

Faculty of Engineering

Summer Research Program 2022-2023

Project Title: Fabrication of electrically conducting smart coatings on various substrates using an automated spray system

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Objective: This project will investigate fabrication of smart coatings on various substrates. Think of a smart wall paint that would enable the wall to be used as a passive reader for the movement around the wall.

Project Details: Conductive polymers are a class of organic polymers that have electrical and optical properties like that of metals and inorganic semiconductors. The advantage of conductive polymers is their processability by dispersion. However, extremely expensive, low yielding and challenging integration of advanced conducting polymers and carbon-based materials is impeding the wide scale application of electrically conducting materials.

Modern manufacturing capabilities of printed electronics can offer high throughput and low-cost mass production of smart devices; however, the biggest economic and environmental challenge is the production of low-cost, green, electrically conducting materials processed using environmentally friendly solvents.

This project will explore the fabrication of electrically conducting composite materials that are produced using green solvents with the help of a 2D fully automated spray system on various substrates like glass, plastic and fabrics. Such thin films will be then tested against commercially available materials for their electrical and mechanical properties.

Prerequisites: Chemistry or chemical engineering knowledge is pre-requisite. A double degree candidate will be given preference and possibly an additional scholarship opportunity

Additional Information: Applicants may be required to attend an interview.