# Dossier: ULTRAMET

## SBIR Award Details

**Award Title:** N/A

**Amount:** $1,448,546.00

**Award Date:** 2024-01-11

**Branch:** MDA

## AI-Generated Intelligence Summary

**Company Overview:**

Ultramet is a US-based advanced materials engineering and manufacturing company specializing in ultra-high-temperature ceramic composites for aerospace, defense, and energy applications. Their primary business involves developing and producing materials capable of withstanding extreme temperatures, exceeding 2000°C, for applications such as hypersonic vehicle components, rocket nozzles, and high-temperature heat exchangers. Their core mission is to enable advancements in high-speed flight and energy efficiency by providing unparalleled thermal protection and structural performance in extreme environments. They solve the fundamental problem of material degradation at high temperatures, offering a unique value proposition through their proprietary manufacturing processes and materials that surpass the capabilities of conventional materials in terms of temperature resistance, strength, and lightweight properties.

**Technology Focus:**

* Carbon-Carbon Composites:\*\* Ultramet produces carbon-carbon composites enhanced with ceramic coatings and other proprietary treatments. They claim to be able to manufacture components with complex geometries for applications requiring high strength-to-weight ratios at temperatures exceeding 2200°C.
* Refractory Carbide Composites (ZrC, HfC):\*\* Ultramet specializes in developing and manufacturing refractory carbide composites, particularly zirconium carbide (ZrC) and hafnium carbide (HfC) based materials. These materials offer exceptional oxidation resistance and thermal stability at extremely high temperatures, making them suitable for leading edges and nose tips of hypersonic vehicles. They offer a proprietary coating technology to enhance these properties further.

**Recent Developments & Traction:**

* January 2023:\*\* Ultramet was awarded a follow-on contract by the US Air Force Research Laboratory (AFRL) to continue development of advanced ceramic matrix composites (CMCs) for hypersonic applications.
* 2022:\*\* Ultramet announced continued progress on its materials for thermal protection systems (TPS) for hypersonic flight, demonstrating improved oxidation resistance and high-temperature performance. Details beyond general press releases are sparse.
* 2021:\*\* Ultramet's materials were featured in the development of advanced propulsion systems for space access, although specific details are confidential.

**Leadership & Team:**

* Dr. Paul Van Wie (CEO):\*\* Possesses extensive experience in materials science and engineering, with a background in high-temperature materials and aerospace applications. His expertise focuses on ceramic matrix composites and their implementation in harsh environments.

**Competitive Landscape:**

* General Atomics Electromagnetic Systems (GA-EMS):\*\* GA-EMS also develops advanced materials for extreme environments, including ceramic matrix composites. Ultramet's differentiator appears to be their specific focus on ultra-high temperature refractory carbide composites and their proprietary coating technologies, targeting extreme environments beyond the capabilities of some competing CMCs.

**Sources:**

1. [https://www.ultramet.com/](https://www.ultramet.com/)

2. [https://www.defenseadvancement.com/portfolio/ultramet/](https://www.defenseadvancement.com/portfolio/ultramet/)

3. [https://www.zoominfo.com/c/ultramet/28859136](https://www.zoominfo.com/c/ultramet/28859136)