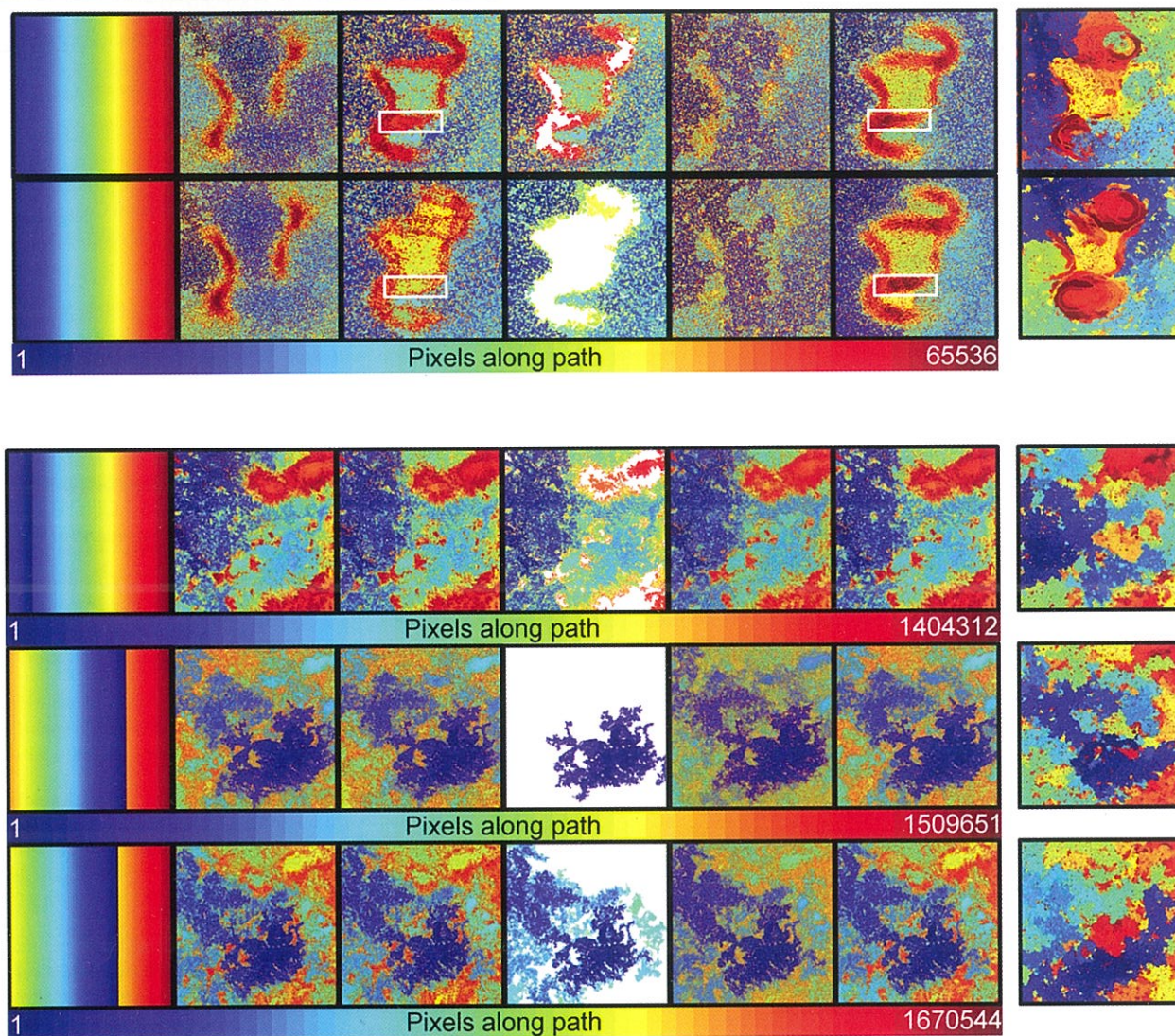


Applied Optics



Early Posting of OSA Journal Articles

OSA now publishes accepted articles for JOSA A, JOSA B, *Optics Letters*, and *Applied Optics* to an Early Posting page as soon as they have been cleared for production. Early Posting articles are presented in their manuscript format as supplied by the author, and they are removed from the page once the final version has been published in an issue.

