MONASH
ENGINEERING

MONASH University

Faculty of Engineering
Summer Research Program 2023-2024

Project Title: Self-healing smart skin using graphene enhanced vitrimer nanocomposites

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Objective

The aim of this study is to develop and characterize the repeatable low temperature self-healing nanovitrimer for electronic skin applications based on vitrimer with dynamic covalent bonds.

Project Details

Recent developments in the field of soft robotics and wearable electronics have stimulated the efforts towards the research of a new class of electronic skins with sensing elements to be integrated into soft polymeric platforms. Pressure sensitivity and mechanical self-healing are two salient functions of the human skin, which allow it to sense the external mechanical forces even being subjected to constant damage. However, combining repeatable self-healing and high pressure-sensitivity together simultaneously remains a challenging task. The incorporation of graphene nanoparticles to vitrimers makes it possible for the design and fabrication of flexible self-healing nanocomposite for pressure sensing.

Prerequisites

Polymers, mechanical behaviour of materials.

Additional Information

Applicants may be required to attend an interview