

Self-assembled Protein Bioplastic Film from Waste



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SYDNEY

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Sustainable materials



- > TRL 3
- > Proof of concept

Problem

The growing environmental impact of conventional plastics has created an urgent need for sustainable material alternatives, particularly in packaging applications where large volumes of single-use products are consumed each year.

While a range of alternative materials have been proposed, many face challenges relating to feedstock availability, end-of-life considerations, performance requirements or manufacturing practicality.

Industry is increasingly seeking renewable materials that can reduce reliance on fossil-derived plastics, support circular economy objectives and create value from underutilised biological resources without compromising commercial applicability.

Solution

This technology provides a renewable bioplastic platform derived from protein-based feedstocks that offers a sustainable alternative to conventional plastic materials.

The innovation enables the conversion of readily available biological resources, including potential side-stream and waste-derived inputs, into functional bioplastic products suitable for packaging and related applications.

In addition to providing a renewable materials pathway, the platform supports the development of advanced bioplastic products with added functionality, creating opportunities for environmentally responsible packaging solutions that align with growing consumer, industry and regulatory demand for sustainable materials.

Intellectual Property Status

Provisional patent filed.

Potential Commercial Applications

The technology has potential applications across food packaging, consumer goods packaging, sustainable films, biodegradable products and other sectors seeking alternatives to conventional plastics.

It may be of interest to packaging manufacturers, food producers, materials companies, sustainability-focused brands and organisations pursuing circular economy initiatives.

The platform may also support the development of next-generation packaging products incorporating value-added functionality, creating opportunities for product differentiation, improved consumer engagement and enhanced sustainability credentials.

Additional opportunities may exist through the utilisation of underused biological resources as inputs for higher-value material production.

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