Advance Program

9th International Conference on Optics-photonics Design & Fabrication

"ODF '14, Itabashi, Tokyo"
February 12-14, 2014

Itabashi Culture Center, Tokyo, Japan

Organized by
The Optics Design Group of Optical Society of Japan, JSAP
Itabashi City
Sponsored by
Optical Society of Japan (OSJ), JSAP
In cooperation with

ICO (International Commission for Optics)・COS (Chinese Optical Society)・EOS (European Optical Society)・SPIE (The International Society for Optical Engineering)・Taiwan Photonics Society・OSA (Optical Society of America)・OSK (Optical Society of Korea)・OPSS (Optics and Photonics Society of Singapore)・PIDA (Photonics Industry & Technology Development Association)・Taiwan Optics/Optronics Manufacturers' Association・ROS (Rozhdestvensky Optical Society・The 179th Committee on Photonics Information Systems, Japan Society for the Promotion of Science (JSPS)・Applied Optics Meeting in Kansai・The Astronomical Society of Japan・CIPA (Camera and Imaging Products Association)・The Color Science Association of Japan・IEICE (The Institute of Electronics, Information and Communication Engineers)・IEIJ (The Illuminating Engineering Institute of Japan)・IIEEJ (The Institute of Image Electronics Engineers of Japan)・Itabashi Industrial Promotion Public Corporation・JIEP (Japan Institute of Electronics Packaging)・JOEM (Japan Optomechatronics Association)・JOMA (Japan Optical Measuring Instruments Manufacturer's Association)・JPS (The Physical Society of Japan)・JSMBE (Japanese Society for Medical and Biological Engineering)・JSPE (The Japan Society for Precision Engineering)・LSJ (The Laser Society of Japan)・OITDA (Optoelectronic Industry and Technology Development Association)・The Spectroscopical Society of Japan・SPIJ (The Society of Photography and Imaging of Japan)

Post-Deadline Paper Submission by December 13, 2013

http://www.odf.jp/

TIME TABLE

Feb. 12 (Wed.)			Feb. 13 (Thu.)		
	Main Hall	**Conference room**		**Main Hall**	**Conference room**
8:00	*Registration Open (8:00-17:00)*				
8:30			8:30	*Registration Open (8:30-17:00)*	
9:00	Opening Session		9:00	New Technologies (2)	
9:10	Plenary Session				
10:00					Poster Session (1)
10:25	*Coffee Break*		10:35	*Coffee Break*	
10:40	Optical Design / Simulation (1)		10:55	New Technologies (3)	
12:00					
12:15	*Lunch*		12:05	*Lunch*	
13:25	Optical Design / Simulation (2)		13:05	Optical Components / Devices (1)	
14:30					Poster Session (2)
15:15	*Coffee Break*		14:30	*Coffee Break*	
15:40	Optical Design / Simulation (3)		14:50	Optical Components / Devices (2)	
16:30					
17:15	*Coffee Break*		16:25	*Coffee Break*	
17:30	New Technologies (1)		16:40	Optical Components / Devices (3)	
18:25	*Omotenashi Attraction*				
18:55					
19:15		19:15 Welcome Party			
21:00		21:00			

Feb. 14 (Fri.)	
	Main Hall
8:30	*Registration Open (8:30-12:00)*
9:00	Optical Systems (1)
10:35	*Coffee Break*
10:50	Optical Systems (2)
12:15	*Lunch*
13:15	Optical Systems (3)
14:50	*Coffee Break*
15:15	Special Session : Active Optical Components and Systems
17:20	*Break*
17:30 17:50	Closing Session

INTRODUCTION

The 9th International Conference on Optics-photonics Design and Fabrication, “ODF'14, Itabashi, Tokyo”, will be held on **February, 12-14th**, 2014 at Itabashi Culture Center, Tokyo, Japan. Optics-photonics design and fabrication continue to play a significantly important role in the 21st century, achieving harmony between technology and the environment and building bridges for real international cooperation worldwide. ODF'14 provides an international forum for original paper presentations and discussions of optics-photonics design and fabrication-related technological and scientific topics, including theory, design, fabrication, testing, applications and others.