The articles are grouped according to month of acceptance and the following information is displayed: article title, listing of authors, dates manuscript received and accepted, link to full-text PDF, and author-selected OCIS codes.

Early Posting articles are available at the following URLs:

JOSA A	josaa.osa.org/upcoming.cfm
JOSA B	josab.osa.org/upcoming.cfm
<i>Applied Optics</i>	ao.osa.org/upcoming.cfm
<i>Optics Letters</i>	ol.osa.org/upcoming.cfm

Individuals must contact OSA (copyright@osa.org) for permission to post an Early Posting article, or any published OSA article, on a personal or institution's website. The final published article is the version of record.

Authors who make Early Posting PDFs available on a website are instructed to replace the Early Posting PDF with a link to the OSA abstract page of their final published article.

See our FAQ at <http://www.opticsinfobase.org/earlyposting/faq.cfm>.

Applied Optics

Volume 50
Number 19
1 July 2011

www.osa.org

Information Pages

Feature Calendar	vii
Information for Contributors	xiii

Cover

Interferometric phase observations are ambiguous, modulo 2π , and algorithms that follow specific paths are used to "unwrap" the data, resolving the ambiguity. The cover shows the results of six different path algorithms plus a benchmark (horizontal axis) applied to five different data sets (vertical axis). Blue represents beginning, red represents end. For details see the paper by Osmanoglu *et al.*, pp. 3205–3220.

OPTICAL TECHNOLOGY

Coherence and Statistical Optics

Validity of the thin mask approximation in extreme ultraviolet mask roughness simulations

Patrick P. Naulleau and
Simi A. George

3346

Diffraction and Gratings

Design of a high-efficiency seven-port beam splitter using a dual duty cycle grating structure

Fung Jacky Wen and Po Sheun Chung

3187

Sensitivity enhancement of grating interferometer based two-dimensional sensor arrays using two-wavelength readout

Onur Ferhanoglu and Hakan Urey

3289

Fiber Optics and Optical Communications

Highly sensitive fiber loop ringdown strain sensor using photonic crystal fiber interferometer

Wenjun Zhou, Wei Chang Wong,
Chi Chiu Chan, Li-Yang Shao, and
Xinyong Dong

3087

Geometric Optics

Optical distortion evaluation of an aerodynamically heated window using the interfacial fluid thickness concept

Haosu Xiao, Zhile Wang, and
Zhigang Fan

3135

Evaluation and optimization of the optical performance of low-concentrating dielectric compound parabolic concentrator using ray-tracing methods

Nabin Sarmah, Bryce S. Richards, and
Tapas K. Mallick

3303

Holography

Single-shot, dual-wavelength digital holography based on polarizing separation

D. G. Abdelsalam, Robert Magnusson,
and Daesuk Kim

3360

Image Processing

Iris segmentation using an edge detector based on fuzzy sets theory and cellular learning automata

Afshin Ghanizadeh,
Amir Atapour Abarghouei,
Saman Sinaie,
Puteh Saad, and
Siti Mariyam Shamsuddin

3191

Imaging Systems

Nonaxial Strehl ratio of wavefront coding systems with a cubic phase mask

Shouqian Chen, Zhigang Fan,
Hong Chang, and Zhigao Xu

3337

OSA[®]
The Optical Society

Early Posting of OSA Journal Articles

OSA now publishes accepted articles for JOSA A, JOSA B, *Optics Letters*, and *Applied Optics* to an Early Posting page as soon as they have been cleared for production. Early Posting articles are presented in their manuscript format as supplied by the author, and they are removed from the page once the final version has been published in an issue.

