Front Matter: Volume 7955
Contents

vii Conference Committee
ix Introduction

KEYNOTE SESSION

7955 02 Liquid crystal photonic crystal fibers and their applications (Keynote Paper) [7955-33]
  T. R. Woliński, S. Ertman, D. Budaszewski, M. Chyctlowski, A. Czapla, Warsaw Univ. of
  Technology (Poland); R. Dąbrowski, Military Univ. of Technology (Poland);
  A. W. Domarński, Warsaw Univ. of Technology (Poland); P. Mergo, Maria Curie-Skłodowska
  Univ. (Poland); E. Nowinowski-Kruszelnicki, Military Univ. of Technology (Poland);
  K. A. Rutkowska, M. Sierakowski, M. Tefelska, Warsaw Univ. of Technology (Poland)

SESSION 1 ORGANIC SEMICONDUCTORS

7955 05 Liquid crystalline phthalocyanines as a self-assembling organic semiconductor for
  solution-processing thin film devices (Invited Paper) [7955-03]
  Y. Miyake, National Institute of Advanced Industrial Science and Technology (Japan) and
  Osaka Univ. (Japan); T. Hori, H. Yoshida, Osaka Univ. (Japan); H. Monobe, National Institute
  of Advanced Industrial Science and Technology (Japan); A. Fujii, M. Ozaki, Osaka Univ.
  (Japan); Y. Shimizu, National Institute of Advanced Industrial Science and Technology
  (Japan)

SESSION 2 GRATING, BEAM STEERING, AND PHOTONIC BANDGAP DEVICES

7955 06 Photonic bandgaps controllable blue phase liquid crystal (Invited Paper) [7955-04]
  H.-Y. Liu, C.-T. Wang, C.-Y. Hsu, T.-H. Lin, National Sun Yat-Sen Univ. (Taiwan)

SESSION 3 ADAPTIVE OPTICS AND OPTICAL MICROCAVITIES

7955 09 Tunable liquid crystal optical microcavities [7955-07]
  I. Muševič, Univ. of Ljubljana (Slovenia); M. Humar, J. Stefan Institute (Slovenia)

SESSION 4 NONLINEAR OPTICS, LASING, AND WAVEGUIDE

7955 0B Three-dimensional finite element modeling of liquid crystal devices (Invited Paper)
  [7955-09]
  P. J. M. Vanbrabant, Ghent Univ. (Belgium); R. James, Ghent Univ. (Belgium) and Univ.
  College London (United Kingdom); J. Beeckman, K. Neyts, Ghent Univ. (Belgium); E. Willman,
  F. A. Fernandez, Univ. College London (United Kingdom)
SESSION 5  ADVANCES IN DISPLAY TECHNOLOGIES

7955 0D  High efficiency liquid crystal lasers giving “white light” emission from arrays and flexible substrates (Invited Paper) [7955-11]
S. M. Morris, H. J. Coles, Univ. of Cambridge (United Kingdom)

7955 0E  Solvent-less repair inks for color filters (Invited Paper) [7955-12]
H.-M. P. Chen, National Chiao Tung Univ. (Taiwan); F.-C. Tang, National Chiao Tung Univ. (Taiwan) and Chugwha Picture Tubes, Ltd. (Taiwan); C.-H. Li, W.-J. Hsieh, Y.-C. Lin, Chugwha Picture Tubes, Ltd. (Taiwan)

7955 0F  Recent advances in optically isotropic liquid crystals for emerging display applications (Invited Paper) [7955-13]
J. Yan, M. Jiao, L. Rao, S.-T. Wu, CREOL, The College of Optics and Photonics, Univ. of Central Florida (United States)

7955 0G  A wide-viewing-angle liquid-crystal display using front-scattering film and directional backlight [7955-14]
T. Saruta, Keio Univ. (Japan); A. Tagaya, Y. Koike, Keio Univ. (Japan) and ERATO-SORST/Japan Science and Technology Agency (Japan)

7955 0H  Wide temperature range blue phase liquid crystals for displays [7955-15]
J.-Y. Hwang, J. Xiang, S.-Y. Lu, L.-C. Chien, Kent State Univ. (United States)

