

Faculty of Engineering

Summer Research Program 2022-2023

Project Title: Linking Material Selection and Design to Additive Manufacturing and Applications

Supervisor(s): Dr. Erin Brodie and Prof. Christopher Hutchinson

Department: Materials Science and Engineering

Email: erin.brodie1@monash.edu

Website profile of project supervisor:

<https://research.monash.edu/en/persons/erin-brodie>

Objective

Additive manufacturing (AM) is becoming business as usual for many industries, however the materials available are limited to a small collection optimized for conventional manufacturing techniques. To meet the needs of different industries, from biomedical to new energy to sustainable manufacturing, new materials are required both to match the method of additive manufacturing and the requirements of the application. The objective of this project will be to identify, match or design an optimal material for a novel application and additively manufacture a part, benefiting from additive design, to solve a real world problem.

Project Details

The student will be based in the FutureLab on the ground floor of New Horizons, working closely with a team of academics, post-docs, PhD students and interns. A novel application where additive manufacturing could be used to solve a real world problem will be chosen in discussion between the student and supervisors. The problem may be a particular project already identified by the student, or a design problem already proposed to the FutureLab. The student will then utilise the FutureLab's infrastructure (including metal and polymer AM techniques) to prototype, test and optimize a design solution, with the aim of supplying the final part for use. The student will experience the full cycle of part manufacture, from material selection and characterisation, CAD design, suitable 3D printing technology selection and prototyping to final part supply and testing.

Prerequisites

Materials science and engineering knowledge will be required but depth of knowledge will be dependent on the application chosen.

Additional Information

Applicants may be required to attend an interview.