



Fiber Optic Sensors: An Introduction for Engineers and Scientists

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Since the technology has moved strongly into a number of different areas a textbook of this sort could be used by a wide variety of academic departments including physics, electrical engineering, mechanical engineering, civil engineering, aerospace engineering and bioengineering. To make the second edition as widely appealing as possible a series of significant upgrades were made.

1. The book is structured to support a variety of academic programs and it can also be used as a general reference by practicing engineers and scientists.
2. The introductory chapter has been revised to outline the new content of the second edition and provide a overview of the current status of fiber optic sensor technology.
3. A new, extensive chapter has been added covering fiber optic grating sensor technology and its application to aerospace, civil structures, oil and gas and power generating applications.
4. A second new chapter has been added on the emerging field of biomedical fiber optic sensors. This is one of the most rapidly growing fields of use for fiber optic sensors and with rising health costs and medical advances promises to be an important area for many years to come.

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Editorial Review

Review

"This revision of the successful first edition is designed to fill the needs of introductory and advanced courses on Fiber Optic Sensors while still offering a wealth of information to the professional. Included are problems, applications, and a solutions manual for instructors." (Yahoo! Finance US, 15 February 2011)

From the Publisher

Provides an introduction to the rapidly advancing and expanding field of fiber optic sensors, with chapters contributed by internationally recognized experts. Initial chapters cover optical fibers, light sources and detectors and optical modulators, introducing the fundamental building blocks of fiber optic sensors and pointing out the many connections between these elements and fiber optic sensor technology. The second section focuses primarily on extrinsic or hybrid fiber optic sensors, with chapters covering intensity sensors for monitoring temperature, position and other environmental aspects; the Fabry-Perot based fiber optic sensor; grating and displacement fiber optic sensors; and polarization. Also discusses (intrinsic) fiber optic sensors where sensing occurs in the interaction of a light beam with an environmentally perturbed optical fiber. The final section illustrates the potential of fiber optic sensor technology through specific applications.

From the Back Cover

The most comprehensive primer on fiber optic sensors, now in a new edition

Now updated to include the most recent developments in this rapidly advancing field, Fiber Optic Sensors fills the needs of both introductory and advanced courses on the topic while also offering a wealth of practical information to the professional. Drawing upon the wisdom of internationally recognized experts, this Second Edition provides thorough coverage of demonstrated sensor concepts as well as areas of future fiber optic sensor development and application.

Initial chapters cover optical fibers, light sources, and detectors and optical modulators, while subsequent chapters cover:

- Extrinsic or hybrid fiber optic sensors
- Intensity sensors for monitoring physical parameters
- The Fabry-Perot fiber optic sensor
- The Mach-Zehnder interferometer
- Sagnac interferometer and fiber gyroscopes
- Displacement fiber optic sensors
- Polarization sensors
- Industrial applications of fiber optic sensors
- Fiber optic smart structures
- Fiber Bragg grating sensors
- Fiber biosensors

Two new extensive chapters have been added to this edition. The first is on the FBG sensor—the most commonly used fiber optic sensor—covering its theory and technology. The second provides a comprehensive analysis of the emerging field of fiber optic biosensors.

Users Review

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Geneva Richardson:

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