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***Photonic Applications for
Aerospace, Transportation,
and Harsh Environment II***

**Alex A. Kazemi
Bernard Kress
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Nabeel A. Riza
Lothar U. Kempen**
Editors

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Introduction

Over the past forty years, the field of fiber optic sensors has undergone a remarkable change. 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 such areas as telephone, cable TV, and local-area network (LAN). It has spread into every situation in which information is being transmitted. Now even digital television is carried over fiber optic.

Fiber optic technology 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, are easy to constructor to precise tolerances and are accurate and perfect in operation.

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

I am fortunate to be among pioneers and the thrill of technical achievement can be just as tangible to those of us involved with engineering, technology, 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 transportation industries such as advanced technologies for cryogenic leak detection of hydrogen and oxygen for space applications to a new generation of fiber optic media converter, high speed laser communication network for satellite systems and plastic optical fiber sensor for the harsh environment of space application.

On behalf of SPIE and myself, I would like to thank the individual authors for their valuable contributions, particularly Dr. Eric Chan of the Boeing Co., Dr. Allen Panahi of ARK International, Prof. Patrick Meryueis of the University of Strasbourg, Prof. Nabeel Riza of CREOL, of the University of Central Florida, Dr. Lothar Kempen, Dr. Ed Mendoza, and Dr. Bernard Kress of USI Photonics, Inc. for outstanding papers they presented in this book. I would also like to thank my wife for her support during this conference.

Alex A. Kazemi

