Fourth International Seminar on Photonics, Optics, and Its Applications (ISPhOA 2020)

Agus Muhammad Hatta
Aulia Nasution
Ruri Agung Wahyuno
Editors

1-2 December 2020
Online Only, Indonesia

Organized by
Institut Teknologi Sepuluh Nopember (Indonesia)
Universitas Airlangga (Indonesia)
Institut Teknologi Bandung (Indonesia)
Universitas Indonesia
Universitas Brawijaya (Indonesia)
Universitas Udayana (Indonesia)
Universitas MaChung (Indonesia)

Sponsored by
Directorate of Research and Community Service
The Optical Society (United States)
International Commission for Optics (ICO)
PT HORIBA Indonesia
PT Serviam Abadi Mumi (Indonesia)

Published by
SPIE

Volume 11789
The papers in this volume were part of the technical conference cited on the cover and title page. Papers were selected and subject to review by the editors and conference program committee. Some conference presentations may not be available for publication. Additional papers and presentation recordings may be available online in the SPIE Digital Library at SPIEDigitalLibrary.org.

The papers reflect the work and thoughts of the authors and are published herein as submitted. The publisher is not responsible for the validity of the information or for any outcomes resulting from reliance thereon.

Please use the following format to cite material from these proceedings:


ISSN: 0277-786X
ISSN: 1996-756X (electronic)
ISBN: 9781510644120

Published by
SPIE
P.O. Box 10, Bellingham, Washington 98227-0010 USA
Telephone +1 360 676 3290 (Pacific Time)- Fax +1 360 647 1445
SPIE.org
Copyright ©2021, Society of Photo-Optical Instrumentation Engineers.

Copying of material in this book for internal or personal use, or for the internal or personal use of specific clients, beyond the fair use provisions granted by the U.S. Copyright Law is authorized by SPIE subject to payment of copying fees. The Transactional Reporting Service base fee for this volume is $21.00 per article (or portion thereof), which should be paid directly to the Copyright Clearance Center (CCC), 222 Rosewood Drive, Danvers, MA 01923. Payment may also be made electronically through CCC Online at copyright.com. Other copying for republication, resale, advertising or promotion, or any form of systematic or multiple reproduction of any material in this book is prohibited except with permission in writing from the publisher. The CCC fee code is 0277-786X/21/$21.00.

Printed in the United States of America by Curran Associates, Inc., under license from SPIE.

Publication of record for individual papers is online in the SPIE Digital Library.

SPIEDigitalLibrary.org

Paper Numbering: Proceedings of SPIE follow an e-First publication model. A unique citation identifier (CID) number is assigned to each article at the time of publication. Utilization of CIDs allows articles to be fully citable as soon as they are published online, and connects the same identifier to all online and print versions of the publication. SPIE uses a seven-digit CID article numbering system structured as follows:

• The first five digits correspond to the SPIE volume number.
• The last two digits indicate publication order within the volume using a Base 36 numbering system employing both numerals and letters. These two-number sets start with 00, 01, 02, 03, 04, 05, 06, 07, 08, 09, 0A, 0B … 0Z, followed by 10-1Z, 20-2Z, etc. The CID Number appears on each page of the manuscript.
Contents

v Introduction

FOURTH INTERNATIONAL SEMINAR ON PHOTONICS, OPTICS, AND ITS APPLICATIONS
(ISPHOA 2020)

11789 02 Understanding of the dynamics of water molecules by using terahertz spectroscopy and its bio-applications (Invited Paper) [11789-29]

11789 03 Elastography measurement for soft material using digital holography [11789-7]

11789 04 Estimation of respiratory rate based on image processing using camera with pixel value analysis method [11789-9]

11789 05 Reconstruction and regularization multi frame super resolution on vegetation index NIR image [11789-11]

11789 06 Improvement of digital phase shifting profilometry skin imaging by combination of frequency and spatial filtering [11789-15]

11789 07 Application of RGB-CCM and GLCM texture analysis to predict chlorophyll content in Vernonia amygdalina [11789-18]

11789 08 Face detection and recognition in real-time photos with haar cascade and local binary pattern histogram for automatic door locking system [11789-23]

11789 09 Low amplitude coherently coupled solitons in photorefractive polymers [11789-5]

11789 0A Modifying surface energy level of citric acid-based carbon dots with polyethylene [11789-6]

11789 0B Design of GaN-based optical switch for telecommunication links [11789-14]

11789 0C Design of plastic optical fiber for soil moisture measurements as potential landslide detector [11789-22]

11789 0D Absorption spectra of edible oils on UV-visible-near infrared region [11789-24]

11789 0E Use of a singlemode multimode singlemode fiber structure for apex cardiography monitoring [11789-27]

11789 0F Estimation of refractive index of eggshell in intact egg using terahertz time-domain spectroscopy [11789-4]

11789 0G Measurement of glucose concentrations in solid tissue phantom using diffuse reflectance technique in NIR region [11789-8]
Non-invasive blood oxygenation monitoring from different sites of human body using diffuse reflectance spectroscopy: a feasibility study of diabetic foot monitoring [11789-16]

Preliminary investigation on rice bran residue detection using ultraviolet fluorescence imaging [11789-17]

Photodynamic potential of blue diode laser inactivation with chlorophyll photosensitisers in Pseudomonas aeruginosa and Staphylococcus aureus bacteria [11789-25]

Wavelength identification of red betel leaf (piper crocatum), green betel leaf (piper betle l.) and black betel leaf (piper betle v.) using Ultraviolet-Visible (UV-Vis) spectroscopy method coupled with Principal Component Analysis (PCA) [11789-28]

Calibrating a non-contact and low-cost respiratory monitoring system based on Digital Correlation Technique [11789-3]

Laser distance meter for cylinder tank volume measurement system [11789-13]

An alternative dichromatic white LED light source for OOK-NRZ visible light communication system [11789-19]

Development of a simple and low cost laser-based viscometer [11789-21]

Object profiling using FMCW reflectometry with asymmetric method [11789-26]