

OSA'S 92ND ANNUAL MEETING

FRONTIERS IN OPTICS 2008 LASER SCIENCE XXIV

APS/DLS 24TH ANNUAL MEETING

FALL 2008

OSA OPTICS & PHOTONICS CONGRESS

Plasmonics and Metamaterials
(META)

Optical Fabrication and Testing
(OF&T) Topical Meetings

Conference Program

ROCHESTER RIVERSIDE CONVENTION CENTER/
HYATT REGENCY ROCHESTER
ROCHESTER, NEW YORK, USA

TECHNICAL CONFERENCE: October 19–24, 2008

EXHIBIT: October 21–22, 2008

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CONFERENCE CHAIRS

Frontiers in Optics 2008

Karl Koch, *Corning Inc., USA*

Lukas Novotny, *Univ. of Rochester, USA*

Laser Science XXIV

John Kitching, *NIST, USA*

Lewis Rothberg, *Univ. of Rochester, USA*

Plasmonics and Metamaterials (META)

Mark Stockman, *Georgia State Univ., USA*

Martin Wegener, *Univ. Karlsruhe, Germany*

Optical Fabrication and Testing (OF&T)

Ulf Griesmann, *NIST, USA*

Stephen Jacobs, *Univ. of Rochester, USA*

Jannick Rolland, *Univ. of Central Florida, USA*

Highland A

Joint

JThB • Optics for Energy IV: Water in Energy Production—Continued

JThB2 • 11:00 a.m.

Tomographic Detection of Water in Fuel Cell Systems, *Laura Waller, Jungik Kim, Yang Shao-Horn, George Barbastathis*, MIT, USA. We present method and results for *in situ* characterization of water diffusion and other degradation mechanisms in fuel cell membranes using interferometric phase tomography.

JThB3 • 11:15 a.m. **Invited**

Optical Properties of Microalgae for Enhanced Biofuels Production, *Anastasios Melis*, Univ. of California at Berkeley, USA. Research seeks to alter the optical properties of microalgae in order to improve solar-to-biofuels energy conversion efficiency in mass culture under bright sunlight conditions. This requires a genetic tailoring of the chlorophyll arrays of photosynthesis.

Highland B

FThG • Optical Models of the Eye II—Continued

FThG2 • 11:00 a.m.

Chromatic Wide-Field Eye Models with a GRIN Lens, *Alexander V. Goncharov, Chris Dainty*, Natl. Univ. of Ireland Galway, Ireland. We propose a chromatic eye model featuring a gradient index (GRIN) lens that shows intrinsic chromaticity. The model is optimized to be consistent with the ocular refractive error known from extensive experimental data.

FThG3 • 11:15 a.m. **Invited**

Eye Models for the Design and Performance Assessment of New-Technology Intraocular Lenses, *Patricia Piers¹, Henk Weeber¹, Pablo Artal², 'AMO Groningen BV, Netherlands, 'Ctr. de Investigacion en Optica y Nanofisica, Univ. de Murcia, Spain*. This paper discusses the development of computer-based eye models derived from measurements of the physical characteristics of pseudophakic eyes. These models are capable of predicting the clinically measured quality of new-technology intraocular lenses.

Highland C

FThH • Harmonic Generation and Phase Matching—Continued

FThH2 • 11:00 a.m.

Modeling Laser-Pulse Evolution during Production of High-Harmonics in a Semi-Infinite Gas Cell, *Matthew Turner, Nicole Brimhall, Michael Ware, Justin Peatross*, Brigham Young Univ., USA. We numerically simulate the propagation of high-intensity laser pulses in helium during high-harmonic generation. Results explain an experimentally observed double focus and illuminate the roles of geometric and nonlinear effects in high-harmonic phase matching.

FThH3 • 11:15 a.m. **Invited**

Mapping of Attosecond Ionization Dynamics by Recollision-Free Higher-Order Harmonic Generation, *A. J. Verhoeve¹, A. Mitrofanov², E. E. Serebryannik², D. Kartashov¹, A. M. Zheltikov¹, Andrius Baltuska¹*, 'Vienna Univ. of Technology, Austria, 'Physics Dept., Intl. Laser Ctr., M.V. Lomonosov Moscow State Univ., Russian Federation. We demonstrate an all-optical technique for mapping sub-cycle tunnel ionization in gas based on a cross-correlation measurement of Brunel-type harmonics detected in the direction of a weak probe pulse to separate them from recollision-driven harmonics.

Highland D

FI O

SThC: Best of Topicals II—Continued

SThC2 • 11:00 a.m.

Kilohertz-Rate, Collision-Free, Gas-Phase Thermometry with Femtosecond CARS, *James R. Gord¹, Daniel R. Richardson², Robert P. Lucht², Suresh Roy¹*, 'AFRL, USA, 'Dept. of Mechanical Engineering, Purdue Univ., USA. Fs-laser-based time-resolved coherent anti-Stokes Raman scattering (CARS) spectroscopy of nitrogen is used to measure temperature at 1 kHz. The first few ps of the time-resolved CARS signal are free of collisions for pressures up to 20 bar. (Laser Applications to Chemical, Security and Environmental Analysis, 2008)

Highland E

FThI • Slow Light and Signal Processing—Continued

FThI3 • 11:00 a.m.

Observations of Single Pulse Slow Light in a Persistent Spectral Hole-Burning Crystal, *J. S. Han, Byoung S. Ham*, Inha Univ., Republic of Korea. We investigate a self-induced ultraslow group delay as long as 40 μ s in a persistent spectral hole-burning crystal. The ultraslow light has potential application to on-demand all-optical information processing such as on-demand buffer memory.

FThI4 • 11:15 a.m.

Controllable Delay of Light Pulses in Erbium-Doped Optical Fibers with Saturable Absorption, *Serguei Stepanov, Elisée Hernández Hernández, CICESE, Mexico*. We report a controllable delay of the probe light pulse sequence by a master, saturating pulses of significantly different wavelength (at 1526 and 1568 nm respectively) observed in erbium-doped single-mode fiber with saturable absorption.

Highland F

FThJ • Light Localization—Continued

FThJ2 • 11:15 a.m.

Observation of a Localization Transition in Quasi-Periodic Photonic Lattices, *Yoav Lahini¹, Rami Pugatch¹, Francesca Pozzi², Marc Sorel², Roberto Morandotti², Nir Davidson¹, Yaron Silberberg¹*, 'Weizmann Inst. of Science, Israel, 'Univ. of Glasgow, UK, 'Inst. Natl. de la Recherche Scientifique, Canada. We observe the signature of a localization phase transition in one-dimensional quasi-periodic photonic lattices. In addition we compare experimentally the effect of nonlinearity before and after the transition.

FThK • Photonic

FThK3 • 11:00 a.m. Cross Talk in Rectal Cavities, *Stefan F. Prell*, Rochester Inst. a square lattice between two composed of holes in silicon dB and -30 dB,

FThK4 • 11:15 Modeling of Thermal Silicon-on-Insulator Resonators, *Amir Soltani, Qing Li, Si Adibi*, Georgia Tech and external heat insulator traveling modeled using finite considering the the silicon slab. Thermal resonators are further optimized and active-tuning applied