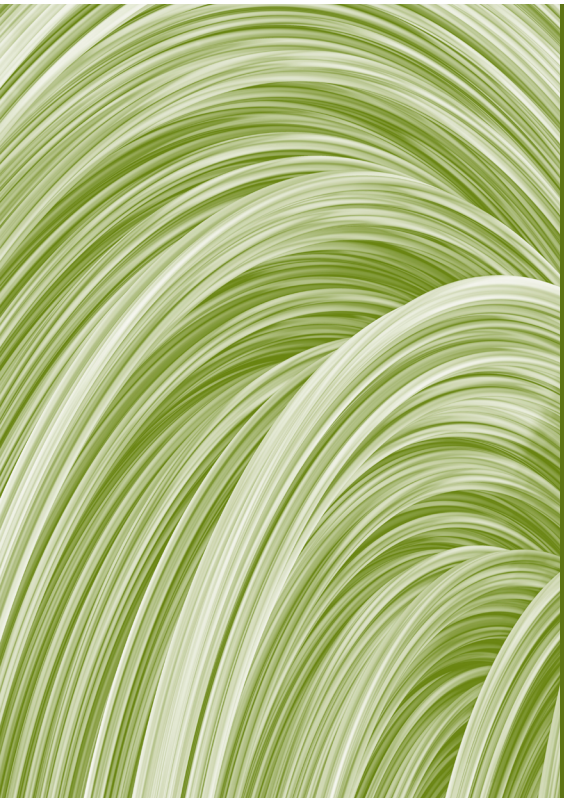
Electronics
an Open Access Journal by MDPI

Impact Factor 2.6
CiteScore 5.3

Section
Optoelectronics



mdpi.com/
journal/
electronics

MDPI

Section Information

This section of “Optoelectronics” addresses the following topics and considers mostly experimental work or theoretical/simulation work, either directly linked to or supporting the following fields:

- Nanoelectronic and photonic devices and their fabrication
- Microsystems, microdevices (e.g., sensors and nanoenergy devices) and their fabrication

Section Editor-in-Chief
Prof. Dr. Elias Stathatos

Author Benefits

Open Access

Unlimited and free access for readers

No Copyright Constraints

Retain copyright of your work and free use of your article

Thorough Peer-Review

2023 Impact Factor: 2.6

(*Journal Citation Reports* - Clarivate, 2024)

No Space Constraints, No Extra Space or Color Charges

No restriction on the maximum length of the papers, number of figures or colors

Coverage by Leading Indexing Services

Scopus, SCIE (Web of Science), CAPlus / SciFinder, Inspec, and other databases

Rapid Publication

A first decision is provided to authors approximately 16.8 days after submission; acceptance to publication is undertaken in 2.6 days (median values for papers published in this journal in the first half of 2024)

Invitation to Submit

Advances in Optical Communication and Optical Computing

Guest Editors: Jiaoqing Pan
Deadline: 16 September 2024

Recent Advances in the Convergence of Wireless and Optical Technologies

Guest Editors: Theofilos Chrysikos and Panagiotis Kokkinos
Deadline: 15 October 2024

Emerging Photovoltaic Technologies, a Step before Commercialization

Guest Editors: Elias Stathatos, Polycarpos Falaras and Bidikoudi Maria
Deadline: 31 October 2024

Emerging Trends and Applications of Visible Light Communication

Guest Editors: Paula Louro and Manuela Vieira
Deadline: 15 November 2024

Section Collection Series: Recent Advances in Optoelectronics from Lab to Industry

Guest Editors: Elias Stathatos and Spyros N. Yannopoulos
Deadline: 20 November 2024

New Advances in Optical Imaging and Metrology

Guest Editors: Zhoujie Wu and Junfei Shen
Deadline: 16 December 2024

Selected Papers

Dark and Singular Highly Dispersive Optical Solitons with Kudryashov's Sextic Power-Law of Nonlinear Refractive Index in the Absence of Inter-Modal Dispersion

Authors: Ahmed M. Elsherbeny, Ahmed H. Arnous, Anjan Biswas, Yakup Yıldırım, Luminita Moraru, Simona Moldovanu, Catalina Iticescu and Hashim M. Alshehri

