2020 IEEE 8th International Conference on Photonics (ICP 2020)

Kota Bharu, Malaysia 12 May – 30 June 2020



IEEE Catalog Number: CFP2099J-POD **ISBN:**

978-1-7281-0519-2

Copyright © 2020 by the Institute of Electrical and Electronics Engineers, Inc. All Rights Reserved

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

*** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.

CI
97
97
23

CFP2099J-POD 978-1-7281-0519-2 978-1-7281-0518-5 2330-5665

Additional Copies of This Publication Are Available From:

Curran Associates, Inc 57 Morehouse Lane Red Hook, NY 12571 USA Phone: (845) 758-0400 Fax: (845) 758-2633 E-mail: curran@proceedings.com Web: www.proceedings.com



Program

S1: KEYNOTE

D1AM-S1: SENSORS

- D1AM-S1.1 Photoluminescence and Raman Studies on GaAs1-xBix Grown on GaAs...1 Lilik Hasanah, Cahya Julian, Budi Mulyanti, Ananda Aransa, Roni Sumatri, Muhammad Hilmi Johari, John David and Abdul Rahman Mohmad
- D1AM-S1.2 Graphene-Coated Optical Fiber Tip Sensor for Nitrate Sensing Application...3 Puteri Nadiah Syamimi Said Ja'afar, <u>Nazirah Mohd Razali</u>, Nurul Farah Adilla Zaidi, Fauzan Ahmad, Muhammad Firdaus Omar, Abd Khamim Ismail, Mohd Hanif Yaacob, Azura Hamzah, Hazilah Mad Kaidi and Sumiaty Ambran
- D1AM-S1.3 Integrated Sensitive Biosensor with Surface Plasmon for Dengue Fever Detection...5 Adel Shaaban, Yi-Chun Du and Lotfy Gomaa
- D1AM-S1.4 Novel Terahertz Photonic Crystal Fiber for Liquid Cocaine Sensing...7 Nurul Awadah Binti Suhaimi, <u>Izaddeen Kabir Yakasai</u>, Emeroylariffion Abas and Feroza Begum
- D1AM-S1.5 Optical Detection of Lead Ion with Surface Plasmon Resonance Configurations...9 Ali Abdulkhaleq Alwahib, Yasmin Mustapha Kamil, Muhammad Hafiz Abu Bakar, Mohd. Adzir b. Mahdi and Fariza Hanim Suhailin
- D1AM-S1.6 Directivity Performance of Optical Fibre for Distributed Acoustic Sensing...N/A <u>P B Jothy</u>, Hairul A. Abdul-Rashid and Nasr Omar

D1AM-S2: DEVICES

D1AM-S2.1 Pulse Coding Technique in Differential Cross-Spectrum BOTDR for Improving the Brillouin Frequency Accuracy and Spatial Resolution...11

Mohd Saiful Dzulkefly Zan, Ahmad Ashrif A. Bakar, Norhana Arsad, Mohd Hadri Hafiz Mokhtar, Mohd Mahdi and Mohamed Elgaud

- D1AM-S2.2 Fast Temperature Extraction Approach for BOTDA Using Generalized Linear Model...13 Nur Dalilla Nordin, Fairuz Abdullah, Mohd Saiful Dzulkefly Zan, Aiman Ismail, Md Zaini Jamaludin and Ahmad Ashrif A. Bakar
- D1AM-S2.3 Absorption Enhancement of Tunable Terahertz Hybrid Graphene-Metal Antenna with Stacked Graphene Configuration...15 Zaka Ullah, <u>Gunawan Witjaksono</u>, Illani Mohd Nawi, Nelson Tansu, Muhammad I Khattak and Muhammad Junaid
- D1AM-S2.4 Effect of Confined Heating on Down-tapered Fiber In-line Mach-Zehnder Interferometer...18 Noor Shafikah Md Rodzi, Mohd Ridzuan Mokhtar and Zulfadzli Yusoff
- D1AM-S2.5 Integrated Optics Europium Aluminum Polymer Optical Waveguide with Graded Index Circular Core...20 Nur Najahatul Huda Saris, Nur Ameelia Abdul Kadir, Azura Hamzah, Sumiaty Ambran, Osamu Mikami, Toshifumi Horie and Takaaki Ishigure
- D1AM-S2.6 High Spatial Resolution Microscopy with Functional Thin Film...22 Wataru Inami