The articles are grouped according to month of acceptance and the following information is displayed: article title, listing of authors, dates manuscript received and accepted, link to full-text PDF, and author-selected OCIS codes.

Early Posting articles are available at the following URLs:

JOSA A	josaa.osa.org/upcoming.cfm
JOSA B	josab.osa.org/upcoming.cfm
<i>Applied Optics</i>	ao.osa.org/upcoming.cfm
<i>Optics Letters</i>	ol.osa.org/upcoming.cfm

Individuals must contact OSA (copyright@osa.org) for permission to post an Early Posting article, or any published OSA article, on a personal or institution's website. The final published article is the version of record.

Authors who make Early Posting PDFs available on a website are instructed to replace the Early Posting PDF with a link to the OSA abstract page of their final published article.

See our FAQ at <http://www.opticsinfobase.org/earlyposting/faq.cfm>.

Applied Optics

Volume 50
Number 19
1 July 2011

www.osa.org

Information Pages

Feature Calendar	vii
Information for Contributors	xiii

Cover

Interferometric phase observations are ambiguous, modulo 2π , and algorithms that follow specific paths are used to "unwrap" the data, resolving the ambiguity. The cover shows the results of six different path algorithms plus a benchmark (horizontal axis) applied to five different data sets (vertical axis). Blue represents beginning, red represents end. For details see the paper by Osmanoglu *et al.*, pp. 3205–3220.

OPTICAL TECHNOLOGY

Coherence and Statistical Optics

Validity of the thin mask approximation in extreme ultraviolet mask roughness simulations	Patrick P. Naulleau and Simi A. George	3346
---	--	------

Diffraction and Gratings

Design of a high-efficiency seven-port beam splitter using a dual duty cycle grating structure	Fung Jacky Wen and Po Sheun Chung	3187
--	-----------------------------------	------

Sensitivity enhancement of grating interferometer based two-dimensional sensor arrays using two-wavelength readout

Onur Ferhanoglu and Hakan Urey	3289
--------------------------------	------

Fiber Optics and Optical Communications

Highly sensitive fiber loop ringdown strain sensor using photonic crystal fiber interferometer	Wenjun Zhou, Wei Chang Wong, Chi Chiu Chan, Li-Yang Shao, and Xinyong Dong	3087
--	--	------

Geometric Optics

Optical distortion evaluation of an aerodynamically heated window using the interfacial fluid thickness concept	Haosu Xiao, Zhile Wang, and Zhigang Fan	3135
---	---	------

Evaluation and optimization of the optical performance of low-concentrating dielectric compound parabolic concentrator using ray-tracing methods

Nabin Sarmah, Bryce S. Richards, and Tapas K. Mallick	3303
---	------

Holography

Single-shot, dual-wavelength digital holography based on polarizing separation	D. G. Abdelsalam, Robert Magnusson, and Daesuk Kim	3360
--	--	------

