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# *Photonics Applications for Aviation, Aerospace, Commercial, and Harsh Environments V*

**Alex A. Kazemi**
**Bernard C. Kress**
**Edgar A. Mendoza**
**Syed H. Murshid**
**Nicolas Javahiraly**
**Abraham K. Ishihara**
*Editors*

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# Introduction

Over the past half century, the field of fiber optics has undergone a quantum leap. We have seen tremendous technological progress in photonics for the aviation, aerospace and transportation industries in harsh environments. Information, intelligence, and data are transferred from one point to another more quickly and precisely than ever thought possible due to these recent advancements. It is envisioned that fiber optics shall become as ubiquitous as copper wire with superior reliability and robustness properties.

Optics and photonics greatly benefitted from the synergy with the telecommunications industry resulting in a number of new technologies including micro-packaging of optics components, aircraft photonics networks, micro and nano-sensors, see-through wearables, head-mounted displays, and phase-shifted fiber Bragg gratings for materials health monitoring.

We are fortunate to be among the pioneers of this exciting and rapidly changing field. The technological achievements are the result of solid engineering, dedication, and innovation. This book contains a series of papers which discuss leading edge technologies and state-of-the- art optics and fiber optic sensor technologies for photonics in aerospace and transportation industries including: advanced technologies for cryogenic liquid level detection of hydrogen for space applications to a new generation of smart fiber optic sensors, a novel implementation of wearable glass, micro satellite systems, micro and nano in optoelectronics and wireless sensor monitoring systems.

Today a significant 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 and aviation industries.

This year we had the highest number of entries with a total of 56 papers which included numerous papers in the field of optoelectronics. As a result we are very grateful to all of the authors and behalf of the SPIE and myself would like to take this opportunity to thank the 56 papers presented by distinguished authors from around the world and for their valuable contributions, particularly by Dr. Bernard Kress of Google X (United States), Dr. Edgar Mendoza from Redondo Optics, Inc. (United States), Professor Syed Murshid from Florida Institute of Technology (United States), Professor Abraham Ishihara of Carnegie Mellon University (United States), Professor Nicolas Javahiraly of University of Strasbourg (France), Professor Bernard Dam of Techische University Deft (Netherland), Professor Fumio Futami from Tamagawa University (Japan), Dr. M. Alam for University of Toronto (Canada), Dr. Dan Curticapean (Germany), Professor Chi-Wai Chow of National Chiao Tung University (Taiwan), Dr. B. Srinvasan from Indian Institute of Technology, Dr. Dipankar

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**Alex A Kazemi**
**Bernard C. Kress**
**Edgar A. Mendoza**
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**Abraham K. Ishihara**