Abstract: The current paper studies highly dispersive optical solitons with the aid of Kudryashov's integration algorithm. The governing model employs Kudryashov's sextic power law of nonlinear refractive index. The inter-modal dispersion term is absent from the model. The integration scheme retrieves dark and singular solitons to the model.

https://doi.org/10.3390/electronics12020352

Intelligent Vibration Monitoring System for Smart Industry Utilizing Optical Fiber Sensor Combined with Machine Learning

Authors: Pradeep Kumar, Guo-Liang Shih, Cheng-Kai Yao, Stotaw Talbachew Hayle, Yibeltal Chanie Manie and Peng-Chun Peng

Abstract: In this paper, we proposed and experimentally demonstrated the association of a fiber Bragg Grating (FBG) sensing system with You Only Look Once V7 (YOLO V7) to identify the vibration signal of a faulty machine. In the experiment, the YOLO V7 network architecture consists of a backbone, three detection heads (Headx3), a path aggregation network (PAN), and a feature pyramid network (FPN). The proposed architecture has an FBG sensor and the FBG interrogator employed for collecting sensing vibration signals or vibration data when degradation or fault occurs. An FBG interrogator collects vibration data independently, and then the YOLO V7 object detection algorithm is the recognition architecture of the vibration pattern of the signal. Thus, the proposed vibration recognition or detection is an assurance for detecting vibration signals that can support monitoring the machine's health. Moreover, this research is promising for ensuring a high accuracy detection of faulty signals rate in industrial equipment monitoring and offers a robust system, resulting in remarkable accuracy with an overall model accuracy of 99.7%. The result shows that the model can identify the faulty signal more accurately and effectively detect the faulty vibration signal using the detection algorithm.

https://doi.org/10.3390/electronics12204302

All-Optical Three-Input “AND” Gate Dependent on a Differential Modulation Architecture

Authors: Hassan Termos and Ali Mansour

Abstract: This gazette focuses on simulation and experimental studies for all-optical three-input “AND” gate schemes. The proposed gate exploits the semiconductor optical amplifier Mach-Zehnder Interferometer (SOA-MZI) nonlinearities, particularly the cross-phase modulation (XPM) corollary in addition to the cross-gain modulation (XGM) corollary, which originates from a SOA-MZI differential modulation concept. Further, the system performance is analyzed and examined through actual and simulated results to evaluate the obtained “AND” gate signal. Dependent on the nonlinearity of SOAs, the all-optical “AND” gate can operate with three signals driven by a 2 picoseconds (ps) optical pulse source (OPS). We noticed that our experimental results are perfectly matched to the simulated results. The output “AND” signal is acquired at higher common harmonics up to 200 GHz in the simulation study and the optical “AND”, which can vastly be used in optical networking, is evaluated through many parameters, such as error vector magnitude (EVM), extinction ratio (ER), and gain. As a result, the pinnacle bit rate for the 16-QAM (Quadrature Amplitude Modulation) and 256-QAM “AND” signal reaches 100 and 200 Gbit/s, respectively, at the 100 GHz common harmonic frequency.

https://doi.org/10.3390/electronics12071510

In-Line Gas Sensor Based on the Optical Fiber Taper Technology with a Graphene Oxide Layer

Authors: Karol Antoni Stasiewicz, Iwona Jakubowska, Joanna Moś, Rafał Kosturek and Krystian Kowiorski

Abstract: This article investigates the possibilities of gas detection using a tapered optical fiber coated with a graphene oxide layer. Measurement is based on changes in light beam propagation depending on the process of gas absorption to the graphene oxide layer. In this paper, we investigated the light change in a double-clad tapered optical fiber in a wide optical range. We present a special platform constructed for the deposition of additional functional materials that enable the preparation of the sensor module. Our results present differences in light transmission for three different kinds of gasses pure nitrogen, pure hydrogen, and a mixture of propane–butane. Measurements were provided in a wide range of 500 nm–1800 nm to find the most sensitive ages for which we are able to detect mentioned absorption and their interaction with light. Obtained results for pure gasses for which the refractive indices are similar to the air show the greatest changes for the visible range 750 nm–850 nm, and for propane–butane, changes are much visible in the whole investigated range.

https://doi.org/10.3390/electronics12040830

MDPI is a member of

Editorial Office
electronics@mdpi.com

MDPI
Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
mdpi.com