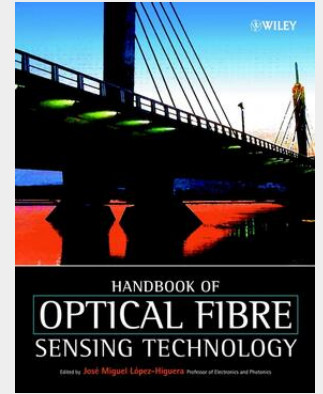


## Handbook of Optical Fibre Sensing Technology

The pursuit of more efficient telecommunications has resulted in a major research push towards communication systems that are lighter, faster, more reliable and cheaper. This has given rise to great advances in devices and in fibre optics. A spin off of this research is the development of optical sensors, which use photonic materials and concepts. Optical sensors have wide-ranging applications in various fields including telecommunications, civil engineering, chemical industry, biomedical applications and the electrical power industry. This comprehensive handbook, written by a wide spectrum of leading international researchers, offers a clear understanding of the theory as well as focusing on the many practical applications throughout the industry. The book is organised into four main sections: - \* Preliminary: Offers an overview of Fiber Optic Sensing Technology, the applications where it can be used successfully and also serves as an overall introduction to the handbook. This section also analyses current publications in the field. \* Fundamentals of Photonics and Components for Sensing: Describes the photonic concepts and components needed in order to carry out the understanding, the design, and to realise photonic sensor systems. \* Principles and Techniques for Sensing: Provides the principles and techniques in which the photonic sensing technology is based in order to understand how sensors work and how sensors can be made. \* Applications: An ample overview of the developments which are successfully taking place in laboratory and field trials, as well as the available sensors in the current market and the future trends in this field. Applications are featured throughout the text, and this section focuses primarily on niche applications. This handbook would prove to be a valuable reference resource for researchers, engineers and postgraduate students in fibre optical sensing, as well as practising engineers in optical communications and electronic engineering, civil engineering, aerospace industry, biomedicine and robotics.

International führende Experten vermitteln Ihnen hier Theorie und Praxis von Sensoren, die auf der Grundlage von Faseroptik arbeiten. Übersichtlich in vier Teile gegliedert, behandelt das Buch Konzepte der Photonik, Bauelemente von Sensorsystemen sowie Prinzipien und Methoden, auf denen Faseroptik-Sensoren beruhen. Sie lernen, wie Sensoren funktionieren, wie sie hergestellt werden und wo man sie anwendet. Sowohl Laborentwicklungen als auch Feldversuche werden diskutiert; ein Ausblick auf die Zukunft ist ebenfalls enthalten.

The field of photonics covers the techniques and scientific knowledge which can be applied to the generation, propagation, control, amplification, detection, storage and processing of signals of the optical spectrum, as well as their technologies and derived uses. Photonics can be divided into several areas in which optical communication and photonic sensing technology are included. The constant pursuit of more efficient telecommunications has resulted in a major research push aimed at creating communication systems that are lighter, faster, more reliable and cheaper. This has resulted in great advances in devices, subsystems and in particular in fibre optic technology which in turn contributes to advances in fibre sensing technology. Written by a broad spectrum of leading international academic and industry experts, this handbook offers comprehensive coverage of the theory as well as the many successful wide-ranging applications. It is organised into four main parts: \* Preliminary: offers an overview of fibre optic sensing technology, the applications where it can be used successfully and provides a general introduction to the handbook. The commercialisation of optical fibre sensors is also reviewed. \* Fundamentals of Photonics and Components for Sensing: describes the photonic concepts and components needed in order to understand, design and realise photonic sensor systems. \* Principles and Techniques for Sensing: presents the principles and techniques of photonic sensing technology enabling the reader to understand how sensors work and how sensors can be made. \* Applications: provides an overview of the recent developments currently taking place in laboratory and field trials, as well as the available sensors in the present market and the future trends.



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