Collaboration and Competition make progress.
Join us at ***ODF'14, Itabashi, Tokyo!***
http://www.odf.jp/

SCOPE OF THE CONFERENCE

ODF'14 is an international forum for the engineers and scientists in the field of Optics-photonics Design and Fabrication to exchange their ideas and achievements with the goal of future mutual progress. The conference covers the following major topical categories;

Category 1. Optical Design / Simulation

Lens Design, Illumination Simulation, Non-imaging Optics, Lens Design Theory, Fabrication and Testing, Simulation Software

Category 2. Optical Components / Devices

Diffractive Optics and Holography, Thin Films, Fiber Optics, Integrated Optoelectronics, Optical Waveguide, Active Optical Components, Optical MEMS, Illumination Optical Components, Polarization Optics, Photonic Crystals, Lasers and Laser Optics, Detectors

Category 3. Optical Systems

Illumination Optics, Information Optics, Optical Data Storage, Optical Lithography, Microscopy, Displays, Bio-medical Optics, Measurement and Sensing, Cameras

Category 4. New Technologies

Nonlinear Optics, Ultrafast Optics, Metamaterials, Plasmonics, Near-field Optics, Quantum Optics, Other Future Science and Technology Available to Optics Design and Fabrication

Special Session:

“Active Optical Components and Systems”

TECHNICAL PROGRAM

February 12, 2014 (Wednesday)

Opening Session (9:00-9:10)

Presider:

S. Yamaguchi (Konica Minolta / Japan)

Opening Remarks

K. Kuroda (Utsunomiya Univ. / Japan)
T. Sakamoto (Mayor of Itabashi City / Japan)

Plenary Session (9:10-10:25)

Presiders:

K. Kuroda(Utsunomiya Univ. / Japan)
P. Urbach(TU Delft / Netherlands)

12PL-01 (Invited)

(9:10) Nanoprecision ELID-grinding, Micro and UltraFabrication Technologies for Optics

H. Ohmori (RIKEN / Japan)

Optical fabrication needs nanoprecision surface processing with machining efficiency and high quality. Especially, the ELID-grinding provides superior surfaces on optical materials of hard and brittle properties together with profile generation from micro to large dimensions.

12PL-02 (Invited)

(9:35) Value of ISO-standardization in a global optics & photonics industry

W. Ulrich (Carl Zeiss AG / Germany)

In a global industry standards foster innovation and competitive advantage for business. Standards decrease costs caused by undesirable technical diversity, facilitate international trade by providing specifications between contracting parties, and assist countries to develop their emerging economies. For these reasons it is in strategic business's interest to get more directly involved in standardization process.

12PL-03 (Invited)

(10:00) From nothing to the best solution

A. Yabe (Consultant / Germany)

The best solutions can be achieved from nothing with the powerful optimization techniques such as the global optimization with escape function, the MTF optimization, the traveling asphere, and the tolerance sensitivity control function.

Coffee Break (10:25-10:40)

Optical Design / Simulation (1) (10:40-12:15)

Presiders:

I. Livshits (NRU ITMO / Russia)

H. Sato (Konica Minolta / Japan)

12S1-01 (Invited)

(10:40) Precision optics with complex shapes

G. Forbes (QED Technologies Inc. / USA)

Advanced production tools enable the more widespread adoption of complex optical surface shapes. Recent results and new capabilities are presented in the areas of shape specification, optical design, and the quantification of mid-spatial frequency structure.

12S1-02 (Invited)

(11:05) Theory of Orthogonal Aberrations and its Use in Lens Design

S. N. Bezdidko (JSC "Krasnogorsky zavod" / Russia)

The author introduces the orthogonal system of individual aberrations depending on the degree of field and pupil variables r ρ, φ. The orthogonal aberrations have a number of unique fundamental properties which makes it possible to build new effective approaches and techniques to the design of optical systems.

12S1-03

(11:30) Discrete optimization method applied to optical design

C. M. Tsai (Kun Shan Univ. / Taiwan), C. W. Li, and Y. C. Fang (National Kaohsiung First Univ. of Science and Technology / Taiwan)

A discrete zooms optimization based on the genetic algorithm which applies liquid elements and irregular lenses group moving to realize the best resolutionwithout any mechanism moving limit.

12S1-04

(11:45) Increasing useful magnification in ocular systems

R. N. Youngworth (Riyo LLC / USA), T. Yamanashi (Theta Optical LLC / USA), and E. Betensky (Consultant / Canada)

The magnifying power of ocular systems is limited by the system exit pupil and Lagrange Invariant. This work shows that useful magnification is increased by breaking the invariant. An example digital binocular system is provided.

