2021 13th International **Conference on Advanced Infocomm Technology** (ICAIT 2021)

Yanji, China 15 – 18 October 2021



IEEE Catalog Number: CFP21ICQ-POD ISBN:

978-1-6654-3189-7

Copyright © 2021 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.

 IEEE Catalog Number:
 CFP21ICQ-POD

 ISBN (Print-On-Demand):
 978-1-6654-3189-7

 ISBN (Online):
 978-1-6654-3188-0

ISSN: 2010-1430

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



2021 The 13th International Conference on Advanced Infocomm Technology (ICAIT 2021)

Table of Contents

Preface vi Committees vii
Optics and Photonics
Atmospheric Turbulence Simulation Experiment Based on Liquid Crystal Spatial Light Modulator
Study on Luminescence Properties of Tb ³⁺ , Yb ³⁺ Doped CeF ₃ Nanoparticles
The Pressure Sensing Method Based on Polarization Properties in Fiber
Based on Brillouin Scattering Photoelectric Research of Oscillator
Study on 1.5µm Laser Properties of Er³+/Yb3+ Co-doped Fluoroaluminophosphate Glass Fiber Materials
Jilong Cao, Pengfei Xu, Xiangyang Song, Longhai Li, Feng Ren, Chunlai Song, Yuxuan Cong, Dechur Zhou
1×4 Optical Demultiplexer for TM Modes in a Hole-Type Silicon Photonic Crystal
Study on Luminescence Properties of Eu ³⁺ /Tb ³⁺ Doped Gadolinium Barium Borosilicate Glass 30 <i>Guanpeng Yao, Shasha Li, Chun Li, Yanyan Zhou, Zhongmin Su, Fanming Zeng</i>
Laser Design and Development
Investigation on All-Fiber Holmium Doped Fiber Laser Based on Nonlinear Polarization Rotation 34 Xin Li, Peng Lin, Wanzhuo Ma, Tianshu Wang

Hybrid Mode-Locked 2µm Fiber Laser Based on Nonlinear Polarization Rotation and Semicondu	
Saturable Absorber Mirror	30
Study on DSR Square Wave Pulse Compression in Er-doped NALM Mode-Locked Fiber Laser	42
Investigation into Adjustable Dissipative Soliton Resonance Generation in Double-Pumped Figure E Cavity Using Nonlinear Amplifying Loop Mirror	•
Research on the Application of Self-Phase Locking Laser in the Fabrication of Micro-Nano Structure Scaffolds	
Chi Wang, Yongliang Li, Yashuai Yang	
Research on Intracavity Cascade Pumping Three-Wave Mixing Laser	58
Electronic Technology and Control System	
Preparation and Characterization of Silica Fiber Reinforced Boron Modified Methyl Phenolic Resin M Composites	
Qingming Xu, Yunhui Li, Fanming Zeng, Pengyang Deng, Zhongmin Su, Ce Liang, Hailiang Zh Xinning Zhang, Zhengmeng Sun	nang,
MZ Fiber Optic Temperature Sensor Based on Staggered Fusion Double Cone Type	68
Cascadable multiplexing two-dimensional vector sensor based on multi-core optical fiber in compositional structure	
Rui Zhou, Xingyong Li, Yizhuo Li, Shuangshuang Li, Ruohui Wang, Xueguang Qiao	
Path Planning for Unmanned Marine Vessels Based on Improved Reinforcement Learning	76
MoTe ₂ Microfilm Terahertz Detector at Room Temperature	81
Model Optimization of Servo System Based on Internal Model Control	85
Study on Fiber Optic Sensor for Ethanol Gas Detection	91

Optical Communication and Optical Transmission Technology

Free Space Laser Communication Equalizer Based on Deep Neural Network
Yugeng Chen, Zhi Liu, Hongyan Liang, Yidi Chang, Chunye Li, Yakun Wang, Yi Liu
Analysis of Communication Link's Performance of Visible Light Intelligent Transportation System in Sandy Environment
Kang-Kang Chang, Yu-Feng Yang, Xiang Han, Rui-Na Xu, Pan-Feng Tan
Research on Pulse Position Modulation and Demodulation System of Space Laser Communication Based
on DBN-SVM
Path Selection for Hybrid Fiber Communication/Sensing Network
Free Space Optical Communication System Based on the Combination of WDM and Polarization Multiplexing
Yahuan Dong, Chonghui Zheng, Peng Lin, Tianshu Wang
Deep Learning Assisted Pre-equalization Scheme for Faster-than-Nyquist Optical Wireless Communications
Cao Minghua, Wu Zhaoheng, Wang Huiqin, Xia Jieping, Zhang Jiawei, Li Wenwen
Modeling for Underwater Optical Channel in Relatively Turbid Waters Based on the Monte Carlo Method
Tianheng Ma, Zihao Du, Jing Xu
Position-Marked Layered Optical Spatial Modulation with Pulse Position Modulation
Research on Composite Tracking Control Technology of Single Detector in Laser Communication 132 Wei Wang, Huilin Jiang, Yan Dong, Yansong Song, Shuai Chang, Yu Wen
Measurement of Lateral Wind Speed in Atmospheric Turbulence Using PIV Technique
Research and Dynamic Demonstration Test of One-Point to Multi-Point Space Laser Communication System
Junyao Wang, Yansong Song, Huilin Jiang, Tong Wang, Bin Ren
Recognition of Third-Party Interference in Cable Monitoring Based on 1-D CNN with Fiber Optic DAS System
Xiaopeng Wang, Peng He, Guoging Kang, Xiaotian Liu, Tao He, Shixiong Zhang

Author Index