



MIE498H1: Research Thesis 2025-2026

Supervisor	Patrick Lee
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Number of Positions	1
Open to	Mechanical Engineering Students
Term Offered	Full-Year (Y)
Research Area	Materials
Research Topic	Conductive polymer composites for Electro Magnetic Interference (EMI) shielding application

Project Description

The widespread development of electronic and wireless devices has contributed to the increased electromagnetic (EM) radiation. To safeguard and ensure the proper functioning of sophisticated electronic devices, numerous studies on the development of efficient electromagnetic interference (EMI) shielding materials have been carried out in recent years. However, most of those reported EMI shielding materials are reflection dominant in nature, meaning that, those materials just reflect the incident waves back to the nature without attenuating or absorbing the power of the waves. These radiated EM waves create primary and secondary EMI pollution by interacting with neighboring electronic devices. Conductive polymer composites (CPCs) with high EM absorption and low reflection characteristics have been investigated in recent years to combat this challenge. Other studies on CPCs also demonstrated that the mechanical, electrical, and dielectric properties can be significantly enhanced by forming multilayered structures using micro-/ nano-layered (MNL) coextrusion technique. By combining these two ideas, our project is aimed at designing and fabricating a CPC based absorption dominant EMI shielding material using MNL coextrusion technique.

Additional Information	N/A
Application Instructions	Please submit CV, unofficial transcript, to Prof. Patrick Lee (patricklee@mie.utoronto.ca)