Funded PhD Project at the University of Canterbury

Driving Sustainable Plastic Alternatives: Designing High-Value Consumer Products with Cell-Derived Biocomposites

About the Project

With increasing global attention on sustainability and growing plastic pollution there is a need to shift towards more sustainable and biodegradable material. Polyhydroxyalkanoates (PHAs) are biodegradable polymers naturally produced by different types of microorganisms. Despite being praised as one of the potential future of plastics the application of PHAs have still been limited due to higher price of such polymers in comparison to traditional petroleum-based plastics. There is also a lack of available high-value products available on the market which are based on this material.

This PhD work will focus on using product design process to develop high value composite consumer product based on PHA polymers and waste-based fibers. We will then assess the acceptance of the product by consumer in an effort to understand ways to increase the acceptability and popularity of these materials. The main objective of this project is to develop and promote PHA based consumer grade products using a product design approach to align the performance, cost, and consumer acceptance of said products. Our overall aim is to find suitable alternatives.

Your ideal background

- BE/BSc (with honours) or MSc/ME in a related Design/Materials Science/Engineering discipline.
- Passion for the application of sustainable materials.
- Demonstrated outstanding ability in product design methods and processes and knowledge of materials used in design.
- A willingness to learn/up-skill.
- Aptitude to learn a broad range of new skills, including those outside their existing discipline.
- A professional attitude, good writing and time management skills.
- Ability to communicate well including with industry.
- Applicants will need to meet all requirements for enrolment in the PhD program at the University of Canterbury. International candidates will also need to meet the English language requirements and once given an offer of place, arrange for a NZ student visa. Information on UC’s entry requirements for PhD study is here http://www.canterbury.ac.nz/enrol/doctoral/
The Supervisors

Dr Ali Reza Nazmi (School of Product Design, University of Canterbury), Prof. Conan Fee (School of Product Design, University of Canterbury) and Prof. Kim Pickering (Waikato Centre for Advanced Materials, University of Waikato).

The Funding

This project is part of Āmiomio Aotearoa which is a research programme funded by MBIE. Āmiomio Aotearoa is a transdisciplinary, multi-partner research project hosted by the University of Waikato. You will also be integrated in the Biomolecular Interaction Centre, University of Canterbury and able to use the facilities and expertise available in this research centre. Hence you will be expected to interact with larger teams comprising of multi-disciplinary research partners and scientists.

We are offering a stipend of NZD $35,000 per year (tax free) for three years. Funding covers tuition fees and research project consumable costs.

To Apply

Please email your CV, including at least two academic referees, a statement of your research interests and your academic transcripts, to alireza.nazmi@canterbury.ac.nz.

Applications will close 15 September 2023, or prior, if a suitable candidate is found.