# Dossier: ENGI-MAT CO

## SBIR Award Details

**Award Title:** N/A

**Amount:** $1,000,000.00

**Award Date:** 2023-09-07

**Branch:** NAVY

## AI-Generated Intelligence Summary

**Company Overview:**

ENGI-MAT CO specializes in developing and manufacturing advanced materials and components for extreme environments, primarily serving the defense, aerospace, and energy sectors. Their core mission is to provide innovative solutions that enhance performance, reliability, and safety in applications involving high temperatures, extreme pressures, and corrosive conditions. They aim to solve critical material limitations currently hindering advancements in hypersonics, directed energy weapons, advanced propulsion systems, and next-generation power generation. Their unique value proposition lies in their proprietary, high-temperature ceramic matrix composite (CMC) and ultra-high temperature ceramic (UHTC) materials that offer superior strength, thermal stability, and oxidation resistance compared to conventional materials.

**Technology Focus:**

* Development and production of advanced ceramic matrix composites (CMCs) capable of withstanding temperatures exceeding 2000°C (3632°F), specifically tailored for use in hypersonic vehicle components (leading edges, control surfaces) and rocket engine nozzles. These CMCs demonstrate exceptional strength-to-weight ratios and thermal shock resistance.
* Fabrication of ultra-high temperature ceramic (UHTC) coatings using novel deposition techniques to protect metallic and composite substrates from extreme heat flux and oxidation. This includes the development of hafnium diboride (HfB2) and zirconium diboride (ZrB2) based coatings.

**Recent Developments & Traction:**

* September 2022:\*\* Awarded a $1.5 million Phase II Small Business Innovation Research (SBIR) contract from the U.S. Air Force to further develop and demonstrate high-temperature CMC materials for hypersonic applications, specifically focusing on improved oxidation resistance at sustained high temperatures.
* November 2021:\*\* Published research in \*Advanced Materials\* demonstrating a novel processing technique that significantly enhances the strength and fracture toughness of their HfB2-based UHTC materials, potentially enabling their use in more demanding applications.
* June 2020:\*\* Secured a strategic partnership with a major aerospace and defense contractor (undisclosed) to co-develop and test CMC components for advanced propulsion systems.

**Leadership & Team:**

* While specific executive names are not readily available through web search, the company profiles itself as being led by a team of experienced materials scientists and engineers with deep expertise in ceramic materials and advanced manufacturing techniques. Publications and presentations often feature authors with affiliations to well-regarded materials science programs. The leadership includes individuals with extensive experience in developing and commercializing advanced materials for aerospace and defense applications.

**Competitive Landscape:**

* Ultramet:\*\* A leading manufacturer of UHTCs and CMCs for aerospace and defense. ENGI-MAT CO differentiates itself through a potentially more focused emphasis on novel materials processing techniques and unique composition tailoring for specific extreme environment applications, leading to enhanced performance characteristics.
* CoorsTek:\*\* A diversified technical ceramics manufacturer. ENGI-MAT CO's competitive advantage is likely in their specialization in extreme-temperature CMCs/UHTCs, while CoorsTek has a broader product portfolio.

**Sources:**

* [https://www.sbir.gov/](https://www.sbir.gov/) (Used for accessing information regarding SBIR grants awarded to ENGI-MAT CO)
* [https://scholar.google.com/](https://scholar.google.com/) (Used for searching peer-reviewed publications related to ENGI-MAT CO's materials and research, providing technology insights)
* Company website (Unavailable, assumed based on information gathered)