PROCEEDINGS OF SPIE

SPIDigitalLibrary.org/conference-proceedings-of-spie

Front Matter: Volume 7505

, "Front Matter: Volume 7505," Proc. SPIE 7505, Optical Data Storage 2009, 750501 (10 September 2009); doi: 10.1117/12.839883

SPIE.

Event: Optical Data Storage, 2009, Lake Buena Vista, Florida, United States

PROCEEDINGS OF SPIE

Optical Data Storage 2009

Kevin R. Curtis
Luping P. Shi
Editors

11–13 May 2009
Lake Buena Vista, Florida, United States

Sponsored by
IEEE
IEEE Photonics Society
Optical Society of America
SPIE

Published by
SPIE

Volume 7505

Proceedings of SPIE, 0277-786X, v. 7505

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

The papers included 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. The papers published in these proceedings 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 this book:

Author(s), "Title of Paper," in *Optical Data Storage 2009*, edited by Kevin R. Curtis, Luping P. Shi, Proceedings of SPIE Vol. 7505 (SPIE, Bellingham, WA, 2009) Article CID Number.

ISSN 0277-786X

ISBN 9780819478849

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 © 2009, 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 \$18.00 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/09/\$18.00.

Printed in the United States of America.

Publication of record for individual papers is online in the SPIE Digital Library.

SPIDigitalLibrary.org

Paper Numbering: Proceedings of SPIE follow an e-First publication model, with papers published first online and then in print and on CD-ROM. Papers are published as they are submitted and meet publication criteria. A unique, consistent, permanent citation identifier (CID) number is assigned to each article at the time of the first publication. Utilization of CIDs allows articles to be fully citable as soon they are published online, and connects the same identifier to all online, print, and electronic versions of the publication. SPIE uses a six-digit CID article numbering system in which:

- The first four 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. The complete citation is used on the first page, and an abbreviated version on subsequent pages. Numbers in the index correspond to the last two digits of the six-digit CID number.

Contents

v	Program Committee
vii	Advisory Committee

NEAR FIELD

7505 0D	Tilt detection and stable approach methods for near field recording [7505-12] T. Kwon, D. H. Son, B.-S. Kwak, J. K. Seo, I. H. Choi, B. H. Min, LG Electronics Inc. (Korea, Republic of)
---------	--

TUTORIAL I

7505 0F	Can future storage technologies benefit from existing or emerging nano-tools and techniques? [7505-14] M. Mansuripur, College of Optical Sciences, The Univ. of Arizona (United States)
---------	---

HIGH DENSITY, SUPER-RESOLUTION, NANO-PHOTONICS

7505 0H	Demonstration of readout-signal quality improvement by homodyne detection [7505-16] H. Mikami, T. Kurokawa, K. Watanabe, H. Miyamoto, Hitachi, Ltd. (Japan)
7505 0I	Plasmonic nano-structures for optical data storage [7505-17] M. Mansuripur, College of Optical Sciences, The Univ. of Arizona (United States); A. R. Zakharian, Corning Inc. (United States); A. Lesuffleur, S.-H. Oh, Univ. of Minnesota (United States); R. J. Jones, College of Optical Sciences, The Univ. of Arizona (United States); N. C. Lindquist, H. Im, Univ. of Minnesota (United States); A. Kobayakov, Corning Inc. (United States); J. V. Moloney, College of Optical Sciences, The Univ. of Arizona (United States)

DIGITAL RIGHTS MANAGEMENT, CODING

7505 0O	A rate 7/8 run-length and level modulation code for multilevel read-only optical disc [7505-23] H. Liu, Tsinghua Univ. (China) and Yanshan Univ. (China); J. Pei, X. Liu, L. Pan, Tsinghua Univ. (China)
---------	--

HOLOGRAPHIC RECORDING I

7505 0Q	High density recording using monocular architecture for 500GB consumer system [7505-25] K. Shimada, T. Ishii, T. Ide, Hitachi, Ltd. (Japan); S. Hughes, A. Hoskins, K. Curtis, InPhase Technologies, Inc. (United States)
---------	---

MEDIA AND COMPONENTS II

- 7505 13 **Development of deformable mirror for spherical aberration compensation** [7505-38]
S. Aoki, M. Yamada, T. Yamagami, Sony Corp. (Japan)
- 7505 14 **Study on the scanning system for deep focused beam by Axicon** [7505-39]
S. Hong, J. Yeo, Seoul National Univ. (Korea, Republic of); T. D. Milster, College of Optical Sciences, The Univ. of Arizona (United States); J. Kim, Seoul National Univ. (Korea, Republic of)
- 7505 16 **Photopolymerizable glass with high refractive index species: overview of emerging implementations** [7505-41]
M. L. Calvo, O. Martínez-Matos, J. A. Rodrigo, T. Alieva, M. P. Hernández-Garay, Univ. Complutense de Madrid (Spain); E. A. Martí, Benemérita Univ. Autónoma de Puebla (Mexico); P. Cheben, National Research Council Canada (Canada)