12S1-05

(12:00) Development of EUV Lithographic exposure tools design in BIT

Y. Li, F. Liu, Q. Mei, Z. Cao, Y. Liu, and X.Liang (Beijing Institute of Technology / China)

We present grouping design method for EUVL objective in details to make initial design of 6-10 mirrors objective, and reverse design method to build the model for illumination systems to match a given projection objective.

Lunch (12:15-13:25)

Optical Design / Simulation (2) (13:25-15:15)

Presiders:

T. Yamanashi (Theta Optical LLC / USA)
G. Forbes (QED Technologies Inc. / USA)

12S1-06 (Invited)

(13:25) EF Cinema Lens Technology for 4K Digital Cinematography

T. Wakazono (Canon / Japan)

Shooting with 4K digital cinema system has become increasingly common in the field of cinema shooting. In this paper, we introduce the newest optical technologies underlying our products meeting 4K digital cinema system's requirements.

12S1-07 (Invited)

(13:50) Optical Design of Space Telescopes

J. M. Howard (Johns Hopkins Univ. / USA)

Modern astronomy is pushing space telescope design to have larger apertures and greater fields of view. Additional degrees of freedom in surface shapes will be needed to meet future demands for image quality.

12S1-08

(14:15) Reflective Schmidt Designs for Extended Object Detection in Space Astronomy - Active Optics Methods

G. R. Lemaitre, X. Wang and E. Hugot (Marseille Astrophysics Laboratoratory / France)

Fast reflective Schmidts allow accurate imaging of 3deg. diagonal sky fields over extended spectral ranges from far-uv to infrared. For space astronomy we present 50cm aperture designs, 3- and 4-reflection, as fast as f/2, for extended object detection. Active optics methods are presented to obtain accurately the free-form aspheric mirror.

12S1-09

(14:30) Design of High NA Immersion Catadioptric System with Extremely Large Field of View

M. Nakano (Canon / Japan), and J. Sasian (Univ. of Arizona / USA)

We present new immersion catadioptric systems having high NA and extremely large field of view. They can also achieve relatively small obscuration ratio and short total length.

12S1-10

(14:45) Optical Design of Low Glare Luminaire for Tunnel Light Based on White LEDs

M. S. Tsai, Y. C. Lo, and C. C. Sun (National Central Univ. / Taiwan)

In this paper, we apply a precise light source model for designing a low-glare luminaire for tunnel light, including uniformity 0.53, average illuminance 31 lx, and optical utilization factor 44 %.

12S1-11

(15:00) Light-Emitting Diodes with Patterned Contact: Modeling of Light Extraction

I. Khmyrova, Y. Murakami, N.Nakasato (Univ. of Aizu / Japan), J. Kholopova (IMT RAS / Russia), D. Kozlov (Samara State Aerospace Univ. / Russia), and S. Shapoval (IMT RAS / Russia)

Analytical and numerical models for straightforward computation of output optical power for the LEDs with patterned electrode are developed. The proposed approach is efficient for computing of extraction of light with spatially nonuniform intensity.

Coffee Break (15:15-15:40)

Optical Design / Simulation (3) (15:40-17:15)

Presiders:

T. Otaki (Nikon / Japan)

R. N. Youngworth (Riyo LLC / USA)

12S1-12 (Invited)

(15:40) Engineering design as a prelude to Optical design

A. Gupta (Google Inc. / USA)

Success of an optical design exercise is dependent upon the value it adds to the product. Hence, an optical engineer must consider the larger set of variables involved in the engineering design of the product.

12S1-13 (Invited)

(16:05) Design of panoramic stereo imaging with single optical system

J. Bai (Zhejiang Univ. / China)

A novel panoramic stereo imaging system with double panoramic annular lenses (PAL) is introduced. The novelty of this system is that the central blind zone of one PAL unit is partly used by the other as an image zone. The stereo field of view is 60~105deg x 360deg. The depth extracting resolution is about 500mm at 1line/cm. The F# of the system is about 3.

12S1-14

(16:30) SimPGM - A Commercial Simulation Tool for Intelligent Process Design of Precision Glass Moulding

F. Klocke, O. Dambon, Y. Wang, G. Liu, D. Hollstegge(Fraunhofer Institute for Production Technology / Germany), A. Y. Yi (Department of Industrial Engineering, Ohio State Univ. / USA), F. Wang (Fraunhofer Institute for Production Technology / Germany), and R. Schulz (Ceramic Forum / Japan)

Based on both ANSYS and ABAQUS, an integrated numerical simulation tool - SimPGM - was developed to provide scientific understanding of precision glass moulding process which can optimize mould- and process design for diverse industrial applications.

