Additive Manufacturing with Continuous Fiber Reinforcement for Fused Deposition Modelling Process

PROJECT DESCRIPTION

Composites materials are formed by combining two or more different materials to form a superior material. Fiber reinforced polymers (FRP) are composites in which fibers are used as reinforcements that carry loads and polymers are used as binders to hold fibers together. The nature of fibers determines the strength of the composite. They are added to the thermoplastic polymers as short, long and continuous reinforcements. However, continuous reinforcements are proven to provide higher strength than compared to short and long. One of the two objectives of this research work involves making a filament using extrusion process such that the final extruded filament has continuous carbon fiber coated with a thermoplastic polymer. The other objective of this research work is to modify the existing FDM 3d printer such that they can print continuous carbon fiber. The problem with using a continuous fiber is that the filament should be sheared off whenever the print head stops depositing the material and moves to a different position. This problem can be addressed by including a shear mechanism as a part of the print head such that the filament is sheared just before the print head moves to a different position.

FACULTY-DEPARTMENT

Engineering - Mechanical

DESIRED FIELD OF (STUDENT) STUDY

Mechatronics, Electronics, Mechanical, or Manufacturing Engineering

INTERNSHIP LOCATION

University of Alberta Main Campus - Edmonton

NUMBER OF INTERNSHIP POSITIONS

1

INTERNSHIP START DATE

January 2

Contact: Brendan Cavanagh, Internship Coordinator (Inbound)
University of Alberta International
intern@ualberta.ca
INTERNSHIP END DATE

12 weeks from start

ARE THE DATES FLEXIBLE?

Yes, I am flexible regarding the internship dates. Selected students can contact me to request a date change.