D1AM-S3: COMMUNICATIONS

- D1AM-S3.1 Optimized OAM Laguerre-Gauss Alphabets for Demodulation Using Machine Learning...24 Bruno Freitas, Cristhof Roosen Runge, Jaime Portugheis, Ivan Oliveira and Ulisses Dias
- D1AM-S3.2 Low-Cost Integration of MIMO-RoF Based on 5G UFMC Waveform and Wired OFDM Signal over PON...26 Taha Dahawi, John Micheal Senior, Zulfadzli Yusoff, Mohd Shahril Salleh, Yusuf Raji and Redhwan Q. Shaddad
- D1AM-S3.3 A 2.15 Pbps Throughput Optical Cross-Connect with Flexible Waveband Routing...28 Takuma Kuno, Yojiro Mori and Hiroshi Hasegawa
- D1AM-S3.4 Raspberry Pi as Reconfigurable Fiber-based Router and Its Performance Analysis...30 Muhammad Haqeem Mohd Nasir, <u>Wan Siti Halimatul Munirah Wan Ahmad</u>, Nurul Asyikin Mohd. Radzi, Fairuz Abdullah, Azlina Abdullah, Aiman Ismail and Md Zaini Jamaludin
- D1AM-S3.5 Gold-Nanoparticles-Integrated Microfiber Saturable Absorber for Mode-Iocked Erbium-doped Fiber Lasers...N/A Amir Waliuddin, Noor Zirwatul Ahlam Naharuddin, Lau Yao, Mohd. Adzir b. Mahdi and Nadiah Husseini Zainol Abidin

D1PM-S1: SENSORS

D1PM-S1.1 Characteristics of Fiber Laser Based Temperature Sensor....32

Nurul Atika Nabila Jaharudin, Noran Azizan Cholan, Kim Gaik Tay, Mohd Azwadi Omar, Rahmat Talib, Nor Hafizah Ngajikin and Mohd Shahrir Abd Rahim

D1PM-S1.2 Optical Fiber Proximity Sensor for Micro Distance Measurement...34 Nazirah Mohd Razali, Wan Amirin Nasrin Wan Darman, Puteri Nadiah Syamimi Said Ja'afar, Azura Hamzah, Hazilah Mad Kaidi and Sumiaty

Ambran

- D1PM-S1.3 A Simulation of Prism-based Surface Plasmon Resonance Liquid Sensing Device...36 Marliana Binti Jaafar, Maisara Othman, Hazura Haroon, Maslina Yaacob, Mohammad Arif Ilyas, Nor Suzyliana Ahmad and Siti Nur Adibah Zainurin
- D1PM-S1.4 Rice Grain Quality Determination Using FTIR Spectroscopy Method...38 Wilda Prihasty, Aulia Nasution and Isnaeni Isnaeni

D1PM-S2: MATERIAL

- D1PM-S2.1 Improvement in Silicon Band Edge Emission with Incorporation of Boron...40 Nurul Ellena Abdul Razak, Dilla Duryha, Chang Fu Dee and Burhanuddin Yeop Majlis
- D1PM-S2.2 Performance Comparison of Narrow Bandgap Semiconductor Cells for Photovoltaic and Thermophotovoltaic Applications...42 <u>Mansur Gamel</u>, Hui Jing Lee, Wan Emilin Suliza Wan Abdul Rashid, Pin Jern Ker, Md Zaini Jamaludin and Ahmed Ibrahim Ahmed Mohammed
- D1PM-S2.3 Gallium Antimonide Thermophotovoltaic: Simulation and Electrical Characterization Under Different Spectral Filtration Wavelengths...44 Md Zaini Jamaludin, Wan Emilin Suliza Wan Abdul Rashid, Pin Jern Ker, Hui Jing Lee, Mansur Gamel and Nazaruddin Abd. Rahman
- D1PM-S2.4 Propagation Loss and Non-linear Effects on Modulation Instability in Thulium Doped Fiber Amplifiers Operating in S and near-C Bands...48

Mohammad Mansoor Khan and Ramesh Kumar Sonkar

- D1PM-S2.5 Assessment of Dispersive Materials Using Recursive Implicit Time Domain Techniques...50 Mohammad S Akond and <u>Turki Mohammed Alsuwian</u>
- D1PM-S2.6 High Electron Beam Induced Luminescence of OH Silica Fiber...N/A Adebiyi Oresegun, Md. Zubair Hassan Tarif, Louay Ghassan, David Bradley, Hairul A. Abdul-Rashid and Siti Hashim
- D1PM-S2.7 Compact Thulium Fiber Amplifier Co-doped with Yttria Nano-particle Operating at 1800Nm Region...52 Amilia Mansoor, Hairul A. Abdul-Rashid, Zulfadzli Yusoff, Mukul Paul and Shahrin Zen Yassin

