Fiber Optic Sensors

Current Status and Future Possibilities

This book describes important recent developments in fiber optic sensor technology and examines established and emerging applications in a broad range of fields and markets, including power engineering, chemical engineering, bioengineering, biomedical engineering, and environmental monitoring. Particular attention is devoted to niche applications where fiber optic sensors are or soon will be able to compete with conventional approaches. Beyond novel methods for the sensing of traditional parameters such as strain, temperature, and pressure, a variety of new ideas and concepts are proposed and explored. The significance of the advent of extended infrared sensors is discussed, and individual chapters focus on sensing at THz frequencies and optical sensing based on photonic crystal structures. Another important topic is the resonances generated when using thin films in conjunction with optical fibers, and the enormous potential of sensors based on lossy mode resonances, surface plasmonresonances, and long-range surface exciton polaritons. Detailed attention is also paid to fiber Bragg grating sensors and multimode interference sensors. Each chapter is written by an acknowledged expert in the subject under discussion.



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Kundenservice Fachmedien Otto Schmidt Neumannstraße 10, 40235 Düsseldorf | <u>kundenservice@fachmedien.de</u> | 0800 000-1637 (Inland)

