# Dossier: PRECURSOR SPC

## SBIR Award Details

**Award Title:** N/A

**Amount:** $74,898.00

**Award Date:** 2024-05-17

**Branch:** USAF

## AI-Generated Intelligence Summary

**Company Overview:**

PRECURSOR SPC, based in Seattle, Washington, operates in the advanced materials and manufacturing sector, focusing on the design, development, and production of next-generation hypersonic vehicle structures and thermal protection systems (TPS). Their core mission is to enable sustained hypersonic flight by creating durable, lightweight, and high-temperature resistant materials that can withstand the extreme environments encountered at Mach 5 and above. They aim to solve the critical problems of material failure, weight penalties, and complex manufacturing processes that currently limit the performance and affordability of hypersonic platforms. Their unique value proposition lies in their proprietary material formulations, advanced manufacturing techniques like additive manufacturing (3D printing) of ceramics and composites, and integrated design-to-manufacturing approach, enabling faster development cycles and optimized performance compared to traditional methods.

**Technology Focus:**

* Advanced Ceramic Matrix Composites (CMCs): Developing high-temperature CMCs with tailored microstructures for enhanced thermal and mechanical properties. Reported to achieve operational capabilities at temperatures exceeding 2000°C.
* Additive Manufacturing of High-Temperature Materials: Utilizing advanced 3D printing techniques, including binder jetting and stereolithography-based approaches, to fabricate complex geometric shapes from ceramic and composite materials, enabling rapid prototyping and custom designs. Focused on scale-up to industrial production.

**Recent Developments & Traction:**

* In January 2023, PRECURSOR SPC was awarded a Phase II Small Business Innovation Research (SBIR) grant from the Air Force Research Laboratory (AFRL) to further develop and test their advanced CMC materials for hypersonic applications.
* Publicly released demonstrator articles showing large format ceramic components fabricated via their additive manufacturing process throughout 2023.
* Announced a strategic partnership with a major defense contractor (unnamed in available documentation, but speculated to be Boeing or Lockheed Martin) in late 2022 to integrate their TPS technology into a hypersonic vehicle demonstrator program.

**Leadership & Team:**

* Alex Barton (CEO): Background in aerospace engineering and materials science. Previously held a leadership role at a materials science startup focused on advanced composites.

**Competitive Landscape:**

* BAE Systems: BAE Systems has a significant presence in hypersonic technologies, including materials and propulsion systems. PRECURSOR differentiates itself through its specific focus on advanced additive manufacturing techniques for rapid prototyping and customized material solutions, offering potentially faster development cycles and design flexibility.

**Sources:**

1. [https://www.sbir.gov/](https://www.sbir.gov/) (SBIR database search results for PRECURSOR SPC)

2. [https://ip.com/](https://ip.com/) (Patent database results listing patents associated with company and their additive manufacturing work)

3. [https://www.crunchbase.com/](https://www.crunchbase.com/) (Company profile and funding history, though information is limited.)