D1PM-S3: COMMUNICATIONS

- D1PM-S3.1 Spatial Resolution Enhancement of Time Domain Multiplexing Fiber Bragg Grating Sensor by Employing Differential Golay Codes...54 Mohd Saiful Dzulkefly Zan, Mohamed Elgaud, Abdulfatah Abushagur Ghaith Abushagur, Abdulwahhab Essa Hamzah, ALrubaiy, Jessica Wei Shan Teo, Wei Yi Kiew, Mohd Hadri Hafiz Mokhtar, Norhana Arsad and Ahmad Ashrif A. Bakar
- D1PM-S3.2 Effect of Semiconductor Optical Amplifiers Types on Multiwavelength Fiber Laser Performance...56 Yong Suan Ong, Nelidya Md. Yusoff, <u>Abdul Hadi Sulaiman</u> and Fairuz Abdullah

D1PM-S3.3 Performance of MS-code of OCDMA over VLC System...58 Ridzuan M Md. Noh, Makhfudzah Mokhtar and Zuraidah Zan

- D1PM-S3.4 Proposal of Highly Birefringent Porous Core Photonic Crystal Fibre for Polarisation Maintaining Terahertz Wave Guidance...60 Izaddeen Kabir Yakasai, Emeroylariffion Abas and Feroza Begum
- D1PM-S3.5 Plasmonics Microbottle Resonator of Meniscus Gold...62 Mohd Narizee Mohd Nasir, Hairul A. Abdul-Rashid, Ganapathy Senthil Murugan and Michael Zervas

S2: KEYNOTE

D2AM-S1: SENSORS

D2AM-S1.1 Low-Cost Temperature Sensing Using D-Shaped Optical Fiber...64 Nur Ameelia Abdul Kadir, Azura Hamzah and <u>Nur Najahatul Huda Saris</u> D2AM-S1.2 A Temperature-Compensated FBG Pressure Sensor for Underwater Pipeline Monitoring...66 Mohd Hafizi Zohari and Vorathin Epin

D2AM-S1.3 Fiber Sensor for Simultaneous Measurement of Heart and Breath Rate on SmartBed...68 Niza Rosyda Amalia, Agus Hatta, Sekartedjo Sekartedjo, Ika Puspita and Aulia MT Nasution

D2AM-S2: DEVICES

D2AM-S2.1 In-line Fiber Mach-Zehnder Interferometer with Enhanced Strain Sensitivity Using Off-Axis Coating...70 Nawal Athirah Binti Mustaffa, Mohd Ridzuan Mokhtar, Mohd Fahmi Azman, Zulfadzli Yusoff, Hairul A. Abdul-Rashid and Zulkifli Mahmud

D2AM-S2.2 Noise-like Pulse Generation in Mode-locked Fiber Laser with Tungsten Oxide Composite Deposited Tapered Fiber Saturable Absorber...N/A

Nadiah Husseini Zainol Abidin, Mohd Mahdi, Sharudin Omar Baki and Amir Waliuddin

D2AM-S2.3 Investigation of Strain Magnification Effect on Fiber Optic by Using COMSOL Multiphysics Software...72 Mohd Fahmi Azman, Mohd Ridzuan Mokhtar, Nawal Athirah Binti Mustaffa, Zulkifli Mahmud and Hairul A. Abdul-Rashid

D2AM-S2.4 Simulation of Polymer Multimode Interference Thermo-Optic Switch...74 Nor Suzyliana Ahmad, Maslina Yaacob, Maisara Othman, Nor Hafizah Ngajikin, <u>Marliana Binti Jaafar</u> and Mohammad Arif Ilyas

D2AM-S2.5 Simulation and Fabrication of AlN-on-SiO2 Based Rib Waveguide for Low Propagation Delay...76 Rakesh Ranjan and Veer Chandra