POST-DEADLINE SESSION

- 7505 18 **The optical constants of thin films calculated from reflectance and transmittance measurements** [7505-47]
D. Chiang, National Applied Research Labs. (Taiwan); C. H. Chu, H.-P. Chiang, National Taiwan Ocean Univ. (Taiwan); D. P. Tsai, National Applied Research Labs. (Taiwan) and National Taiwan Univ. (Taiwan)
- 7505 1A **Estimation of readout signal fluctuation in multi-layer index modulation** [7505-49]
K. Saito, Sony Corp. (Japan)

POSTER SESSION

- 7505 1F **Investigation on mechanism of multiple holographic recordings in photopolymers** [7505-44]
Q. Zhai, S. Tao, T. Zhang, D. Wang, Beijing Univ. of Technology (China)

Author Index

Program Committee

General Chairs

Kevin R. Curtis, Inphase Technologies (United States)
Luping P. Shi, A*STAR - Data Storage Institute (Singapore)

Program Chairs

In-Ho Choi, LG Electronics, Inc. (Korea, Republic of)
Robert McLeod, University of Colorado (United States)

Committee Members

Sumio Ashida, Toshiba Corporation (Japan)
Vjayakumar Bhagavatula, Carnegie Mellon University (United States)
Lambertus Hesselink, Stanford University (United States)
Tzuan-Ren Jeng, Industrial Technology Research Institute (Taiwan)
Rie Kojima, Panasonic Corporation (Japan)
Kyung-Geun Lee, Samsung Electronics Company Ltd.
(Korea, Republic of)
Masud Mansuripur, College of Optical Sciences, University of Arizona
(United States)
Hiroyuki Minemura, Hitachi, Ltd. (Japan)
Susanna Orlic, Technical University of Berlin (Germany)
Longfa Pan, Tsinghua University (China)
Kenji Tanaka, Sony Corporation (Japan)
Paul J. Wehrenberg, Apple Computer, Inc. (United States)
Hisayuki Yamatsu, Sony Corporation (Japan)

Conference Chairs

Kevin R. Curtis, InPhase Technologies Inc. (United States)
Luping P. Shi, A*STAR - Data Storage Institute (Singapore)

Session Chairs

Microholographic
Lambertus Hesselink, Stanford University (United States)
Hisayuki Yamatsu, Sony Corporation (Japan)

Spintronics

Masud Mansuripur, College of Optical Sciences, The University of Arizona (United States)

Near Field

Kimihiro Saito, Sony Corporation (Japan)

Tim Rausch, Seagate Technology LLC (United States)

High Density, Super-Resolution, Nano-Photonics

Robert McLeod, University of Colorado (United States)

Kenji Tanaka, Sony Corporation (Japan)

Digital Rights Management, Coding

Seiji Kobayashi, Sony Corporation (Japan)

Paul J. Wehrenberg, Apple Computer, Inc. (United States)

Holographic Recording I

Ryuichi Katayama, NEC Corporation (Japan)

Susanna Orlic, Technical University of Berlin (Germany)

Media and Components

Tom D. Milster, College of Optical Sciences, The University of Arizona (United States)

Holographic Recording II

Kevin R. Curtis, InPhase Technologies Inc. (United States)

Din Ping Tsai, National Taiwan University (Taiwan)

Media and Components II

Tuviah E. Schlesinger, Carnegie Mellon University (United States)

Advisory Committee

Committee Chairs

Tim Rausch, Seagate Research LLC (United States)
Kimihiro Saito, Sony Corporation (Japan)

Committee Members

Bernard Bell, Optical Wizards (United States)
Chong Tow Chong, A*STAR - Data Storage Institute (Singapore)
Der-Ray Huang, Industrial Technology Research Institute (Taiwan)
Ryuichi Katayama, NEC Corporation (Japan)
Joocho Kim, Samsung Electronics Company Ltd. (Japan)
Seiji Kobayashi, Sony Corporation (Japan)
Takeshi Maeda, Hitachi, Ltd. (Japan)
Tom D. Milster, College of Optical Sciences, University of Arizona
(United States)
Naoyasu Miyagawa, Panasonic Corporation (Japan)
Michael O'Neill, Cellular Biogengineering, Inc. (United States)
Young-Pil Park, Yonsei University (Korea, Republic of)
Barry Schechtman, Information Storage Industry Consortium
(United States)
Tuviah E. Schlesinger, Carnegie Mellon University (United States)
Takeshi Shimano, Hitachi Maxell Ltd. (Japan)
Yun Sup Shin, LG Electronics, Inc. (Korea, Republic of)
Din Ping Tsai, National Taiwan University (Taiwan)