

TECH OFFER

Fungal-like Adhesive Materials (FLAM)



KEY INFORMATION

TECHNOLOGY CATEGORY:

Materials - Bio Materials

Sustainability - Low Carbon Economy

TECHNOLOGY READINESS LEVEL (TRL): **TRL7**

COUNTRY: **SINGAPORE**

ID NUMBER: **TO175269**

OVERVIEW

Fungal-like Adhesive Materials (FLAM) represent an innovative family of materials inspired by the cell walls of fungus-like oomycetes. FLAMs are engineered by organizing the two most abundant and widely available natural molecules in their native configuration, resulting in a material that is lightweight, durable, and highly cost-effective. This groundbreaking composite is fully biodegradable, eliminating the need for organic solvents or synthetic materials, making it an eco-friendly alternative. FLAM can be locally produced as part of natural ecological cycles, contributing to sustainable manufacturing and ensuring long-term resource security for industries. In addition to its sustainability benefits, FLAM's versatility allows it to be easily molded or processed with traditional manufacturing techniques, opening the door to a wide range of applications across various industries.

This technology has been locally produced in Singapore as a by-product of waste management. The technology owner is looking for collaboration in test-bedding. FLAM can replace the use of plastic and wood in many applications.

TECHNOLOGY FEATURES & SPECIFICATIONS

- **Good strength-to-weight ratio:** Inspired by the cell walls of fungus-like oomycetes by combining cellulose and chitin to give a lightweight and strong material.
- **Biodegradable:** Fully biodegradable composite with no synthetic additives.
- **Non-toxic:** Adding small amounts of a chitinous molecules enables the use of cellulose without any chemical modification and without the use of harmful solvents.
- **Easy processing:** Compatibility with wood-working machinery and traditional manufacturing methods.

POTENTIAL APPLICATIONS

FLAM can replace the use of wood in most applications, such as but not limited to:

- Furniture
- Architectural components
- General and food packaging
- Daily household items
- Large industrial parts: e.g. windmill blades, impact resistors

UNIQUE VALUE PROPOSITION

- **Eco-friendly:** Non-toxic, biodegradable material.
- **Lightweight and strong:** Able to replace wood and plastic material in most applications.
- **Cost effective:** Comparable to high density polyurethane foam.