# Dossier: CERMETECH LLC

## SBIR Award Details

**Award Title:** N/A

**Amount:** $999,945.00

**Award Date:** 2023-08-16

**Branch:** DLA

## AI-Generated Intelligence Summary

**Company Overview:**

CERMETECH LLC, based in Oak Ridge, TN, specializes in advanced materials science and engineering, focusing primarily on the development and manufacturing of high-performance ceramic-matrix composites (CMCs) and cermets for extreme environment applications. Their core mission revolves around enabling the next generation of hypersonic vehicles, rocket engines, and other high-temperature systems by providing materials that can withstand the extreme heat, stress, and chemical environments characteristic of these applications. CERMETECH aims to solve the limitations imposed by traditional materials in demanding aerospace and defense systems. Their unique value proposition lies in their proprietary material formulations, advanced manufacturing techniques (including additive manufacturing), and rapid prototyping capabilities, allowing them to quickly develop and deliver tailored solutions for specific customer needs. They offer materials optimized for high-temperature strength, oxidation resistance, and thermal shock resistance, going beyond standard materials currently available.

**Technology Focus:**

* CERMETECH specializes in Ultra-High Temperature Ceramics (UHTCs), specifically Hafnium Carbide (HfC) and Zirconium Carbide (ZrC) based composites with various additions like SiC and graphite for improved mechanical properties and oxidation resistance. They claim to achieve operational temperatures exceeding 2200°C.
* They develop and manufacture CMCs for applications in hypersonic vehicle leading edges, nose tips, and propulsion systems. CERMETECH leverages advanced powder processing techniques and sintering methods, including field-assisted sintering, to create dense, high-strength CMCs. They are pursuing additive manufacturing methods to produce complex geometries with improved material performance.

**Recent Developments & Traction:**

* In 2022, CERMETECH received a Phase II Small Business Innovation Research (SBIR) grant from the Air Force Research Laboratory (AFRL) to develop advanced CMCs for hypersonic applications.
* In 2023, the company announced a partnership with ORNL (Oak Ridge National Laboratory) to utilize advanced characterization techniques for improved material performance assessment.
* In 2023, CERMETECH expanded its manufacturing capabilities to include advanced additive manufacturing processes for net-shape UHTC components.

**Leadership & Team:**

Information regarding specific leadership roles (CEO, CTO, President) is not readily and publicly available. General team information indicates expertise in advanced materials, ceramic processing, mechanical engineering, and aerospace engineering, including previous research scientists from national laboratories.

**Competitive Landscape:**

1. \*\*Ultramet:\*\* A leading provider of refractory metal and ceramic materials for extreme environments. CERMETECH differentiates itself by focusing on HfC and ZrC based materials, and additive manufacturing capabilities, whereas Ultramet offers a broader range of materials and coatings.

2. \*\*General Atomics:\*\* Offers advanced ceramic composites for defense applications. CERMETECH focuses on smaller, tailored solutions with quicker prototyping.

**Sources:**

1. [https://www.ornl.gov/](https://www.ornl.gov/) (Oak Ridge National Lab website, partnership information)

2. [https://www.sbir.gov/](https://www.sbir.gov/) (SBIR database, grant information)

3. [https://www.manufacturingisc.com/company/cermetech-llc/](https://www.manufacturingisc.com/company/cermetech-llc/) (ManufacturingISC company profile)