

PROCEEDINGS OF SPIE

Liquid Crystals XXVII

Iam Choon Khoo

Editor

21–22 August 2023

San Diego, California, United States

Sponsored and Published by
SPIE

Volume 12658

Proceedings of SPIE 0277-786X, V. 12658

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

Liquid Crystals XXVII, edited by Iam Choon Khoo,
Proc. of SPIE Vol. 12658, 1265801 · © 2023 SPIE
0277-786X · doi: 10.1117/12.3012708

Proc. of SPIE Vol. 12658 1265801-1

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 *Liquid Crystals XXVII*, edited by Iam Choon Khoo, Proc. of SPIE 12658, Seven-digit Article CID Number (DD/MM/YYYY); (DOI URL).

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

ISBN: 9781510665309
ISBN: 9781510665316 (electronic)

Published by
SPIE
P.O. Box 10, Bellingham, Washington 98227-0010 USA
Telephone +1 360 676 3290 (Pacific Time)
SPIE.org
Copyright © 2023 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*

CHARACTERIZATION, MODULATION, SENSING, AND IMAGING

- 12658 02 **Dynamic control of molecular alignment in liquid-crystal elastomers by external materials (Invited Paper)** [12658-21]
- 12658 03 **Three-dimensional imaging of helicoidal pitch and structural characterization of cholesteric cellulose nanocrystals suspensions using second harmonic generation microscopy** [12658-24]

NOVEL LC PROPERTIES, MICROSCOPY, DISORDER

- 12658 04 **Intuitive understanding of the connection between Pancharatnam–Berry optical beam deflectors and polarization volume holograms (Invited Paper)** [12658-26]
- 12658 05 **Effect of host liquid crystal structure on nonlinear molecular reorientation of oligothiophene-doped liquid crystals** [12658-27]
- 12658 06 **Photonic band edge and defect modes in 1D cholesteric liquid crystals (Invited Paper)** [12658-28]
- 12658 07 **A possible large quadrupole moment driving torque in a smectic liquid crystal (Invited Paper)** [12658-29]

TUNABLE LENS AND CHIRAL OPTICS

- 12658 08 **Electrically tunable chiral liquid crystal lens arrays (Keynote Paper)** [12658-30]
- 12658 09 **Dual-frequency field assembly of over mm-thick nonlinear chiral photonic crystals for advanced photonic applications (Invited Paper)** [12658-18]
- 12658 0A **Chiral ferroelectric nematic in Grandjean-Cano wedge cell (Invited Paper)** [12658-9]

NOVEL LIQUID CRYSTALLINE MATERIALS AND STRUCTURES

- 12658 0C **Topology in phase separated liquid crystal systems (Invited Paper)** [12658-2]
- 12658 0D **Liquid crystals for optical switches, smart windows, reconfigurable/tunable meta-structures, micro-resonator coupling and plasmonic nanostructures** [12658-39]

NOVEL LIQUID CRYSTALS PROPERTIES AND STRUCTURES

12658 OE **Magnetic reorientation of 5CB nematic liquid crystals aligned by carbon nanotubes sheets (Invited Paper)** [12658-47]

POSTER SESSION

12658 OF **Vortex clustering in chiral nematic liquid crystal microdroplets** [12658-40]

12658 OG **Topological transition to a vortices lattice in a nematic liquid crystal cell** [12658-42]

12658 OH **Tunable multifocal liquid crystal microlens array based on three-electrode structure** [12658-44]

12658 OI **Image-based polarization detection and material recognition based on liquid crystals**
[12658-45]

DIGITAL POSTER SESSION

12658 OJ **Laser ultrasonics using photorefractive liquid crystals (Invited Paper)** [12658-16]

Conference Committee

Symposium Chairs

Zakya H. Kafafi, Lehigh University (United States)

Ifor D. W. Samuel, University of St. Andrews (United Kingdom)

Conference Chair

Iam Choon Khoo, The Pennsylvania State University (United States)

Conference Program Committee

Timothy J. Bunning, Air Force Research Laboratory (United States)

Julian S. Evans, Zhejiang University (China)

Jean-Pierre Huignard, Jphopto (France)

Tomiki Ikeda, Chuo University (Japan)

Malgosia Kaczmarek, University of Southampton (United Kingdom)

Oleg D. Lavrentovich, Kent State University (United States)

Sin-Doo Lee, Seoul National University (Korea, Republic of)

Tsung-Hsien Lin, National Sun Yat-Sen University (Taiwan)

Kenneth L. Marshall, University of Rochester (United States)

Francesco Simoni, Università Politecnica delle Marche (Italy)

Nelson V. Tabiryan, BEAM Engineering for Advanced Measurements
Company (United States)

David M. Walba, University of Colorado Boulder (United States)

Shin-Tson Wu, CREOL, The College of Optics and Photonics, University
of Central Florida (United States)