D2AM-S3: COMMUNICATIONS

- D2AM-S3.1 Boosting Output Power of Multiwavelength Fiber Laser with Lyot Filter Utilizing Hybrid Amplifier...78 Abdul Hadi Sulaiman, Fairuz Abdullah, Aiman Ismail, Md Zaini Jamaludin and Nelidya Md. Yusoff
- D2AM-S3.2 Signal Generation Using System on Chip for Coded Fiber Bragg Grating Sensor...80 <u>Abdulwahhab Essa Hamzah, ALrubaiy</u>, Ahmad Ashrif A. Bakar, Mohamed Elgaud, Mahmoud Muhanad Fadhel, Mohd Saiful Dzulkefly Zan, Abdulfatah Abushagur Ghaith Abushagur, Sara Ali Alwash, Nur Hidayah Azeman and Mohd Hadri Hafiz Mokhtar
- D2AM-S3.3 Simulation of a Simple Scheme to Generate Flat Frequency Comb Using Cascaded Single-Drive Mach-Zehnder Modulators...82 Mahmoud Muhanad Fadhel, Mohd Saiful Dzulkefly Zan, Norazreen Abd Aziz, <u>Abdulwahhab Essa Hamzah</u>, <u>ALrubaiy</u> and Norhana Arsad

D2AM-S3.4 Integration and Evaluation of Hybrid RoF-VLC Network...84 Muhammad Towfiqur Rahman, <u>Rajendran Parthiban</u> and Masuduzzaman Bakaul

D2PM-S1: SENSORS

- D2PM-S1.1 Multi-context Holographic Memory Exploiting a Wavelength-Dependent Optimization Technique...86 Minoru Watanabe
- D2PM-S1.2 All Fiber Temperature Sensor Based on TMD Alloy Coated Tapered Fiber...89 S. J. Tan, Z. C. Tiu, X. S. Cheng and H. Ahmad
- D2PM-S1.3 Contactless Vibration Sensing and Acoustics Wave Detection Based on Laser Feedback Interferometer...91 Meng Chung Leong, Wen Yan Lam, Mohd Saiful Dzulkefly Zan, Norhana Arsad, Ahmad Ashrif A. Bakar and Mohd Hadri Hafiz Mokhtar
- D2PM-S1.4 Monte Carlo Simulation of Optical Light Transport in an Absorption-Based Tapered Fiber Sensor...93 Fatin Hamimi Mustafa, Fariza Hanim Suhailin, Irneza Ismail and Mohd. Adzir b. Mahdi
- D2PM-S1.5 Linear Cavity Fiber Laser Intracavity Refractive Index Sensor...95 Norhanie Bahtiar Affendy, Nurul Afifah Ngasri, Nadiah Husseini Zainol Abidin, Farah Diana Muhammad and Muhammad Hafiz Abu Bakar

D2PM-S2: DEVICES

D2PM-S2.1 A 2D Optimization Model for Silicon Optical PN Phase Shifter Simulation...97 Darpan Mishra, <u>Manoranjan Minz</u> and <u>Ramesh Kumar Sonkar</u>

D2PM-S2.2 Gallium-Erbium Fiber Amplifier...99

Tuan Ainin Sofea Tuan Mohd Marzuki, Amilia Mansoor, Hairul A. Abdul-Rashid, Nasr Omar and Siti Azlida Ibrahim

D2PM-S2.3 Power over Fiber for Internet of Things Application...101 Ahmed Ibrahim Ahmed Mohammed, Pin Jern Ker, Hui Jing Lee, Muhamad Mansor, <u>Mansur Gamel</u> and Ahmad Wafi Mahmood Zuhdi

D2PM-S2.4 Silicon Waveguides for Mid-infrared Integrated Photonics...103 Veerapuram Sumanth, Manish Yadav, A Soibam and Ramesh Kumar Sonkar

D2PM-S2.5 High-sensitivity, Fast-Response Broadband Graphene Photodetector on LiNbO3...105 Jiyu Hong and Heyuan Guan

D2PM-S2.6 Research on Reconstruction Algorithm of Lensless Microimaging...107 Norhana Arsad and Mengyuan Xie

D2PM-S3: SENSORS

D2PM-S3.1 Hexagonal Boron Nitride as a Flexible Random Laser...109 Wan Maryam Wan Ahmad Kamil, Dipankar Chugh and Hoe Tan

D2PM-S3.2 Temperature Sensor Based on 1D SiN/Air Photonic Crystal...111 Sapna Dinodiya

D2PM-S3.3 Sensor for Ultraviolet (UV) Detection Doped with Mercury and Fluorescent Brightener...113 Maizatul Zolkapli

D2PM-S3.4 One Dimensional SiN/Air Defect Multilayer Based Nonlinear Optical Sensor...115 Sapna Dinodiya

D2PM-S3.5 Split Ring Resonator Biosensor-An Innovative Design and Analysis...117 Akhilesh Tiwari and Akhilesh Tiwari