PROCEEDINGS OF SPIE

Liquid Crystals XXIII

Iam Choon Khoo
Editor

11–12 August 2019
San Diego, California, United States

Sponsored and Published by
SPIE

Volume 11092

Proceedings of SPIE 0277-786X, V. 11092

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 *Liquid Crystals XXIII*, edited by Iam Choon Khoo, Proceedings of SPIE Vol. 11092 (SPIE, Bellingham, WA, 2019) Seven-digit Article CID Number.

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

ISBN: 9781510628779
ISBN: 9781510628786 (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

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

Liquid Crystals XXII. Editor(s): Iam Choon Khoo. For the purchase of this volume in printed format, please visit Proceedings.com.Â Liquid crystals (LCs) have been suggested to have a place in biological sensing for detection and quantitation of biomolecules. Through many years, texture observation has long been the core technique in LC-based bioassays. Proceedings Volume 10735, Liquid Crystals XXII; 1073512 (2018) https://doi.org/10.1117/12.2323487 Event: SPIE Organic Photonics + Electronics, 2018, San Diego, California, United States. Article. Figures & tables.Â Liquid crystal phase boundaries play an important role in self-assembly processes defining nanostructured complex fluid systems. Liquid crystals (LCs) are highly structured liquids, with orientational (nematic, cholesteric) and positional (smectic) order of constituent molecules (see figure). The type of molecular order is controlled by shape and chirality of LC molecules, with over a hundred known LC phases. Because LCs are liquids, their molecular order is sensitive to environment, e.g. temperature, electric and magnetic fields, or adsorption of chemicals.