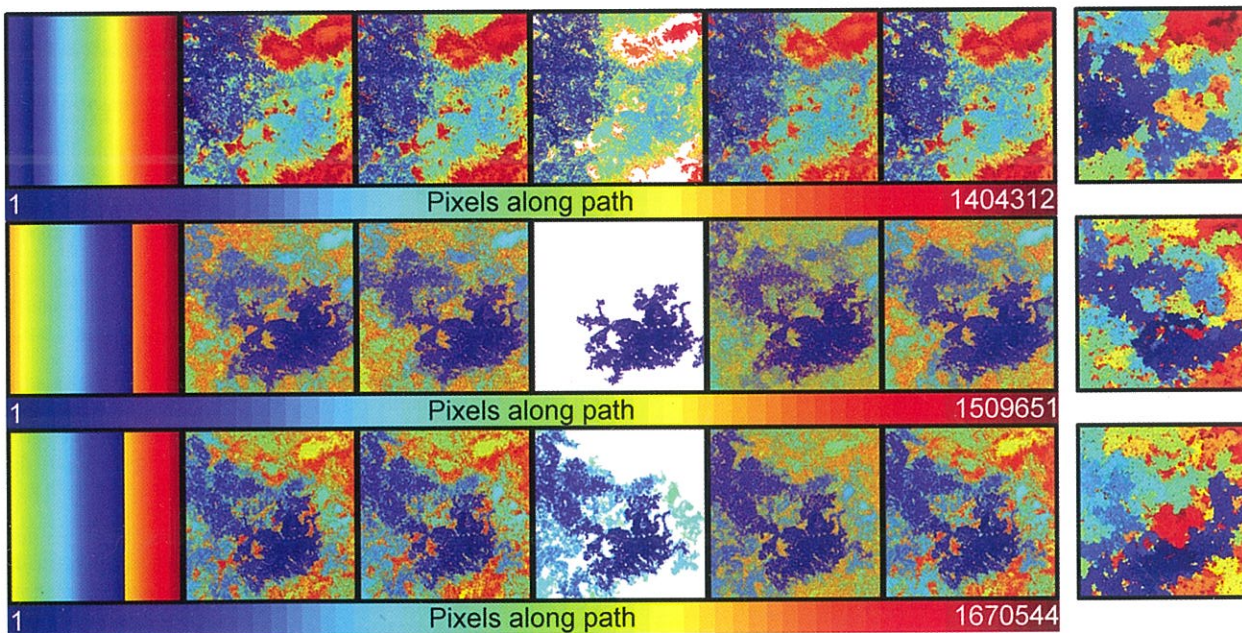
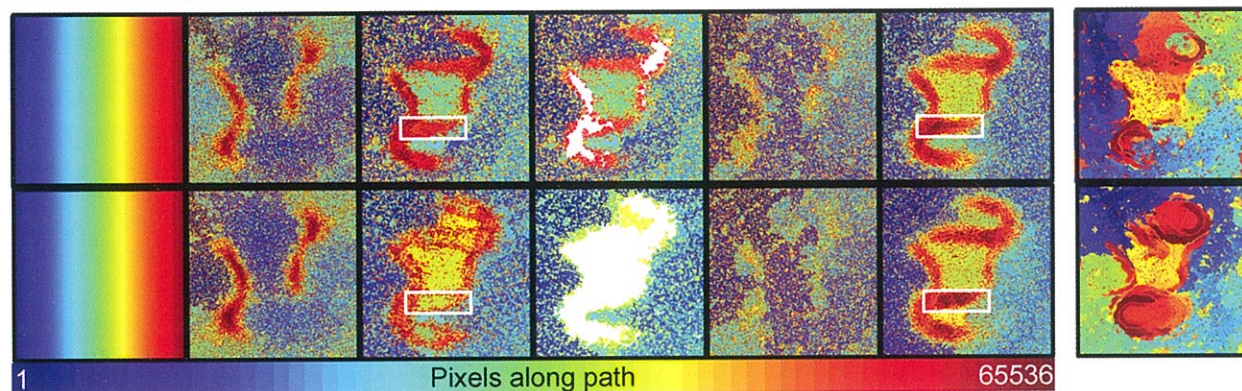
Image Processing

Iris segmentation using an edge detector based on fuzzy sets theory and cellular learning automata	Afshin Ghanizadeh, Amir Atapour Abarghouei, Saman Sinaie, Puteh Saad, and Siti Mariyam Shamsuddin	3191
--	---	------

Imaging Systems

Nonaxial Strehl ratio of wavefront coding systems with a cubic phase mask	Shouqian Chen, Zhigang Fan, Hong Chang, and Zhigao Xu	3337
---	---	------

Applied Optics



Applied Optics

Volume 50
Number 19
1 July 2011

www.osa.org

Information Pages

Feature Calendar vii
Information for Contributors xiii

Cover

Interferometric phase observations are ambiguous, modulo 2π , and algorithms that follow specific paths are used to "unwrap" the data, resolving the ambiguity. The cover shows the results of six different path algorithms plus a benchmark (horizontal axis) applied to five different data sets (vertical axis). Blue represents beginning, red represents end. For details see the paper by Osmanoglu *et al.*, pp. 3205–3220.

