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Stavros Pissadakis
Ping Lu

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# Optical Fiber Sensor Technology

**Gary A. Miller**
US Naval Research Laboratory
Washington, DC, United States

**Stavros Pissadakis**
Institute of Electronic Structure and Laser (IESL)
Foundation for Research and Technology-Hellas (FORTH)
Heraklion, Greece

**Ping Lu**
National Research Council Canada
Fibre Photonics
Ottawa, Ontario, Canada

Optical Fiber Sensors (OFSs) constitute a cornerstone sensing approach, with its foundations established almost 50 years ago. The prominent advantages of light guidance inside the confined geometry of glass or polymer optical fibers, for long distances with low losses, without being subjected to interference with other bands of the broader electromagnetic spectrum, and with the possibility of reliably tracing/interrogating externally introduced phase changes, have rendered OFSs a powerful sensing technology implemented into several civil and defense-related contemporary applications. Specific technological domains of OFSs have already reached maturity (e.g., Bragg gratings and Fabry-Perot resonators) with international standards being introduced, while others based on new types of optical fibers and materials exhibit great demonstrations (and potential) into new sensing fields and functionalities.

The Special Section on Optical Fiber Sensor Technology aims to bring an update to the engineering aspects of OFSs, including contributed and review articles covering both long-standing technical issues and sensing applications, while simultaneously offering significant new ideas and findings in the domains of microstructured optical fibers, metal-coated sensors, and magnetic field probes.

The special section contains four review-feature manuscripts, addressing different fields of OFSs and prepared by renowned experts in the corresponding fields. A review on multiparametric sensing is presented by Pevec and Donlagić, covering a number of optical fiber components (Fabry-Perot cavities, tapers, grating structures) into the measurement of different physical or chemical parameters from a single OFS unit. Another niche review article is presented by Perrone et al. on enhanced plasmonic biosensors based on microstructured optical fibers, presenting a detailed theoretical analysis. A third review article has been prepared by Chai et al. on the hot topic of fiber-optic sensing in health monitoring of power grids. Finally, a commentary summarizing half a century of fiber sensing has been written by Culshaw, one of the founders of the OFS field.

Many high quality contributed articles have been also received. Teng et al. presented a low-cost and easily fabricated plastic optical fiber displacement sensor. Wee, Hackney, and Peters presented the impact of instrumental parameters on ultrasonic sensor operation. Zhu et al. presented a pressure sensor based on the combination of Bourdon tubes and optical frequency-domain reflectometry. Silva et al. presented a numerical simulation on the application of hollow-core negative curvature fibers in gas sensing. Qu et al. demonstrated a new scheme for blade tip time employing microstructured surfaces. Jothibasu et al. presented a distributed strain sensor using the OFDR technique. Bilal et al. demonstrated a temperature sensor based on photonic crystal fiber. Additionally, Khramov, Shaidullin, and Ryabushkin utilized a copper-coated fiber sensor to detect the output power of fiber lasers through changes in the electrical resistance of the coating.

The guest editors give an open-hearted thank you to all reviewers and the OE editorial staff for their hard and timely work. These kind regards also extend to all authors for their valuable contributions to this special issue. We hope that these manuscripts will constitute a useful guideline for the readers of the communities of optical fiber devices, sensing instrumentation, and transducing materials.