



Editorial: Optical Fiber-Based Plasmonics Biosensors for Biomedical Applications

Carlos Marques¹ and Santosh Kumar^{2*}

¹Physics Department, University of Aveiro, Aveiro, Portugal, ²Shandong Key Laboratory of Optical Communication Science and Technology, School of Physics Science and Information Technology, Liaocheng University, Liaocheng, China

Keywords: biosensor, optical fiber, Plasmonics, biomedical, Optical Devices

Editorial on the Research Topic

Optical Fiber-based Plasmonics Biosensors for Biomedical Applications

Today, healthcare problems have become the most essential and challenging matters worldwide. Many features in biomedical industries have been growing quickly in recent years, particularly in the underdeveloped areas.

The plasmonic-optical fiber sensors have shown extraordinary capabilities in realizing highly sensitive and accurate sensors for the measurement of biological analytes in the field of health monitoring and diagnosis.

This kind of sensor offers a unique ability for real-time monitoring of the molecular binding events. Plasmonics in optical fiber is a highly dynamic field feeding to multi-faceted research domains and involves several students, researchers, scientists, and engineers from different areas. The sensitivity of plasmonic structures to the changes in their local dielectric environment has led to the development of new sensing strategies and systems. It is a huge topic for many areas that need more than even research to increase the strength of this digital Era.

This Research Topic on “Optical Fiber-based Plasmonics Biosensors for Biomedical Applications” have contribution of papers in Frontiers in Sensors, Physical Sensors, Biosensors and Frontiers in Physics, Optics and Photonics and it was organized by Managing Editor Santosh Kumar, Liaocheng University, China and Guest Editors Carlos Marques, Qiang Wu, Qinglin Wang, and Sanjeev Kumar Raghuvanshi. The goal is to highlight the advancement of optical fiber-based plasmonics biosensors and devices in applications to sensors covering fields such as medicine, power industry, energy, fast optics and telecom. The Research Topic includes both comprehensive review articles and original technical contributions covering fundamental research and application. 17 invited feature papers will be published in this issue where the authors are from universities, government labs and industries.

The managing editor, Santosh Kumar, and guest editors thank the authors who submitted their papers to this Research Topic and the anonymous reviewers whose feedbacks ensure the high quality of the Journal, the Frontiers publication team, for helping this issue to be a success.

All Guest Editors hope that this special issue can provide and in-depth look at this hot-topic where future students, researchers, engineers and industrial applicators can take a valuable reference on Optical Fiber-based Plasmonics Biosensors for Biomedical Applications.

A list of these papers is listed below.

1. *GeO₂ Doped Optical Fiber Plasmonic Sensor for Refractive Index Detection* (Gangwar et al.).

OPEN ACCESS

Edited and reviewed by:

Joel Villatoro,
University of the Basque Country,
Spain

*Correspondence:

Santosh Kumar
santosh@lcu.edu.cn

Specialty section:

This article was submitted to
Physical Sensors,
a section of the journal
Frontiers in Sensors

Received: 24 March 2022

Accepted: 29 March 2022

Published: 17 May 2022

Citation:

Marques C and Kumar S (2022)
Editorial: Optical Fiber-Based
Plasmonics Biosensors for
Biomedical Applications.
Front. Sens. 3:903826.
doi: 10.3389/fsens.2022.903826

2. *Cost-Efficient Hybrid WDM-MDM-Ro-FSO System for Broadband Services in Hospitals* (Liang et al.).
3. *Exploring Optimality of Piecewise Polynomial Interpolation Functions for Lung Field Modeling in 2D Chest X-Ray Images* (Kumar R. et al.).
4. *WDM-Based 160 Gbps Radio Over Fiber System With the Application of Dispersion Compensation Fiber and Fiber Bragg Grating* (Kumar D et al.).
5. *A Cost-Efficient RGB Laser-Based Visible Light Communication System by Incorporating Hybrid Wavelength and Polarization Division Multiplexing Schemes* (Xiang-Peng).
6. *Secrecy Performance Analysis of Hybrid RF/VLC Dual-Hop Relaying Systems* (Liu et al.).
7. *Developing Cost-Effective and High-Speed 40 Gbps FSO Systems Incorporating Wavelength and Spatial Diversity Techniques* (Modalavalasa et al.).
8. *Performance Evaluation of a 4×20 -Gbps OFDM-Based FSO Link Incorporating Hybrid W-MDM Techniques* (Singh et al.).
9. *A Cost-Effective Photonic Radar Under Adverse Weather Conditions for Autonomous Vehicles by Incorporating a Frequency-Modulated Direct Detection Scheme* (Sharma et al.).
10. *Coherent Detection-Based Optical OFDM, 60 GHz Radio-over-Fiber Link Using Frequency Quadrupling, and Channel and Carrier Phase Estimation* (Thool et al.).
11. *Hybrid MDM-PDM Based Ro-FSO System for Broadband Services by Incorporating Donut Modes Under Diverse Weather Conditions* (Chaudhary et al.).
12. *Performance Investigation of a High Data Rate Mode Division Multiplexed-Free Space Optics Link Under Harsh Weather Conditions* (Singh et al.).
13. *Modeling and Performance Analysis of Simplified Two-Diode Model of Photovoltaic Cells* (Prakash et al.).
14. *Improved Dielectric Properties and Grain Boundary Effect of Phenanthrene Under High Pressure* (Wang et al.).
15. *Large Tunable 16-Tupled Millimeter Wave Generation Utilizing Optical Carrier Suppression With a Tunable Sideband Suppression Ratio* (Asha and Sandeep Dahiya).
16. *Nanoparticle-Based FM-MCF LSPR Biosensor With Open Air-Hole* (Yang et al.).
17. *Remote Chemical Sensing by SERS with Self-Assembly Plasmonic Nanoparticle Arrays on a Fiber* (Zhang et al.).

AUTHOR CONTRIBUTIONS

All authors listed have made a substantial, direct, and intellectual contribution to the work and approved it for publication.

Conflict of Interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publisher's Note: All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article, or claim that may be made by its manufacturer, is not guaranteed or endorsed by the publisher.

Copyright © 2022 Marques and Kumar. This is an open-access article distributed under the terms of the Creative Commons Attribution License (CC BY). The use, distribution or reproduction in other forums is permitted, provided the original author(s) and the copyright owner(s) are credited and that the original publication in this journal is cited, in accordance with accepted academic practice. No use, distribution or reproduction is permitted which does not comply with these terms.