OPTICAL TECHNOLOGY

Coherence and Statistical Optics

Validity of the thin mask approximation in extreme ultraviolet mask roughness simulations Patrick P. Naulleau and Simi A. George 3346

Diffraction and Gratings

Design of a high-efficiency seven-port beam splitter using a dual duty cycle grating structure Fung Jacky Wen and Po Sheun Chung 3187

Sensitivity enhancement of grating interferometer based two-dimensional sensor arrays using two-wavelength readout

Onur Ferhanoglu and Hakan Urey 3289

Fiber Optics and Optical Communications

Highly sensitive fiber loop ringdown strain sensor using photonic crystal fiber interferometer Wenjun Zhou, Wei Chang Wong, Chi Chiu Chan, Li-Yang Shao, and Xinyong Dong 3087

Geometric Optics

Optical distortion evaluation of an aerodynamically heated window using the interfacial fluid thickness concept Haosu Xiao, Zhile Wang, and Zhigang Fan 3135

Evaluation and optimization of the optical performance of low-concentrating dielectric compound parabolic concentrator using ray-tracing methods

Nabin Sarmah, Bryce S. Richards, and Tapas K. Mallick 3303

Holography

Single-shot, dual-wavelength digital holography based on polarizing separation D. G. Abdelsalam, Robert Magnusson, and Daesuk Kim 3360

Image Processing

Iris segmentation using an edge detector based on fuzzy sets theory and cellular learning automata Afshin Ghanizadeh, Amir Atapour Abarghouei, Saman Sinaie, Puteh Saad, and Siti Mariyam Shamsuddin 3191

Imaging Systems

Nonaxial Strehl ratio of wavefront coding systems with a cubic phase mask Shouqian Chen, Zhigang Fan, Hong Chang, and Zhigao Xu 3337

Instrumentation, Measurement, and Metrology

- All-fiber magneto-optic Sagnac interferometer
Feng Wen, Bao-jian Wu, and Te Luo 3123
- Terahertz reflectivities of metal-coated mirrors
Mira Naftaly and Richard Dudley 3201
- Design of the double-telecentric high-aperture diffractive-refractive objectives
Grigoriy I. Greisukh, Evgeniy G. Ezhov, Il'ya A. Levin, and Sergei A. Stepanov 3254
- Interferometric investigation and simulation of refractive index in glass matrixes containing nanoparticles of varying sizes
Michael Gerard Feeney, Rabia Ince, Mehmet Hikmet Yukselici, and Cagdas Allahverdi 3259

Lasers and Laser Optics

- Active phase locking of fiber amplifiers using sine-cosine single-frequency dithering technique
Yanxing Ma, Pu Zhou, Xiaolin Wang, Haotong Ma, Xiaojun Xu, Lei Si, Zejin Liu, and Yijun Zhao 3330

Materials

- Tunable solid-body elastomer lenses with electromagnetic actuation
Peter Liebetraut, Sebastian Petsch, Wolfgang Mönch, and Hans Zappe 3268
- Spectrally selective reflector surfaces for heat reduction in concentrator solar cells: modeling and applications of $\text{TiO}_2\text{:Nb}$ -based thin films
Christopher M. Maghanga, Gunnar A. Niklasson, Claes G. Granqvist, and Mghendi Mwamburi 3296

Optical Design and Fabrication

- Improving fast aspheric convex surface tests with dynamic null screens using LCDs
Manuel Campos-García, Víctor Iván Moreno-Oliva, Rufino Díaz-Urbe, Fermín Granados-Agustín, and Agustín Santiago-Alvarado 3101
- Hybrid optical (freeform) components—functionalization of nonplanar optical surfaces by direct picosecond laser ablation
Roman Kleindienst, Ronald Kampmann, Sebastian Stoebenau, and Stefan Sinzinger 3221
- Research on error control and compensation in magnetorheological finishing
Yifan Dai, Hao Hu, Xiaoqiang Peng, Jianmin Wang, and Feng Shi 3321
- Construction method of axially asymmetric lenses
Akira Yabe 3369