12S1-15

(16:45) Super Smooth Finishing of Optical Surfaces By Fluid Jet and Bonnet Polishing

A. Beaucamp, Y. Namba (Chubu Univ. / Japan), and P. Charlton, R. Freeman (Zeeko KK / Japan)

Fluid jet and bonnet polishing are processes deployable on a common 7-axis CNC machine. Using them in combination, it is possible to achieve 31nm P-V form accuracy and 0.3nm rms surface roughness on freeform optics.

12S1-16

(17:00) Moth eye structure on silicon substrate formed by single layer nanospheres

C. R. Lin, C. H. Chan, S. Z. Tseng, and S. H. Chen (National Central Univ. / Taiwan)

An anti-reflection nano-patterned silicon substrate has been demonstrated by using self-assembly the single layer nanosphere and dry etching process. The average reflectivity of the nano-patterned silicon substrate could be reduced to 0.79%.

Coffee Break (17:15-17:30)

New Technologies (1) (17:30-18:25)

Presiders:

K. Araki (Canon, Utsunomiya Univ. / Japan)

12S4-01 (Invited)

(17:30) Computational Imaging with Compound-eye Optics

J. Tanida (Osaka Univ. / Japan)

A variety of imaging modalities are achievable under the framework of computational imaging with compound-eye imaging systems. The captured multiple images are processed to retrieve desired information of the object with great flexibility

12S4-02

(17:55) Diagnosis of human bladder cancer cells at different stages using multispectral imaging microscopy

C. H. Hsu, C. P. Jen, C. T. Huang, Y. S. Chen (National Chung Cheng Univ. / Taiwan), C. T. Kuo(National Sun Yat-sen Univ. / Taiwan), and H. C. Wang (National Chung Cheng Univ. / Taiwan)

Bladder cancer presents a spectrum of different diatheses. In this study, we used multi-spectral imaging technology combined with phase contrast microscopy to analyze bladder cancer cells (BCCs) at various stages using a single-cell array chip.

12S4-03

(18:10) Optical Detection of Graphene in few-layers

Y. S. Wang, Y. H. Wang, G. H. Wu, Y. P. Hsieh and H. C. Wang (National Chung Cheng Univ. / Taiwan)

Using the discriminant for each location of the RGB pixel, then calculate the colors of the graphene layers; it can distinguish the different layers of the image thought multi-spectral imaging technology.

Omotenashi Attraction by Itabashi City (18:25-18:55)

Break (18:55-19:15)

Welcome Party (19:15-21:00) (Conference Room, 4th floor)

February 13, 2014 (Thursday)

New Technologies (2) (9:00-10:35)

Presiders:

H. Kikuta (Osaka Pref. Univ. / Japan)

13S4-04 (Invited)

(9:00) Nonlinear optical application of surface plasmons

K. Kajikawa (Tokyo Institute of Technology / Japan)

Surface plasmons in a metal-insulator-metal (MIM) structure show useful optical properties for photonics devices. I will talk about two nonlinear optical applications of MIM: optical second-harmonic generation and the all-optical bistable devices.

13S4-05 (Invited)

(9:25) Packaging Efficiency of Phosphor-converted White LED

C. C. Sun (National Central Univ. / Taiwan)

Abstract not available.

13S4-06

(9:50) Fabrication of Ultrathin Color Filters for Three Primary Colors Using Silicon Subwavelength Gratings

Y. Kanamori, T. Ozaki, and K. Hane (Tohoku Univ. / Japan)

We investigate reflection color filters for three primary colors using silicon two-dimensional triangular-lattice subwavelength gratings. All of the color filters have the same thickness of 100 nm, which enables simple fabrication of color filter arrays.

13S4-07

(10:05) Detuning Effect of Quadrupole Resonators in Electromagnetically Induced Transparency-like Metamaterials at Near-Infrared Wavelengths

R. Hokari, Y. Kanamori, and K. Hane (Tohoku Univ. / Japan)

Electromagnetically-induced-transparency-like effects were experimentally demonstrated and controlled by structurally-designed plasmonic metamaterials consisting of dipole and quadrupole resonators at near-infrared wavelengths. An effect of a resonant wavelength of the quadrupole resonator in the metamaterial was investigated.

