses techniques to detect corrosion. Without them, we would have a very limited understanding of corrosion!

How do you think a good corrosion professional should be?

Creative. There are lots of different challenges in the field of corrosion.

What is the single most valuable attribute of a researcher in a lab?

Determined. Corrosion research experiments are challenging and don't always go to plan. It's important to be determined to finish a Ph.D.

Could you say what it is and how you see the future of engineers/corrosion scientists? Any advice?

The global challenge of net-zero and finding sustainable alternatives to energy means materials are being applied in new and challenging environments. Corrosion Science and engineering will be a critical part of ensuring materials can function in these environments.

Corrosionist... is it born or made?

Made

TO END... COULD YOU TELL US...

- **A color:** Red
- **A number:** 4
- **A song:** Cornerstone by Arctic Monkeys
- **A hobby:** Guitar
- **A city:** Leeds