7955 0I  Tuning liquid crystal properties at hybrid glass interfaces with polarized self-inscribing guided waves [7955-16]
M. P. Andrews, T. Gonzalez, McGill Univ. (Canada); T. Galstian, Univ. Laval (Canada)

SESSION 6  ALIGNMENT AND NANOSTRUCTURED SURFACES

7955 0J  Bent-core alignment layers (Invited Paper) [7955-17]
E. K. Mann, W. Iglesias, Kent State Univ. (United States); T. Smith, Case Western Reserve Univ. (United States); P. Basnet, Kent State Univ. (United States); D. J. Lacks, Case Western Reserve Univ. (United States); A. Jákli, Kent State Univ. (United States)

7955 0L  Nematic liquid crystal interfaces for chemical and biological detection (Invited Paper) [7955-19]
D. R. Most, H. J. VanTreeck, B. A. Grinwald, K. A. Kupcho, A. Sen, M. D. Bonds, K. Anhalt, B. A. Israel, B. R. Acharya, Platypus Technologies LLC (United States)

7955 0M  Polar and biaxial properties of mesophases derived from bent-core mesogens with an acute-sustended angle (Invited Paper) [7955-32]
E.-J. Choi, Kumoh National Institute of Technology (Korea, Republic of); J.-H. Lee, Pusan Univ. (Korea, Republic of); W.-C. Zin, Pohang Univ. of Science and Technology (Korea, Republic of)
SESSION 7 PHOTONIC AND OPTICAL RESPONSE MATERIALS

7955 0N LC/polymer composite and its applications in photonics devices (Invited Paper) [7955-20]
H. T. Dai, Tianjin Univ. (China); Y. J. Liu, D. Luo, Nanyang Technological Univ. (Singapore);
X. W. Sun, Tianjin Univ. (China) and Nanyang Technological Univ. (Singapore)

7955 0O Light-responsive actuation materials based on azo-containing liquid-crystalline polymers
(Invited Paper) [7955-21]
X. Li, R. Yin, F. Cheng, Y. Yu, Fudan Univ. (China)

7955 0P Optically responsive liquid crystal microfibers for display and nondisplay applications
(Invited Paper) [7955-22]
E. A. Buyuktanir, Kent State Univ. (United States) and Stark State College (United States);
J. L. West, Kent State Univ. (United States); M. W. Frey, Cornell Univ. (United States)

7955 0Q Coupled surface plasmon resonance sensor with sensitive liquid crystal layer [7955-23]
A. S. Abu-Abed, Univ. of Central Oklahoma (United States); S. A. Alboon, Yarmouk Univ.
(Jordan); Y. Lin, R. G. Lindquist, The Univ. of Alabama in Huntsville (United States)

7955 0R Liquid crystalline block copolymers for macroscopic nanodomain orientation and
photoinduced microphase separation (Invited Paper) [7955-24]
D. Han, Y. Zhao, X. Tong, Y. Zhao, Univ. of Sherbrooke (Canada)

SESSION 8 SWITCHABLE FILTERS AND REFLECTORS

7955 0S Liquid crystal Bragg filters (Invited Paper) [7955-24]
R. L. Sutherland, Mount Vernon Nazarene Univ. (United States); L. V. Natarajan,
V. P. Tondiglia, SAIC (United States) and Air Force Research Lab. (United States); C. A. Bailey,
M. M. Duning, A. Voevodin, T. J. White, T. J. Bunning, Air Force Research Lab. (United States)

7955 0V Origin of iridescence in chiral nematic phase nanocrystalline cellulose for encryption and
enhanced color [7955-27]
Y. P. Zhang, V. P. Chodavarapu, A. G. Kirk, M. P. Andrews, M. Carluer, McGill Univ. (Canada);
G. Picard, Collège Ahuntsic (Canada)

POSTER SESSION

7955 0W Holographic polymer dispersed liquid crystal system utilizing the co-polymerizations with
siloxane compounds and polypropylene glycol derivatives [7955-28]
T. Takanokura, M. Kurashige, K. Ishida, Y. Ohyagi, M. Watanabe, Dai Nippon Printing Co., Ltd.
(Japan); Y. H. Cho, Pusan National Univ. (Korea, Republic of)

Author Index
Conference Committee

Symposium Chair

Liang-Chy Chien, Kent State University (United States)