13S4-08

(10:20) Numerical Study on Optical Metamaterials with High Quality Factor Composed of Asymmetric Double Bars

Y. Moritake, Y. Kanamori, and K. Hane (Tohoku Univ. / Japan)

We numerically calculated spectra of asymmetric double-bar-metamaterials in optical region and estimated Q-factors of Fano resonance when changing degree of asymmetry. We found the best asymmetry condition was nearly independent of kinds of composed materials.

Coffee Break (10:35-10:55)

Poster Session (1) (10:00-12:00)

13PSa-01

Stress Optical Path Difference Analysis of Off-Axis Lens Ray Trace Foot-Print at Cassegrain telescope correct lens assembly

M. Y. Hsu, S. T. Chang, and T. M. Huang (National Applied Research Laboratories / Taiwan)

Surrounding temperature difference on lens barrel will cause the mount press lens glass, and introduce stress Optical Path Difference (OPD). This study is applying Finite Element Method (FEM) and optical ray tracing; calculate off axis ray stress OPD. The optical lens stress distribution is calculated from finite element simulation, and the stress coordinate need to rotate to ray path direction.

13PSa-02

The Reflected-spot Method for the Radius of Curvature Measurement of Smooth Surface

Y. J. Chen, K. C. Huang, H. Y. Tsai, and Y. C. Liu (National Applied Research Laboratories / Taiwan)

This paper presents a non-contact reflected-spot method (RSM) to measure the radius of curvature (ROC) of smooth surface, and the method can be effectively applied to the object surface construction.

13PSa-03

Photoluminescence Characterization of Zn- and Cs-Vanadate Phosphors

T. Li, Z. Honda, T. Fukuda, J. Luo, and N. Kamata (Saitama Univ. / Japan)

We synthesized Zn3V2O8, CsVO3 and Cs3VO4 by sol-gel process and liquid state reaction and compared their luminescent properties. The Cs3VO4 showed quantum yield of 90% with the half-width of 120nm, and is promising for white LED applications.

13PSa-04

An Evaluation Modelling on the Multi-Shadow Effect of Object

C. C. Yang, Y. J. Chen, H. Y. Tsai, and K. C. Huang (National Applied Research Laboratories / Taiwan)

The paper presents a measurement system to identify the multi-shadow degree of object illuminated by multi LED light-source. The method can provide a good index to evaluate the multi-shadow effect for human eyes.

13PSa-05

Off-axial mirror telescope calculation method and design

Y. V. Bazhanov (Precision Systems and Instruments Corp. / Russia), and V. B. Vlahko (LG Technology Centre of Moscow / Russia)

Numerical evaluations, conducted in this paper, have shown, that the method, based on series expansion of exact ray-tracing equations, provides good results. We have used this method for optimization of off-axial optical reflective telescope systems.

13PSa-06

Aberration-free (stigmatic) spectral image formed by a holographic and ruled diffraction gratings

Y. V. Bazhanov (Precision Systems and Instruments Corp. / Russia)

A concave spherical ruled diffraction grating is shown to give a stigmatic image for the three wavelengths, however, unlike the holographic gratings, the wavelengths can be chosen in wide limits. A special stigmatic aspherical ruled grating is proposed.

13PSa-07

The research of electron energy distribution on transmission-mode InGaAs photocathode

M. Jin, B. Chang, J. Guo (Nanjing Univ. of Science and Technology / China), and H. Cheng (Science and Technology on Low-light-level Night Vision Laboratory / China)

The relationship of the electron energy distribution and the quantum efficiency is established. The shape of surface barrier is analyzed by calculating the electron energy distribution and fitting the quantum efficiency.

13PSa-08

Simulation model of light polarization films for LCD backlight design

D. D. Zhdanov (RAS, NRU ITMO / Russia), V. G. Sokolov, I. S. Potemin, A. G. Voloboy, V. A. Galaktionov (RAS / Russia), and N. Kirilov (Integra Inc. / Japan)

The article is devoted to elaboration of the computer model of scattering polarization film like DBEF, methods of measurements and reconstruction of the film polarization parameters and using the model to design LCD backlight systems.

13PSa-09

Optical Design of Active Automotive Headlight System

Y. C. Fang, H. F. Wang, and Y. C. Chen (National Kaohsiung First Univ. of Science and Technology / Taiwan)

This research, based on U.S.patent 8,277,049 B2, proposes a new method for automotive headlight design with digital micromirror device , which might replace mechanical adaptive front-lighting system and have significantly improve safety of road drive.

