

LOPS® 20244th Edition of Annual Conference on**LASERS, OPTICS, PHOTONICS,
SENSORS, BIO PHOTONICS &
ULTRAFAST NONLINEAR OPTICS****JUNE 07-10, 2024**

This presentation is an outline to fiber optic sensor systems and its understanding of the utilization of these systems for aviation, aerospace and space applications. It documents the current state of the art and provides references for users of this advanced technology for future of aerospace and track the rapid advances in leading edge technologies under development plus revolutionary progresses in fiber optic technology as applied to flight-test instrumentation that that has been achieved over the last two decades and are expected to continue at a rapid pace for the foreseeable future.

Optical fiber is well-known for its ability to carry information at high speeds over long distances. They have evolved a long way from the first low-loss fiber demonstrated in the late 1960s. Fiber optic technologies offer unique features that can be exploited in a variety of ways, such as carrying high optical powers in flexible light guides for welding stations, transfer ring images in endoscopes, distribute sensing along a large structure such as wing of the aircraft, and for low weight and high-transmission bandwidth in avionics.

The presentation also covers the state-of-the-art Fiber Bragg Grating (FBG) technology. One application for this technology is System Health Monitoring (SHM) to a wide range of aircraft systems in order to establish a comprehensive set of data for aging aircraft. Other future applications could entail embedding fiber optic systems in composite structures as they are manufactured, allowing extremely light-weight flexible structures to be actively controlled, and giving enhanced capability to aircraft systems.

Key Words: Fiber Optic Sensor, FBG, Aviation, Aerospace, Space, SHM

Biography

Dr. Alex Kazemi a world recognized Micro Technologist, and materials scientist is the CEO and President of ARK International LLC is focusing on development of fiber optics, miniaturized fiber

**ADVANCED FIBER OPTIC
SENSING SYSTEMS FOR
AVIATION AND AEROSPACE
APPLICATIONS****Dr. Alex Kazemi**

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components, fiber optic sensors, and micro/nano technology of laser components for aviation, aerospace and space applications. He is developer of the lightest fiber optic cable in aviation history, World 1st fiber optic sensor for rocket engine, U.S. 1st fiber optic delivery system for micro welding of laser chips, and leading-edge technologies. He is The Boeing Company Fiber Optic Architect, Associate Technical Fellow, and worked for 25 years for Boeing as well as 10 years for telecom, lasers, sensors and MEMS industries. He also taught physics and materials science for several years at University of Southern California. Currently he is the Principal Consultant for development of new generation of fiber optics and sensors to the Boeing Company. He has authored/edited 8 books and one book chapter in the area of photonics, lasers, sensors, fiber optics, micro and nano technologies, plus published over 48 papers in International Journals and hundreds of presentations throughout of conferences and technical community's world-wide. In recent survey by "Research Gate" organization over 1000 of his peers reviewed his published papers. In 2018, 2019 and 2021 three separate International Awards were presented to him for the phenomenal presentation for his research on fiber optic sensor and lasers. He has been Chairman of SPIE International Conferences in Photonics Applications for Fiber Optic Sensors and Lasers for 8 years and Chairman, Chief Scientific Committee and Chief Editor of Excel Global International Conference on Lasers, Optics, Photonics, and Sensors in 2021. He has bestowed hundreds of recognitions, awards and patents