

Faculty of Engineering

Summer Research Program 2024-2025

Project Title: Stress Corrosion Cracking of 3D Printed Alloys

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Objective

The objective of this project is to characterize and quantify the stress corrosion cracking behavior of laser powder bed fusion (L-PBF) manufactured alloys; IN625 and 316L.

Project Details

Additive manufacturing (AM) is becoming business as usual for many industries. To ensure safe service of components in a range of extreme environments, the behavior of AM materials must be characterized under application representative temperatures and corrosive environments.

This project will expand the current understanding of the behavior of L-PBF alloys under stress corrosion cracking (SCC) conditions to include the effect of the orientation of the anisotropic microstructure produced through L-PBF manufacturing. The student will be performing metallographic characterisation and stress corrosion cracking experiments, including hands-on experience applying strain gauges, and will gain familiarity with the requirements of industry relevant testing standards.

Prerequisites

Fundamental metallic microstructural and corrosion knowledge is required for this project and lab-skills in metallography are highly encouraged.

Additional Information

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

