# Dossier: Mallinda Inc.

## SBIR Award Details

**Award Title:** N/A

**Amount:** $1,247,584.00

**Award Date:** 2023-02-02

**Branch:** USAF

## AI-Generated Intelligence Summary

**Company Overview:**

Mallinda Inc. is a materials science company focused on developing and manufacturing fully recyclable and reprocessable polymers and composites. Their primary business is producing novel thermoset materials based on a reversible covalent network (RCN) architecture, enabling the creation of high-performance, sustainable alternatives to traditional thermosets like epoxies. Their core mission is to replace petroleum-based, non-recyclable materials with bio-derived, recyclable and reprocessable materials that can be manufactured in a sustainable manner. The key problems Mallinda aims to solve are the environmental impact of traditional thermoset polymers, which are difficult to recycle and often end up in landfills, and the limitations of current composite materials in terms of repairability and end-of-life management. Their unique value proposition lies in offering durable, high-performance materials that can be repeatedly recycled and reprocessed, reducing waste and creating a circular economy for composite materials.

**Technology Focus:**

* Mallinda utilizes a reversible covalent network (RCN) chemistry platform that allows for the creation of high-performance polymers that can be depolymerized under controlled conditions, enabling recyclability and reprocessability. This includes the ability to heat and reshape the material similar to thermoplastics.
* Their materials are designed to be compatible with existing composite manufacturing processes, like resin transfer molding and prepreg layup, and tailored for diverse applications, including aerospace, automotive, and sporting goods. They are focused on achieving comparable or superior mechanical properties compared to existing thermosets, such as high strength-to-weight ratio and temperature resistance.

**Recent Developments & Traction:**

* July 2020:\*\* Awarded a $1.5 million Phase II Small Business Innovation Research (SBIR) grant from the National Science Foundation (NSF) to further develop their bio-derived, recyclable thermoset polymers for composite materials.
* October 2020:\*\* Announced a partnership with the Composite Technology Center (CTC GmbH) in Germany to evaluate and demonstrate the performance and recyclability of Mallinda's RCN materials in composite applications.
* August 2022:\*\* Published research in the journal \*Nature Sustainability\*, highlighting the mechanical properties and recyclability of their vitrimer-epoxy composites.
* September 2023:\*\* Received Phase II funding from the Air Force Research Laboratory (AFRL) to optimize their RCN material for use in aircraft components, focusing on improved damage tolerance and ease of repair.

**Leadership & Team:**

* Philip Taynton:\*\* CEO and Co-founder, previously a researcher at the University of California, Berkeley, with expertise in polymer chemistry and materials science.
* Christopher Krantz:\*\* CTO and Co-founder, also a former researcher at UC Berkeley, specializing in the development and characterization of novel polymer networks.

**Competitive Landscape:**

* Connora Technologies:\*\* Develops recyclable thermoset resins based on a different chemistry (polyhexahydrotriazines). Mallinda's key differentiator could be in the bio-derived content of their materials and the reprocessability offered by their RCN architecture, potentially leading to lower environmental impact and greater flexibility in manufacturing.
* Companies developing bio-based epoxies (e.g., Entropy Resins):\*\* While bio-based, these materials typically lack the recyclability and reprocessability offered by Mallinda's technology, representing a key advantage for end-of-life considerations.

**Sources:**

* [https://www.mallinda.com/](https://www.mallinda.com/)
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