Optical Devices

- Simplified design of thin-film polarizing beam splitter using embedded symmetric trilayer stack
R. M. A. Azzam 3316

Thin Films

Optical and tribomechanical stability of optically variable interference security devices prepared by dual ion beam sputtering

Eda Çetinörgü-Goldenberg, Bill Baloukas, Oleg Zabeida, Jolanta Klemberg-Sapieha, and Ludvik Martinu

3351

INFORMATION PROCESSING

Holography

Effective reduction of the novel look-up table memory size based on a relationship between the pixel pitch and reconstruction distance of a computer-generated hologram

Seung-Cheol Kim, Jae-Ho Kim, and Eun-Soo Kim

3375

Image Processing

Automated localization of retinal features

Sribalamurugan Sekhar, Fathi E. Abd El-Samie, Pan Yu, Waleed Al-Nuaimy, and Asoke K. Nandi

3064

On the importance of path for phase unwrapping in synthetic aperture radar interferometry

Batuhan Osmanoglu, Timothy H. Dixon, Shimon Wdowinski, and Enrique Cabral-Cano

3205

Measurement of shaft diameters by machine vision

Guang Wei and Qingchang Tan

3246

Three-dimensional modeling using x-ray shape-from-silhouette

Emanuele Simioni, Filippo Ratti, Irene Calliari, and Luca Poletto

3282

Imaging Systems

Estimating optical absorption, scattering, and Grueneisen distributions with multiple-illumination photoacoustic tomography

Peng Shao, Ben Cox, and Roger J. Zemp

3145

Instrumentation, Measurement, and Metrology

Application of the radial basis function interpolation to phase extraction from a single electronic speckle pattern interferometric fringe

Gao Wang, Yang Jun Li, and Han Chang Zhou

3110

LASERS, PHOTONICS, AND ENVIRONMENTAL OPTICS

Atmospheric and Oceanic Optics

An inherent-optical-property-centered approach to correct the angular effects in water-leaving radiance

Zhong Ping Lee, Keping Du, Kenneth J. Voss, Giuseppe Zibordi, Bertrand Lubac, Robert Arnone, and Alan Weidemann

3155

Neural network approach to retrieve the inherent optical properties of the ocean from observations of MODIS

Ioannis Ioannou, Alexander Gilerson, Barry Gross, Fred Moshary, and Samir Ahmed

3168

Officers of the Society

J. CHRISTOPHER DAINTY,
President
National University of Ireland,
Galway

TONY F. HEINZ,
President-Elect
Columbia University

DONNA T. STRICKLAND,
Vice President
University of Waterloo

JAMES C. WYANT,
Past President
University of Arizona

STEPHEN D. FANTONE,
Treasurer
Optikos Corporation

ELIZABETH ROGAN,
CEO

OSA Staff

Christopher Videll
Managing Editor
Joseph Richardson
Feature Proposals Manager

Antoinette P. Wrighton
Director of Editorial Services

M. Scott Dineen
Deputy Senior Director,
Publications

Kelly Cohen
Manuscripts Director
Daniel Dawes
Production Editor
Stu Griffith
Publications Senior Production
Manager

Carlos X. Izurieta
Production Assistant

Peer Review

Carmelita Washington
Applied Optics Coordinator
Keith Jackson
Journal Assistant

Rights and Permissions

Susannah Lehman
Publications Research and
Fulfillment Coordinator

Elizabeth Nolan
Chief Publishing Officer
Alan N. Tourtlotte
Director, Institutional Sales and
Fulfillment

