

## Faculty of Engineering

### Summer Research Program 2022-2023

Project Title: Numerical modeling of electrically conducting smart coatings

Supervisor(s): Prof Udo Bach, Dr Kalim Kashif

Department: Chemical and Biological Engineering

Email: [udo.bach@monash.edu](mailto:udo.bach@monash.edu), [kalim.kashif@monash.edu](mailto:kalim.kashif@monash.edu),

Website profile of project supervisor:

<https://www.monash.edu/engineering/udobachgrp/team>

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**Objective:** This project will investigate the use of software tools like, MATLAB, Ansys HFSS and COMSOL for numerical modeling characterization of smart coatings.

**Project Details:** The Internet of Things (IoT) is projected to reach almost 65B smart devices by 2023. Applications of these materials will use simple devices, low-cost small area sensors deployed everywhere for live monitoring. The resulting data will improve human health and food safety besides commercial benefits. Modern manufacturing capabilities of Printed Electronics can offer high throughput and low-cost mass production of such devices; however, the potential scale of this mass production poses challenges.

The biggest economic and environmental challenge is the production of low-cost and green, electrically conducting materials processed using environmentally friendly solvents. This project will explore the effect of electromagnetic spectrum on thus fabricated composite materials that will not only reduce the cost of materials but also impart specific characteristic properties to the coatings.

Candidate will be required to use software suits to numerically model various parameters like absorption, reflection etc. and compare it with set of data generated using a network analyzer. These studies will be conducted in collaboration with a professor at the dept of electrical and computer systems engineering.

**Prerequisites:** Electrical 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.