# Dossier: GREAT LAKES CRYSTAL TECHNOLOGIES INC

## SBIR Award Details

**Award Title:** N/A

**Amount:** $1,757,905.00

**Award Date:** 2024-03-19

**Branch:** USAF

## AI-Generated Intelligence Summary

**Company Overview:**

Great Lakes Crystal Technologies, Inc. (GLCT) is a US-based advanced materials company specializing in the development and commercialization of high-purity, single-crystal diamond materials using microwave plasma chemical vapor deposition (MPCVD) technology. Their core mission is to provide diamond materials with superior performance characteristics for applications in demanding environments, enabling advancements in power electronics, photonics, quantum sensing, and high-frequency communications. They aim to solve the limitations of traditional semiconductor materials (silicon, silicon carbide, gallium nitride) by leveraging diamond's exceptional thermal conductivity, high breakdown voltage, and chemical inertness. Their unique value proposition lies in offering customized diamond solutions grown with precise control over doping and crystal quality, exceeding the capabilities of standard diamond suppliers.

**Technology Focus:**

* Microwave Plasma Chemical Vapor Deposition (MPCVD):\*\* GLCT utilizes MPCVD to grow single-crystal diamond films and substrates. This process allows for precise control over growth parameters, resulting in high purity, low defect density, and tailored doping profiles. They can grow diamond materials with thicknesses ranging from microns to millimeters.
* Diamond-Based Devices:\*\* GLCT develops and provides diamond-based devices for various applications. This includes Schottky diodes for high-power electronics, UV photodetectors, and diamond substrates for quantum sensing applications. They also offer custom diamond materials with specific crystallographic orientations and doping concentrations to meet client specifications.

**Recent Developments & Traction:**

* SBIR Phase II Award (2023):\*\* Secured a Phase II Small Business Innovation Research (SBIR) award from the US Department of Energy to develop diamond-based radiation detectors for fusion energy applications. This underscores their growing relevance in high-energy physics and energy sectors.
* DARPA Funding (Ongoing):\*\* Continues to participate in DARPA-funded research programs focused on advanced diamond materials for high-power electronics and RF applications. Details on the specific program names and funding amounts require further investigation.
* Collaboration with Universities and National Labs:\*\* Collaborates extensively with leading universities and national laboratories on research and development projects related to diamond materials. Specific collaborations are often outlined in research publications and presentations.

**Leadership & Team:**

Key individuals were difficult to definitively confirm due to limited public information available. However, based on press releases and publications, the following roles are likely filled:

* CEO/President:\*\* The company's leadership has been involved in multiple material science startups. Further research is needed to determine current CEO.
* Technical Lead:\*\* Highly likely a PhD-level scientist with expertise in CVD diamond growth and materials characterization.

**Competitive Landscape:**

* Element Six (De Beers Group):\*\* Element Six is a major player in the synthetic diamond market, offering a wide range of diamond materials and solutions. GLCT differentiates itself by focusing on specialized, high-purity diamond materials grown using MPCVD for advanced applications and potentially offering greater customization.
* SP3 Diamond Technologies:\*\* Focuses on CVD single crystal diamond with applications for high-power, high-frequency and other demanding technologies. GLCT differentiates through application specialization and potentially customized growth parameters.

**Sources:**

1. [https://glctech.com/](https://glctech.com/)

2. [https://www.osti.gov/servlets/purl/1966238](https://www.osti.gov/servlets/purl/1966238)

3. [https://www.researchgate.net/institution/Great\_Lakes\_Crystal\_Technologies\_Inc](https://www.researchgate.net/institution/Great\_Lakes\_Crystal\_Technologies\_Inc)

4. [https://usaspending.gov/award/ASST\_NON\_2023\_SC0023110](https://usaspending.gov/award/ASST\_NON\_2023\_SC0023110)