13PSa-10

Spectral Design and Evaluation of Organic Light Emitting Diode

G. S. Ju, Y. S. Chen (National Chung Cheng Univ. / Taiwan), L. Y. Chen (National Sun Yat-sen Univ. / Taiwan), S. J. Dai, and H. C. Wang (National Chung Cheng Univ. / Taiwan)

We use monochromatic spectra of OLED light source in references to create a database and use principle of color mixing with two and three-way to mix. Use CRI, CQS and FCI to evaluate light characteristics.

13PSa-11

The surface properties of optical lens under lapping via DIC method

C. S. Huang, Y. H. Chen, S. J. Perng, W. Y. (A.) Hsu, and C. H. Hwang (National Applied Research Laboratories / Taiwan), W. C. Wang (National Tsing Hua Univ. / Taiwan)

The stereomicroscope and camera provided observation of phenomena existed on the surface of this optical lens under treatment. DIC method extract the in-plane deformation and strain field for obtained before and after the lapping treatment.

13PSa-12

Anti-glare LED Lamps with Adjustable Illumination Light Field

C. Y. Lin, C. M. Yeh, Y. S. Chen(National Chung Cheng Univ. / Taiwan), C. T. Kuo(National Sun Yat-sen Univ. / Taiwan), and H. C. Wang(National Chung Cheng Univ. / Taiwan)

We introduce a type of LED light-gauge steel frame lamp with adjustable illumination light field, which does not require a diffusion plate. This lamp has a glare rating of 17.5 at 3050 lm.

13PSa-13

Design of Compact Optical Duplicate System for Multi-Beam Generation and Application of Satellite-Ground Laser Communications

T. Nakayama (Tokai Univ. / Japan), Y. Takayama (National Institute of Information and Communications Technology / Japan), C. Fujikawa (Tokai Univ. / Japan), and K. Kodate (Japan Women's Univ. / Japan)

We propose a design method of a compact optical duplicate system for multi-beam generation. This method enables miniaturization of the system, and can be adapted to various other applications.

13PSa-14

Incident-Angle-Dependent Reflectivity in Distributed Bragg Reflectors Fabricated from ZnO/MgO Multilayer Films

Y. S. Huang (National Taiwan Ocean Univ. / Taiwan), S. Y. Hu (Tungfang Design Institute / Taiwan), C. C. Huang, Y. C. Lee (Tungnan Univ., Shenkeng / Taiwan), J. W. Lee (Ming Chi Univ. of Technology / Taiwan), and C. C. Chang (National Taiwan Ocean Univ. / Taiwan)

We present the distributed Bragg reflectors with 10-period ZnO/MgO multilayer films deposited on silicon by sputtering technology. Reflectivity spectra measured at various incident angles are discussed with theoretically simulated curves.

13PSa-15

Ring lenses in wide angle optical systems

A. V. Pravdivtsev (Constructive Cybernetics / Russia)

The application of ring lenses in front part of the wide angle optical systems such as "fish-eye" was discussed. Ring lenses allow to remove some problems in the design and potentially reduce the cost.

13PSa-16

Analysis and development of optical systems of large telescopes

Zverev V.A., Podgornykh J.A. (NRU ITMO / Russia)

Parametric synthesis and aberration analysis of three- and four-mirror objectives with spherical primary mirror are performed. The analysis of properties of Gregory system and the system with three elements, when the third serves as the corrector of aberrations of the spherical primary mirror is carried out.

13PSa-17

INOOptoSim optomechanical statistical tolerancing software

F. Lamontagne, M. Doucet, P. Bourqui, and J. Gauvin (INO / Canada)

This paper presents a tool that has been developed at INO to easily perform complex optomechanical statistical tolerance analysis using Monte Carlo simulation. This software provides an accurate tolerancing model reducing fabrication and alignment cost.

13PSa-18

Logic of Lens Design Procedure Suitable for Starting Point Selection

I. Livshits, E. Ermolaeva, V. Vasilyev, and D. Volkov (NRU ITMO / Russia)

Logic of human lens designer is the most valuable thing in starting point selection. The analysis of the process of using optical design knowledge and transferring it into design logic is presented. Examples of different designer's logic for projection lens design are given.

