

## **Faculty of Engineering**

### **Summer Research Program 2023-2024**

**Project Title:** Investigating corrosion performance of industrial cold spray Al coatings for steels

**Supervisor(s):** Dr. Sebastian Thomas (Main supervisor) and Dr. Erin Brodie

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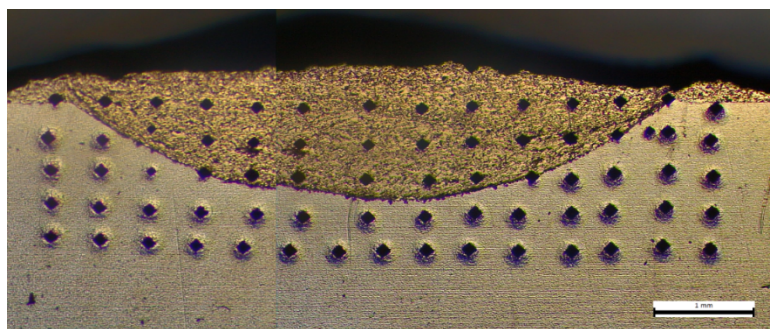
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### **Objective**

Metallic infrastructure are prone to atmospheric corrosion, thus constantly requiring remediation and replacement. Coatings and cathodic protection are methods used by industry to remediate structural issues caused by corrosion, however, these can be expensive and difficult to set-up in service environments (e.g., in chemical or petrochemical plants). Cold spray coatings are emerging as a low-cost alternative to fix corrosion damage of metallic infrastructure mainly because they are easy to apply directly onsite. The main objective of this project is to evaluate the mechanical, and corrosion performance of novel industrial cold-spray coatings to support their roll out in industry. Specifically, cold spray coatings will be characterised using a constellation of techniques- including electrochemical techniques and optical/electron-based characterisation techniques.

### **Project Details**

The student will be based in the Future Lab on the ground floor of New Horizons, working closely with a team of academics, post-docs, PhD students and interns. The student will learn about metallic coatings used in heat-critical environments and will independently perform experiments to assess corrosion performance of cold-spray coatings as relevant to such environments. An image of a cold spray coating, on a metal sample is shown below. The student will learn and use industry-standard testing methods to assess performance of such coatings.



### **Prerequisites**

- Basic knowledge of metallurgy
- Knowledge of corrosion and basic corrosion testing methods.

### **Additional Information**

The student will be situated as part of the FutureLab team.