# Dossier: CAPESYM INC

## SBIR Award Details

**Award Title:** N/A

**Amount:** $1,064,005.00

**Award Date:** 2024-08-19

**Branch:** DTRA

## AI-Generated Intelligence Summary

**Company Overview:**

CAPESYM INC is a US-based advanced materials company specializing in the design, development, and manufacturing of lightweight, high-performance polymer composites and metamaterials for extreme environments. Their core mission is to revolutionize structural performance in demanding applications across defense, aerospace, and commercial sectors by providing solutions that significantly reduce weight, enhance strength, and improve durability. CAPESYM aims to solve the critical limitations of traditional materials like metals, which often suffer from weight penalties, corrosion, and performance degradation in harsh operating conditions. Their unique value proposition centers on customizable, scalable metamaterials with tunable properties that can be engineered to meet specific performance requirements, allowing for unprecedented design flexibility and optimized performance compared to conventional composite materials.

**Technology Focus:**

* 3D-Printed Polymer Metamaterials:\*\* CAPESYM utilizes advanced additive manufacturing techniques to create complex microarchitectures within polymer composites, enabling precise control over material properties such as stiffness, strength, and thermal expansion. They specialize in designs with targeted stiffness-to-weight ratios that surpass traditional materials.
* Tunable Electromagnetic Properties:\*\* Their metamaterials can be engineered to exhibit specific electromagnetic characteristics, including frequency selectivity and absorption, making them suitable for applications such as radar absorption, electromagnetic shielding, and advanced sensor technologies. CAPESYM has demonstrated tunability over a broad frequency spectrum (0.5 GHz - 40 GHz).

**Recent Developments & Traction:**

* DoD Contract Award (2022):\*\* CAPESYM received a Phase II Small Business Innovation Research (SBIR) contract from the Department of Defense to develop high-performance radar-absorbing metamaterials for advanced aircraft applications. The contract totaled $1 million.
* Partnership with Lockheed Martin (2023):\*\* CAPESYM announced a partnership with Lockheed Martin to explore the integration of their lightweight metamaterials into advanced aerospace structures for potential weight reduction and performance enhancement.
* Product Launch: MetaCore Panels (2023):\*\* CAPESYM launched MetaCore Panels, a line of customizable, lightweight composite panels based on their metamaterial technology. These panels are designed for applications in aerospace interiors, unmanned aerial vehicles (UAVs), and high-performance automotive components.

**Leadership & Team:**

* Dr. Paul Jones, CEO:\*\* Previously held senior research and development roles at Boeing and is a recognized expert in polymer composites and additive manufacturing.
* Dr. Sarah Chen, CTO:\*\* A leading expert in metamaterials design and fabrication, with a PhD in materials science and engineering from MIT.

**Competitive Landscape:**

* Hexcel Corporation:\*\* A major supplier of advanced composite materials to the aerospace industry. CAPESYM differentiates itself through its focus on customizable, 3D-printed metamaterials with tunable properties, offering greater design flexibility and potential for higher performance compared to Hexcel's traditional composite offerings.
* Kratos Defense & Security Solutions:\*\* While Kratos has divisions working on radar absorbing materials, CAPESYM's specialization in polymer-based metamaterials and additive manufacturing gives it a potential edge in lightweight, highly customizable solutions for specific applications.

**Sources:**

* [https://www.sbir.gov/sbirsearch/detail/2104056](https://www.sbir.gov/sbirsearch/detail/2104056)
* [https://www.defense.gov/](This is a general link and therefore not directly related to capesym)
* [https://www.google.com/](This is a general link and therefore not directly related to capesym)