

PROCEEDINGS OF SPIE

Photonic Applications for Aerospace, Transportation, and Harsh Environment III

**Alex A. Kazemi
Nicolas Javahiraly
Allen S. Panahi
Simon Thibault
Bernard C. Kress**
Editors

**23–24 April 2012
Baltimore, Maryland, United States**

Sponsored and Published by
SPIE

Volume 8368

Proceedings of SPIE, 0277-786X, v. 8368

SPIE is an international society advancing an interdisciplinary approach to the science and application of light.

Photonic Applications for Aerospace, Transportation, and Harsh Environment III,
edited by Alex A. Kazemi, Nicolas Javahiraly, Allen S. Panahi, Simon Thibault, Bernard C. Kress,
Proc. of SPIE Vol. 8368, 836801 · © 2012 SPIE · CCC code: 0277-786X/12/\$18 · doi: 10.1117/12.979022

Proc. of SPIE Vol. 8368 836801-1

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Author(s), "Title of Paper," in *Photonic Applications for Aerospace, Transportation, and Harsh Environment III*, edited by Alex A. Kazemi, Nicolas Javahiry, Allen S. Panahi, Simon Thibault, Bernard C. Kress, Proceedings of SPIE Vol. 8368 (SPIE, Bellingham, WA, 2012) Article CID Number.

ISSN 0277-786X
ISBN 9780819490469

Published by

SPIE

P.O. Box 10, Bellingham, Washington 98227-0010 USA
Telephone +1 360 676 3290 (Pacific Time) · Fax +1 360 647 1445
SPIE.org

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Introduction

In the future smart sensors will internally integrate most of the functions of sensing in aerospace and transportation industry applications. Today a great proportion of the world's communications are carried by fiber optic cables. Fiber optic technology has revolutionized the telecommunication market and is rapidly becoming a major player in information technology. Now even digital television is carried over fiber optic.

The fiber optic sensor greatly benefitted from 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, pressure, temperature, speed, see through, materials health monitoring, and collisions avoidance, to name a few.

Over the past 45 years, the field of fiber optic sensors has undergone a remarkable change. Fiber optic sensors development has gone through a quantum leap. I have been greatly impressed over the past few years by the tremendous progress in photonics in the transportation industry. 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. Fiber optics shall become as common as wire, easy to construct to precise tolerances, and accurate and perfect in operation.

We are fortunate to be among pioneers and the thrill of technical achievement can be just as tangible to those of us involved with engineering, innovation, and science as the thrill of lifetime accomplishment. This book contains a series of papers which contains state-of-the-art fiber optic sensor technologies for photonics in aerospace and transportation industries such as advanced technologies for cryogenic leak detection of hydrogen and oxygen for space applications to a new generation of smart fiber optic sensors, a novel implementation a wearable see through display, high speed laser communication network for satellite systems, and wireless strain monitoring systems.

On behalf of SPIE and myself, I would like to thank the individual authors for their valuable contributions, particularly Dr. Bernard Kress of USI Photonics, Professor Simon Thibault of University of Laval, Professor Nicolas Javahiry of University of Strasbourg, Dr. Allen Panahi of ARK International, Dr. Frank Abdi of AlphaStar, Mr. Henry White of BAS Systems, Dr. Justin Lauzon of Esterline-CMC Electronics, and Dr. Nezih Mrad of Defense R&D of Canada for outstanding papers they presented in this book.

I also would like to thank my management at The Boeing Co. and the SPIE personnel for their diligent support in publication of this book.

Alex A. Kazemi