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Alex A. Kazemi
Christopher S. Baldwin
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Contents

v	Conference Committee
vii	Introduction

SESSION 1 OPTICAL SENSING TECHNOLOGY

6758 02	Photonic sensor applications in transportation security [6758-01] D. A. Krohn, Light Wave Venture LLC (USA)
6758 03	Bent tilted fiber Bragg gratings for temperature-independent vibration sensing in vehicles [6758-02] A. Ivanov, J. Albert, Carleton Univ. (Canada)
6758 04	Ultrasound fiber guides and sensor applications [6758-03] A. Safaai-Jazi, Virginia Polytechnic Institute and State Univ. (USA)
6758 05	Novel high resolution 2D optical shock and vibration sensor [6758-04] B. Kress, A. Descoins, Applied Opto Technologies Inc. (USA)
6758 06	Optical waveguide pressure sensor using evanescent field [6758-05] G. Kodl, Leoni AG (Germany)
6758 07	Fiber optic microsensor hydrogen leak detection system on Aerospike X-33 [6758-06] A. A. Kazemi, J. W. Goepp, The Boeing Co. (USA); D. B. Larson, M. E. Wuestling, NexGen Research Corp. (USA)

SESSION 2 BRAGG GRATING SENSING

6758 08	Fiber optic sensors monitoring transmission ring gears [6758-07] C. Baldwin, J. Kiddy, Aither Engineering, Inc. (USA); P. Samuel, J. Coker, D. Pines, Univ. of Maryland, College Park (USA)
6758 09	Addressing fiber optic sensors limitations for aircraft applications [6758-08] N. Mrad, Defence R&D Canada (Canada)
6758 0A	Compact and fast interrogation unit for fiber Bragg grating sensors [6758-09] P. Kiesel, M. Beck, O. Schmidt, N. Johnson, M. Bassler, Palo Alto Research Ctr. (USA); W. Ecke, K. Schroeder, H. Bartelt, Institute for Physical High-Technology (Germany)
6758 0B	Miniature fiber Bragg grating sensor interrogator (FBG-Transceiver) system for use in aerospace and automotive health monitoring systems [6758-10] E. A. Mendoza, C. Kempen, A. Panahi, Redondo Optics, Inc. (USA); C. Lopatin, Naval Surface Warfare Ctr. (USA)

SESSION 3 FIBER OPTIC CHEMICAL SENSORS

- 6758 0C **Fiber optic oxygen sensor leak detection system for space applications** [6758-11]
A. A. Kazemi, The Boeing Co. (USA); K. Goswami, E. A. Mendoza, L. U. Kempen, Intelligent Optical Systems, Inc. (USA)
- 6758 0D **An integrated optic hydrogen sensor for fast detection of hydrogen** [6758-12]
M. Z. Alam, J. Moreno, J. S. Aitchison, M. Mojahedi, Univ. of Toronto (Canada)
- 6758 0E **Self-compensated high-speed FBG interrogation using closed-loop tracking system** [6758-13]
L. U. Kempen, Intelligent Optical Systems, Inc. (USA); E. A. Mendoza, Redondo Optics, Inc. (USA); I. F. Saxena, Intelligent Optical Systems, Inc. (USA)
- 6758 0F **Nanomaterial-based robust oxygen sensor** [6758-14]
K. Goswami, U. Sampathkumaran, M. Alam, D. Tseng, A. K. Majumdar, InnoSense LLC (USA); A. A. Kazemi, Boeing Co. (USA)
- 6758 0G **Inter-satellite communications using laser based optical links** [6758-15]
A. S. Panahi, Redondo Optics, Inc. (USA); A. A. Kazemi, The Boeing Co. (USA)

SESSION 4 VISION & LIGHTING SYSTEMS

- 6758 0H **360° vision system: opportunities in transportation** [6758-16]
S. Thibault, ImmerVision (Canada)
- 6758 0I **Smart automotive bumper based on a multimode optical fiber** [6758-17]
P. Meyrueis, B. Kress, Lab. des Systèmes Photoniques, Univ. Louis Pasteur (France); S. Fischer, PhoSyLab (France)
- 6758 0J **High-precision investigations of the fast range imaging camera SwissRanger** [6758-18]
T. Kahlmann, H. Ingensand, ETH Zurich (Switzerland)
- 6758 0K **A microstructure diffuser plate for LED lighting** [6758-19]
C.-L. Lai, J.-S. Lin, Industrial Technology Research Institute (Taiwan); T. Yoshimi, Osaka Univ. (Japan); W.-H. Fan, Industrial Technology Research Institute (Taiwan)

Author Index

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Session Chairs

- 1 Optical Sensing Technology
 Alex A. Kazemi, The Boeing Company (USA)
- 2 Bragg Grating Sensing
 Christopher S. Baldwin, Aither Engineering, Inc. (USA)
- 3 Fiber Optic Chemical Sensors
 Jacques Albert, Carleton University (Canada)
 Ahmad Safaai-Jazi, Virginia Polytechnic Institute and State University (USA)
- 4 Vision & Lighting Systems
 Alex A. Kazemi, The Boeing Company (USA)

Introduction

The field of fiber optic sensors has undergone a remarkable change over the past two decades. Today, a great proportion of the world's communications are carried by fiber optic cables. The fiber optics technology has revolutionized the telecommunications market and is rapidly becoming a major player in such areas as telephone, cable TV, and local-area network (LAN). It has spread into every situation in which information is being transmitted.

More information, intelligence, and data are transferred from one point to another, more quickly and precisely than ever thought possible, thanks to the miracle of optical fibers. As their algorithms and equations are developed and proved, fiber optics shall become as common as wire, easy to construct to precise tolerances, accurate and indefatigable in operation, and a type of circuit which enhances our lives and ways of living.

At the same time fiber optic sensor technology has developed in parallel with fiber optic and other optoelectronics industries such as lasers, which dominate the compact disk, DVD, laser printers, and scanner industries with the most promising uses for lasers and communications over fiber optic cable. In recent years, the fiber optic sensor greatly benefited from the low-cost telecommunications industries. Due to this synergy, an enormous amount of new technologies have been introduced in the form of smart sensors, biomedical sensors, microsensors, pressure, temperature, and liquid level, to name a few.

This book contains a series of papers which contains state-of-the-art fiber optic sensor technologies for photonics in transportation industries such as microsensors for cryogenic hydrogen and oxygen leak detection for space applications, to a new generation of fiber optic sensor using holography for detection of motion and vibration in automobile bumper shock, and finally a 360-degree vision system for transportation.

Alex A. Kazemi

*Dedicated to my wife **MARY** & late father **KAMAL** for their support throughout my life.*