# Dossier: INTELLIGENT OPTICAL SYSTEMS, INC.

## SBIR Award Details

**Award Title:** N/A

**Amount:** $1,299,944.94

**Award Date:** 2024-03-15

**Branch:** DHA

## AI-Generated Intelligence Summary

**Company Overview:**

Intelligent Optical Systems, Inc. (IOS) is a technology company specializing in advanced sensor solutions, primarily for aerospace, defense, and security applications. Their core mission is to develop and deploy innovative optical sensing technologies that enhance situational awareness, improve operational efficiency, and address critical security challenges. IOS aims to solve complex problems related to real-time chemical sensing, structural health monitoring, and advanced navigation/guidance in demanding environments. Their unique value proposition lies in their integrated approach, combining advanced materials, micro-optics, photonics, and data analytics to create highly sensitive, reliable, and miniaturized sensor systems suitable for deployment in resource-constrained settings.

**Technology Focus:**

* Chemical Sensors:\*\* Development of fiber optic and micro-opto-mechanical systems (MOEMS) sensors for detecting trace amounts of chemical warfare agents, explosives, and pollutants in air, water, and on surfaces. Reported sensitivities down to parts-per-trillion levels for certain analytes.
* Structural Health Monitoring (SHM):\*\* Design and fabrication of embedded fiber optic sensors for real-time monitoring of stress, strain, temperature, and vibration in composite materials and critical infrastructure. Products include sensor interrogators and data analysis software for predictive maintenance and failure prevention.
* Inertial Measurement Units (IMUs):\*\* Development of high-performance, miniature IMUs based on MOEMS technology for navigation, guidance, and stabilization applications in UAVs, missiles, and other aerospace platforms. Claims of superior size, weight, and power (SWaP) characteristics compared to traditional IMU technologies.

**Recent Developments & Traction:**

* 2022:\*\* Awarded a Phase III Small Business Innovation Research (SBIR) contract by the U.S. Air Force to advance their fiber optic sensor technology for continuous corrosion monitoring of aircraft.
* 2021:\*\* Received funding from the Department of Homeland Security (DHS) Science and Technology Directorate to develop a prototype handheld sensor for rapid detection of fentanyl and other synthetic opioids.
* 2020:\*\* Announced a partnership with a major defense contractor (details not publicly disclosed) to integrate their SHM technology into a next-generation aerospace platform.

**Leadership & Team:**

* Dr. Rao Dandiker (President & CEO):\*\* Possesses extensive experience in photonics, micro-optics, and sensor development, including prior leadership roles in R&D organizations focused on advanced sensing technologies.
* Dr. Sean Koh (CTO):\*\* An expert in fiber optic sensors, micro-fabrication, and materials science, with a strong background in developing and commercializing advanced sensing solutions for various industries.

**Competitive Landscape:**

* Northrop Grumman:\*\* A major player in defense electronics and aerospace, including the development of IMUs and other sensing systems. IOS differentiates itself through its focus on miniaturization, low power consumption, and its niche expertise in specialized chemical and structural health monitoring applications.
* Honeywell:\*\* Another large aerospace and defense company with a broad portfolio of sensors and control systems. IOS competes by targeting specific market segments requiring highly sensitive and customizable sensor solutions, where their size and agility allow for faster innovation and responsiveness.

**Sources:**

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

2. [https://www.sbir.gov/sbirsearch/detail/2075108](https://www.sbir.gov/sbirsearch/detail/2075108)

3. [https://www.dhs.gov/science-and-technology/news/2021/06/08/st-awards-63-million-development-counter-opioid-solutions](https://www.dhs.gov/science-and-technology/news/2021/06/08/st-awards-63-million-development-counter-opioid-solutions)