

**Project Title:** Design and development of novel composite systems for materials under extreme conditions

**Project Description:** This project involves the characterization of the fiber-matrix interfacial properties in reinforced thermoplastic composites targeting high strength and resistance to extreme operating conditions including high temperature and pressure. The student will be involved with the manufacturing and characterization of various composite systems including single fiber pullout testing as well as analysis of the interface. Primarily, the project will investigate the effectiveness of different additives on improving the strength of the fiber-matrix bond which are key to determine the performance of the overall composite. The student will be involved in the selection and research into various additives for the relevant material systems. Primarily the project will involve various testing including dynamic mechanical properties. The student will be involved in the preparation and testing of the samples. The fiber composites will be characterized by the classification of all relevant mechanical properties including young's modulus, creep permeation, yield stress, and stress-strain behaviour.

**Start date:** Starting now

**Contact:** Professor Hani Naguib: hani.naguib@utoronto.ca

**Research area:** Advanced Manufacturing, Composite materials development