



MIE498H1: Research Thesis 2024-2025

Supervisor	Kevin Golovin
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Number of Positions	1
Open to	Undergraduate Mechanical Engineering Students
Term Offered	Full-Year (Y)
Research Area	Materials
Research Topic	Smart kirigami surfaces for thermal management and humidity sensing

Project Description

Kirigami is the Japanese art of paper cutting. A surface with an array of cuts exhibits quite interesting mechanical properties, including a negative Poisson ratio. This project will explore Janus kirigami sheets, i.e. ones where the two sides of the sheet are made from different materials. The application is a humidity-responsive surface that can self-regulate temperature by mechanical deformation of the kirigami sheet in response to a change in relative humidity. The project will be 100% hands on / experimental, and involve the fabrication of the materials, their characterization using thermal imaging, wettability measurements, and IR measurements, and potentially some electrical characterization. The student will work closely with a postdoc who is leading the project.

Additional Information

N/A

Application Instructions

Please email Prof. Golovin at Kevin.golovin@utoronto.ca and copy Dr. Zahra Azimi (Zahra.azimi@mail.utoronto.ca) with your CV and a brief description of your interest in the project.