

PROGRESS IN BIOMEDICAL OPTICS AND IMAGING

Vol. 21 No. 46

# ***Reporters, Markers, Dyes, Nanoparticles, and Molecular Probes for Biomedical Applications XII***

**Samuel Achilefu  
Ramesh Raghavachari**  
*Editors*

**3–4 February 2020  
San Francisco, California, United States**

*Sponsored and Published by*  
SPIE

**Volume 11256**

Proceedings of SPIE, 1605-7422, V. 11256

SPIE is an international society advancing an interdisciplinary approach to the science and application of light.

Reporters, Markers, Dyes, Nanoparticles, and Molecular Probes for Biomedical Applications XII,  
edited by Samuel Achilefu, Ramesh Raghavachari, Proc. of SPIE Vol. 11256, 1125601  
© 2020 SPIE · CCC code: 1605-7422/20/\$21 · doi: 10.1117/12.2569682

Proc. of SPIE Vol. 11256 1125601-1

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 [SPIDigitalLibrary.org](http://SPIDigitalLibrary.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:

Author(s), "Title of Paper," in *Reporters, Markers, Dyes, Nanoparticles, and Molecular Probes for Biomedical Applications XII*, edited by Samuel Achilefu, Ramesh Raghavachari, Proceedings of SPIE Vol. 11256 (SPIE, Bellingham, WA, 2020) Seven-digit Article CID Number.

ISSN: 1605-7422  
ISSN: 2410-9045 (electronic)

ISBN: 9781510632752  
ISBN: 9781510632769 (electronic)

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](http://SPIE.org)

Copyright © 2020, 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](http://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 1605-7422/20/\$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.

**SPIE. DIGITAL LIBRARY**

[SPIDigitalLibrary.org](http://SPIDigitalLibrary.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	<i>Authors</i>
vii	<i>Conference Committee</i>

---

## FLUORESCENT AND LUMINESCENT PROBES

---

11256 OG	<b>An orange-fluorescent dye with long-lasting blinking for single molecule localization microscopy</b> [11256-15]
11256 OH	<b>Aggregation induced enhanced emission in Dimethyl-2,5-bis(4-methoxyphenylamino)terephthalate (Invited Paper)</b> [11256-16]

---

## POSTER SESSION

---

11256 OI	<b>Analysis of Wikipedia pageviews to identify popular chemicals</b> [11256-17]
11256 OJ	<b>Absorption and fluorescence spectra of organic compounds from 40 sources: archives, repositories, databases, and literature search engines</b> [11256-18]
11256 OK	<b>Electron properties of porous carbon nanostructures doped by atoms cesium</b> [11256-19]
11256 OL	<b>Modification of the molecular-mechanics method for realizing the interaction of carbon structures with potassium atoms</b> [11256-20]
11256 OM	<b>The penetration and movement of nanoparticles on membrane</b> [11256-21]
11256 ON	<b>Water desalination using zigzag pillared graphene</b> [11256-22]
11256 OO	<b>Electron-energy properties of pillared graphene modified with potassium</b> [11256-23]
11256 OP	<b>2D monocrystalline nanostructures of cobalt oxide <math>\text{Co}_3\text{O}_4</math> for sensing individual molecules</b> [11256-24]
11256 OQ	<b>Patterns of interaction of the cell membrane with a matrix of natural polymers and carbon nanotubes</b> [11256-25]



## Authors

Numbers in the index correspond to the last two digits of the seven-digit citation identifier (CID) article numbering system used in Proceedings of SPIE. The first five digits reflect the volume number. Base 36 numbering is employed for the last two digits and indicates the order of articles within the volume. Numbers start with 00, 01, 02, 03, 04, 05, 06, 07, 08, 09, 0A, 0B...0Z, followed by 10-1Z, 20-2Z, etc.

Amino, Hiroyuki, 0G  
Boukari, Hacene, 0M  
Cao, Yuru, 0I  
Dutta, Anindya, 0H  
Fujiyama, Shingo, 0G  
Glukhova, Olga E., 0P, 0Q  
Hara, Daiki, 0G  
Iwanaga, Shigeki, 0G  
Kazuta, Yuji, 0G  
Kirillova, Irina V., 0N  
Kolesnikova, Anna S., 0K, 0L, 0N  
Kolosov, Dmitriy A., 0P  
Kossovich, Leonid U., 0N  
Kumar, Anil, 0H  
Kumar, Anshu, 0H  
Lindsey, Jonathan S., 0I, 0J  
Mazepa, Margarita M., 0N  
Mehta, Hely, 0I  
Mishra, Anasuya, 0H  
Motoki, Takafumi, 0G  
Nishikawa, Youichi, 0G  
Norcross, Ann E., 0I  
Norimine, Yoshihiko, 0G  
Okamoto, Yuji, 0G  
Prihodchenko, K. A., 0L  
Ren, Jun, 0M  
Shmygin, D. S., 0O  
Slepchenkov, Michael M., 0O, 0P, 0Q  
Taniguchi, Masahiko, 0I, 0J  
Tyler, Zachary, 0M  
Wang, Zixuan, 0M  
Xin, Lianxin, 0M  
Zerrad, Essaid, 0M  
Zhao, Jian, 0M



# Conference Committee

## *Symposium Chairs*

**Jennifer K. Barton**, The University of Arizona (United States)  
**Wolfgang Drexler**, Medizinische Universität Wien (Austria)

## *Conference Chairs*

**Samuel Achilefu**, Washington University School of Medicine in St. Louis  
(United States)  
**Ramesh Raghavachari**, U.S. Food and Drug Administration  
(United States)

## *Conference Program Committee*

**Mingfeng Bai**, Vanderbilt University Medical Center (United States)  
**Mikhail Y. Berezin**, Washington University School of Medicine in St.  
Louis (United States)  
**Richard B. Dorshow**, MediBeacon Inc. (United States)  
**Jelena M. Janjic**, Duquesne University (United States)  
**Hisataka Kobayashi**, National Cancer Institute (United States)  
**Dolonchampa Maji**, Washington University School of Medicine in St.  
Louis (United States)  
**Ashok Kumar Mishra**, Indian Institute of Technology Madras (India)  
**Gabor Patonay**, Georgia State University (United States)  
**Attila Tarnok**, Universität Leipzig (Germany)  
**Deepa Venkitesh**, Indian Institute of Technology Madras (India)

## *Session Chairs*

- 1 Phototherapeutic Applications using NIR and other Probes  
**Samuel Achilefu**, Washington University in St. Louis (United States)
- 2 Nano/Biophotonics Plenary Session  
**Ewa M. Goldys**, The University of New South Wales (Australia)  
**Paras N. Prasad**, University at Buffalo (United States)
- 2 Nanomaterials as Probes and in Imaging Applications I  
**Mikhail Y. Berezin**, Washington University in St. Louis (United States)
- 3 Nanomaterials as Probes and in Imaging Applications II  
**Mikhail Y. Berezin**, Washington University in St. Louis (United States)