Diffraction and Gratings

Generalized Bessel beams in modified axially
symmetric graded index structures

Ashraf Fathallah and
Mohamed Shalaby

3128

Fiber Optics and Optical Communications

Large-mode-area leaky optical fiber fabricated
by MCVD

Bernard Dussardier, Vipul Rastogi,
Ajeet Kumar, and Gérard Monnom

3118

Instrumentation, Measurement, and Metrology

Absolute refractometry of dry gas to ± 3 parts
in 10^9

Patrick Egan and Jack A. Stone

3076

Lasers and Laser Optics

Selection of dark modes in resonators
with conical reflectors

Yurij N. Parkhomenko,
Boris Spektor, and Joseph Shamir

3093

Ultrafast Yb:Y₂SiO₅ laser investigation based
on a carbon nanotube absorber

Chengcheng Liu, Yonggang Wang,
Jie Liu, Lihe Zheng, Liangbi Su, and
Jun Xu

3229

Effect of focusing conditions on laser-induced
shock waves at titanium-water interface

Arpita Nath and Alike Khare

3275

Measurement of membrane rigidity on trapped
unilamellar phospholipid vesicles by using
differential confocal microscopy

Tze-Hsuan Liu, Jian-Long Xiao,
Chau-Hwang Lee, and
Jiunn-Yuan Lin

3311

Nonlinear Optics

Measurement of the two-photon absorption
cross section by means of femtosecond
thermal lensing

Luis Rodriguez and Matteo Chiesa

3240

Optical Devices

Emission characteristics of photonic crystal
light-emitting diodes

Ali Z. Khokhar, Keith Parsons,
Graham Hubbard, Ian M. Watson,
Faiz Rahman, Douglas S. Macintyre,
Chang Xiong, David Massoubre,
Zheng Gong, Erdan Gu,
Nigel P. Johnson,
Richard M. De La Rue,
Martin D. Dawson, Steve J. Abbott,
Martin D. B. Charlton, and
Martin Tillin

3233

Copyright © 2011, Optical Society of America. Copying of material in this journal is subject to payment of copying fees. The code that appears on the first page of each article in this journal gives the per-article copying fee for each copy of the article made beyond the free copying permitted under Sections 107 and 108 of the U.S. Copyright Law. This fee should be paid through the Copyright Clearance Center, Inc., 222 Rosewood Drive, Danvers, Mass. 01923. The same fees and procedures apply to articles published in previous volumes of this journal. Permission is granted to quote excerpts from articles in this journal in scientific works with the customary acknowledgment of the source, including the author's name and the journal name, volume, page, and year. Reproduction of figures and tables is likewise permitted in other articles and books, provided that the same information is printed with them, permission of one of the original authors is obtained, and notification is given to the Optical Society of America. Reproduction or systematic or multiple reproduction of any material (including electronic publication or reproduction) in this journal (including abstracts) is permitted only under license from the Optical Society of America; in addition, the Optical Society may require that permission also be obtained from one of the authors. Address inquiries and notices to the Director of Publications, Optical Society of America, 2010 Massachusetts Avenue, NW, Washington, DC 20036-1023. In the case of articles whose authors are employees of the United States Government or its contractors or grantees, the Optical Society of America recognizes the right of the United States Government to retain a nonexclusive, royalty-free license to use the author's copyrighted article for United States Government purposes. *Applied Optics* (ISSN 0003-6935) is published three times a month by the Optical Society of America, 2010 Massachusetts Avenue, NW, Washington, DC 20036-1023. CODEN: APOPAI. USPS Publication No. 879520. 2011 subscription rates (domestic) per year (print plus online): \$265.00 for OSA members; nonmember and library subscriptions: \$4842.00. Periodicals postage paid at Washington, DC 20036-1023. **Subscriptions, missing copies, and change of address:** Optical Society of America, Fulfillment Services, 2010 Massachusetts Avenue, NW, Washington, DC 20036-1023; (202) 416-1907; FAX (202) 416-6130. Back number, single-issue, and foreign rates available on request. *Applied Optics*® is a registered trademark of OSA.