PROCEEDINGS OF SPIE

SPIDigitalLibrary.org/conference-proceedings-of-spie

Front Matter: Volume 11463

, "Front Matter: Volume 11463," Proc. SPIE 11463, Optical Trapping and Optical Micromanipulation XVII, 1146301 (4 September 2020); doi: 10.1117/12.2576426

SPIE.

Event: SPIE Nanoscience + Engineering, 2020, Online Only

PROCEEDINGS OF SPIE

Optical Trapping and Optical Micromanipulation XVII

Kishan Dholakia
Gabriel C. Spalding
Editors

24 August – 4 September 2020
Online Only, United States

Sponsored and Published by
SPIE

Volume 11463

Proceedings of SPIE 0277-786X, V. 11463

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

Optical Trapping and Optical Micromanipulation XVII, edited by Kishan Dholakia,
Gabriel C. Spalding, Proc. of SPIE Vol. 11463, 1146301 · © 2020 SPIE
CCC code: 0277-786X/20/\$21 · doi: 10.1117/12.2576426

Proc. of SPIE Vol. 11463 1146301-1

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 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:

Author(s), "Title of Paper," in *Optical Trapping and Optical Micromanipulation XVII*, edited by Kishan Dholakia, Gabriel C. Spalding, Proceedings of SPIE Vol. 11463 (SPIE, Bellingham, WA, 2020) Seven-digit Article CID Number.

ISSN: 0277-786X

ISSN: 1996-756X (electronic)

ISBN: 9781510637320

ISBN: 9781510637337 (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

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. 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/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**
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

VIRUS AND SINGLE-MOLECULE BIOPHYSICAL STUDIES AND TECHNOLOGIES

- 11463 06   **Quantification of low-affinity kinetics between cancer immunity relevant ligands and natural killer cell receptors with a self-induced back-action actuated nanopore electrophoresis (SANE) sensor (Invited Paper)** [11463-4]

FROM THE STATISTICAL PHYSICS OF SMALL SYSTEMS TO BIOMATERIALS I

- 11463 09   **Optical trapping of microparticles and yeast cells at ultra-low intensity by intracavity nonlinear feedback forces** [11463-7]

FROM THE STATISTICAL PHYSICS OF SMALL SYSTEMS TO BIOMATERIALS II

- 11463 0B   **Microrheology of gel electrolyte biomaterials based on deep eutectic solvents** [11463-9]
11463 0C   **Stroboscopic detection of multi-colloidal hydrodynamics using time-multiplexed optical tweezers** [11463-10]

DYNAMIC BIOPHYSICAL SYSTEMS

- 11463 0G   **Dynamics of *Bacillus subtilis* bacterium in an optical trap** [11463-14]

NEXT-GENERATION FABRICATION TECHNOLOGIES

- 11463 0Q   **Acoustic levitation for multimodal volumetric display (Invited Paper)** [11463-24]

FROM THEORETICAL FOUNDATIONS TO PHOTONIC DEVICES FOR OPTICALLY INDUCED FORCES

- 11463 0V   **Energy, linear momentum, and spin and orbital angular momenta of circularly polarized Laguerre-Gaussian wave-packets** [11463-29]

SURFACE MANIPULATION METHODS, HYDRODYNAMICS, AND OPTICALLY BOUND MATTER

- 11463 0W **Light-driven microrobotics and their applications for single-cell manipulation (Invited Paper)** [11463-30]
- 11463 0X **Brownian fluctuations, hydrodynamics and elasticity of a microhelix** [11463-31]

SYSTEMS WITH BROKEN SYMMETRY

- 11463 12 **Polarimetry studies on birefringent materials in optical tweezers** [11463-36]
- 11463 13 **Dynamics of optical forces and torques in plasmonic systems: a surface integral equation** [11463-37]
- 11463 15 **Determination of local cell membrane slope fluctuations using the pitch rotational mode of optical tweezers** [11463-39]

FROM PHOTOACOUSTICS TO PHOTOPHORESIS AND OPTO-THERMOPHORESIS

- 11463 16 **Photoacoustics of single aerosol droplets immobilised by counter-propagating optical tweezers** [11463-40]
- 11463 18 **Migration of silver microparticles suspended in water by means of photophoresis induced with laser radiation.** [11463-42]
- 11463 19 **Trapping and manipulation of a microbubble in 3D through temperature gradients** [11463-43]

TUTORIAL ON MACHINE LEARNING IN COMPUTATIONAL IMAGING: JOINT SESSION WITH CONFERENCES 11463 AND 11469

- 11463 1L **On the use of deep learning for computational imaging (Keynote Paper)** [11463-54]

PRECISION MEASUREMENT, TESTING FUNDAMENTAL PHYSICS, AND NANO-THERMODYNAMICS

- 11463 1R **Optically induced nanoscale forces: precipitating the separation of immiscible liquids** [11463-82]

POSTER SESSION

- 11463 20 **Directed self-assembly of a bio-inspired peptide into ring microstructures using micro-bubbles induced in thermo-optical tweezers** [11463-68]

- 11463 21   **Simulating Traumatic Brain Injury (TBI) using laser-induced shockwave under quantitative phase microscopy** [11463-69]
- 11463 24   **Enhancement of the stiffness constant in optical tweezers by thermal effects** [11463-72]
- 11463 25   **Understanding and optimizing laser-induced thermoelectric forces for enhanced trapping and manipulation of colloidal particles** [11463-73]
- 11463 26   **Characterization of emission from thermo-optical tweezers during spontaneous self-assembly** [11463-74]
- 11463 27   **Oscillation of a microbubble by means of Marangoni force** [11463-75]
- 11463 29   **Generation of thermo-optical instability mediated by thermophoresis in a sessile water droplet** [11463-77]
- 11463 2C   **Reversal in axial symmetry of nonlinear optical trapping potential for metallic nanoparticles: generalized Lorenz-Mie theory** [11463-80]
- 11463 2E   **Nonlinear optical trap: dielectrics, metals, and beyond** [11463-84]