Symposium Co-chairs

Klaus P. Streubel, OSRAM GmbH (Germany)
E. Fred Schubert, Rensselaer Polytechnic Institute (United States)

Program Track Chair

Liang-Chy Chien, Kent State University (United States)

Conference Chair

Liang-Chy Chien, Kent State University (United States)

Conference Co-chair

Hiroshi Yokoyama, Kent State University (United States)

Program Committee

Dirk J. Broer, Technische Universiteit Eindhoven (Netherlands)
Vladimir G. Chigrinov, Hong Kong University of Science and Technology (Hong Kong, China)
Harry J. Coles, University of Cambridge (United Kingdom)
Gregory P. Crawford, University of Notre Dame (United States)
Andy Y.-G. Fuh, National Cheng Kung University (Taiwan)
Otto W. Haase, Technische Universität Darmstadt (Germany)
Jun-ichi Hanna, Tokyo Institute of Technology (Japan)
Hirotugu Kikuchi, Kyushu University (Japan)
Heinz-Siegfried Kitzerow, Universität Paderborn (Germany)
Shunsuke Kobayashi, Tokyo University of Science (Japan)
Seung Hee Lee, Chonbuk National University (Korea, Republic of)
Antonio Martins Figueiredo Neto, Universidade de São Paulo (Brazil)
Akihiro Mochizuki, Nano Loa, Inc. (United States)
Masanori Ozaki, Osaka University (Japan)
Ci-Ling Pan, National Tsing Hua University (Taiwan)
Ryo Sakurai, Bridgestone Corporation (Japan)
Ivan I. Smalyukh, University of Colorado at Boulder (United States)
Richard L. Sutherland, Mount Vernon Nazarene University (United States)
Shin-Tson Wu, CREOL, The College of Optics and Photonics, University of Central Florida (United States)
Tae-Hoon Yoon, Pusan National University (Korea, Republic of)

Session Chairs

Keynote Session
Liang-Chy Chien, Kent State University (United States)

1 Organic Semiconductors
Liang-Chy Chien, Kent State University (United States)

2 Grating, Beam Steering, and Photonic Bandgap Devices
Richard L. Sutherland, Mount Vernon Nazarene University (United States)

3 Adaptive Optics and Optical Microcavities
Harry J. Coles, University of Cambridge (United Kingdom)

4 Nonlinear Optics, Lasing, and Waveguide
Harry J. Coles, University of Cambridge (United Kingdom)

5 Advances in Display Technologies
Tae-Hoon Yoon, Pusan National University (Korea, Republic of)

6 Alignment and Nanostructured Surfaces
Hiroshi Yokoyama, Kent State University (United States)

7 Photonic and Optical Response Materials
Ivan I. Smalyukh, University of Colorado at Boulder (United States)

8 Switchable Filters and Reflectors
Antonio Martins Figueiredo Neto, Universidade de São Paulo (Brazil)
Introduction

With an emphasis on new scientific exploration and emerging technological applications of liquid crystals in optics, photonics, information display and nanotechnology, the 2011 SPIE Photonics West conference on Emerging Liquid Crystal Technologies VI was organized to address current developments concerning the most important themes by bringing together the world’s leading scientists in the field. Participation from renowned researchers guaranteed that the conference had significantly advanced the knowledge and understanding within the broad field of liquid crystal science and technology. In addition, the group of participants also included a good number of contributed oral presentations and poster papers from a mix of young and well established researchers which fostered the excitement of brainstorming.

The scope of the conference was extremely broad, especially with a featured keynote presentation on liquid crystal photonic crystal fibers and their applications, and many frontier topics including the organic semiconductors, grating, beam steering, and photonic bandgap devices, adaptive optics and optical microcavities, nonlinear optics, lasing, and waveguide, advances in display technologies, alignment and nanostructured surfaces, photonic and optical response materials, and switchable filters and reflectors. Technical programs with such broad objectives rarely satisfy all needs. This conference is no exception; however, these papers constitute a representative progress report on advancements in emerging liquid crystal technologies.

The symposium and this publication provided platforms for leading principle investigators to present unpublished or the latest important results in a broad spectrum, and enlightening discussion and idea exchange on the issues is still in debate. The cooperation of the authors, attendees, program committee members, and SPIE staff during the course of the symposium and publication preparation is greatly acknowledged.

Liang-Chy Chien