

PROCEEDINGS OF SPIE

Optical Trapping and Optical Micromanipulation XIX

Kishan Dholakia
Gabriel C. Spalding
Editors

21–24 August 2022
San Diego, California, United States

Sponsored and Published by
SPIE

Volume 12198

Proceedings of SPIE 0277-786X, V. 12198

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

Optical Trapping and Optical Micromanipulation XIX, edited by Kishan Dholakia,
Gabriel C. Spalding, Proc. of SPIE Vol. 12198, 1219801 · © 2022 SPIE
0277-786X · doi: 10.1117/12.2661510

Proc. of SPIE Vol. 12198 1219801-1

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.

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 XIX*, edited by Kishan Dholakia, Gabriel C. Spalding, Proc. of SPIE 12198, Seven-digit Article CID Number (DD/MM/YYYY); (DOI URL).

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

ISBN: 9781510653801
ISBN: 9781510653818 (electronic)

Published by
SPIE
P.O. Box 10, Bellingham, Washington 98227-0010 USA
Telephone +1 360 676 3290 (Pacific Time)
SPIE.org
Copyright © 2022 Society of Photo-Optical Instrumentation Engineers (SPIE).

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 fees. To obtain permission to use and share articles in this volume, visit Copyright Clearance Center 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.

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

Paper Numbering: A unique citation identifier (CID) number is assigned to each article in the Proceedings of SPIE 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 *Conference Committee*

BIOPHOTONIC LAB-ON-A-CHIP AND HYBRID SYSTEMS I

- 12198 02 **Development of a fiber-based microfluidic flow cytometry platform using viscoelastic fluids for polydisperse particle suspensions** [12198-9]

BIOPHOTONIC LAB-ON-A-CHIP AND HYBRID SYSTEMS III

- 12198 03 **Multiplexed near-field optical trapping (Invited Paper)** [12198-16]

OPTICAL MANIPULATION OF MATTER THROUGH GASEOUS MEDIA

- 12198 04 **A water droplet as a toy atom** [12198-41]
- 12198 05 **Coupling between modulated Mie scattering and photoacoustic signal generation in optically trapped, single aerosol particles** [12198-42]

SHAPING THE FLOW OF INFORMATION, ENERGY, AND MOMENTUM

- 12198 06 **Superkicks and momentum density tests via micromanipulation** [12198-33]
- 12198 07 **Linear and angular momenta of photons in the context of "which path" experiments of quantum mechanics** [12198-35]

STATISTICAL MECHANICS OF SMALL SYSTEMS

- 12198 08 **Ordering and dynamics of active matter systems on static and dynamic periodic optical substrates (Invited Paper)** [12198-54]
- 12198 09 **Synthesis and thermometry of NV⁻ nanodiamond a-NaYF₄ composite nanostructures** [12198-57]
- 12198 0A **Solid-state laser refrigeration of core-shell polystyrene microspheres** [12198-58]

- 12198 0B **Trapping and monitoring of single nanoparticle using a metallic nanoantenna (Invited Paper)**
[12198-59]
- 12198 0C **Towards Stirling engine from a single up-converting particle confined in an optical trap at pump-wavelength exhibiting Hot Brownian Motion** [12198-55]

EXTENSIONS OF THE OTOM TOOLKIT

- 12198 0D **Interplay of thermal and nonlinear processes for stable optical tweezers** [12198-64]

POSTER SESSION

- 12198 0E **Laser-induced photolysis leads to a Ca^{2+} transient in surrounding astrocytes which is dependent on internal stores** [12198-67]
- 12198 0F **Data-driven analysis by Raman spectroscopy for ABO blood typing** [12198-69]
- 12198 0G **Investigation of the power spectral density of a scaled model simulation of an optical tweezer**
[12198-72]
- 12198 0H **Optical trapping of dielectric microparticles with the focused annular beam** [12198-76]
- 12198 0I **3D manipulation of vapor microbubbles driven by the Marangoni force** [12198-84]
- 12198 0J **Direct detection of cell membrane slope fluctuations upon adding Latrunculin B using optical tweezers and single probe particle** [12198-80]
- 12198 0K **Soft probing technique to estimate the rolling work of adhesion in nanoscale regime using optical tweezers** [12198-81]

Conference Committee

Symposium Chairs

Gennady B. Shvets, Cornell University (United States)
Cornelia Denz, Westfälische Wilhelms Universität Münster (Germany)

Symposium Co-chairs

Reuven Gordon, University of Victoria (Canada)
Natalia M. Litchinitser, Duke University (United States)

Conference Chairs

Kishan Dholakia, University of St. Andrews (United Kingdom)
Gabriel C. Spalding, Illinois Wesleyan University (United States)

Conference Program Committee

Ashley R. Carter, Amherst College (United States)
Reuven Gordon, University of Victoria (Canada)
Catherine M. Herne, State University of New York at New Paltz
(United States)
Masud Mansuripur, Wyant College of Optical Sciences, The University
of Arizona (United States)
James Millen, King's College London (United Kingdom)
David C. Moore, Yale University (United States)
Justus C. Ndukaife, Vanderbilt University (United States)
Daniel H. Ou-Yang, Lehigh University (United States)
Daryl Preece, University of California, San Diego (United States)
Ruben Ramos-Garcia, Instituto Nacional de Astrofísica, Óptica y
Electrónica (Mexico)
Halina Rubinsztein-Dunlop, The University of Queensland (Australia)
Nick Vamivakas, University of Rochester (United States)
Karen P. Volke-Sepúlveda, Universidad Nacional Autónoma de
México (Mexico)
Yuebing Zheng, The University of Texas at Austin (United States)