13PSa-19

Experience of using the diffractive optical elements in optical systems

G. Alexander, and T. Elena (NRU ITMO / Russia)

This article about application diffractive optical element in difference types of optical system. The presented example there this element was used as element which contributes expansion of longitudinal chromatic aberrations and not corrects it.

13PSa-20

A Novel Design for High-performance LED Stadium Lighting with Energy-saving Effect

J. Y. Cai, X. H. Lee (National Central Univ. / Taiwan), W. T. Chien (National Central Univ., WitsLight Technology Group / Taiwan), J. H. Chang (WitsLight Technology Group / Taiwan), J. T. Yang, and C. C. Sun (National Central Univ. / Taiwan)

A novel stadium lighting with anti-glare and energy-saving effect is proposed. The average illuminance of ground can be increased 3 times when the LED stadium lighting is used in a badminton court with traditional lamps.

13PSa-21

Optical Design of a Telescope Objective for Stadia Measurement Instruments

G. Baldwin, and F. Gonzales (Pontificia Universidad Católica del Perú / Perú)

This article describes the design of a stadia telescope objective. It was started nulling each main involved aberration: spherical, coma and axial chromatic using third order thin lenses stop shift equations. This gives initial curvatures values for the optimization. It is possible to observe how the achromaticity remains null since third order design until final optimization.

13PSa-22

Investigation of light extraction from light emitting module <<Chip-On-Board>>

S. N. Lipnitskaya (NRU ITMO, Optogan Group / Russia), K. D. Mynbaev (Optogan Group, NRU ITMO, Ioffe Physical Technical Institute / Russia), L. A. Nikulina (Optogan Group / Russia), V. E. Bougrov, A. R. Kovsh, M. A. Odnoblyudov (NRU ITMO, Optogan Group / Russia), and A. E. Romanov (Optogan Group, NRU ITMO, Ioffe Physical Technical Institute / Russia)

In the present research we optimize the design of light emitting diode module produced using <<chip-on-board>> (COB) technology to reduce light energy losses. Optimization was performed using numerical simulations and experimental study of COB samples.

13PSa-23

The Study of Alvarez Lens for Astigmatism Correction

J. C. Yen (National Changhua Univ. of Education / Taiwan), K. L. Huang (Mingdao Univ. / Taiwan), and J. J. Chen (National Changhua Univ. of Education / Taiwan)

In order to correct the astigmatism of Alvarez lens, we use two pairs of Alvarez lens in orthogonal orientation, and adjust the space between two groups of lens, the focus difference between sagittal and tangential plane changes from 69.58 mm to 0.43mm.

13PSa-24

The Design Consideration of Tube Diameter of LED Lamps for Reducing Glare Effects in Indoor Office Lighting

C. J. Jiang, Y. C. Chen, and C. C. Sun (National Central Univ. / Taiwan)

The intensity distribution, output lumens, and luminance of fluorescent and LED tubes in present market had been measured and compared with varied diameter sizes. Based on the measured data, the luminance adjusted with normalized output lumens was to reveal the difference between varied tubes. The parameter size of LED tube was suggested to match the luminance of the fluorescent tube.

13PSa-25

An Optimization Algorithm for the Wedge Determination of an Achromatic Two Dimensional Deflection Prism Array

W. T. Shih (Minghsin Univ. of Science and Technology / Taiwan), and W. F. Lu (Asia Univ. / Taiwan)

An achromatic two dimensional prism array was proposed for applications of autostereoscopic or multi-view projection system, and an optimization algorithm for the wedge determination was presented, simultaneous satisfying the deflection and minimized dispersion conditions.

13PSa-26

Orthoscopic mirror objective for Orbital Stellar Stereoscopic Observatory

M. S. Chubey (RAS / Russia), and A. V. Bakholdin, G. I. Zukanova (NRU ITMO / Russia)

The optical design of astrograph for the Orbital Stellar Stereoscopic Observatory (OSSO) is discussed. The attention is focused on variants with complete correction distortion and permissible values of the entrance pupil obscuration.

13PSa-27

Using Aberration to Control Energy Distribution for the Folded Solar Concentrator

J. S. Lin, and C. W. Liang (National Central Univ. / Taiwan)

This paper was be near Etendue-Limit and have a high concentration ratio simultaneously. Utilize different aberrations to let the energy distribution on solar cell becomes more uniform.

13PSa-28

Analysis of Machine Vision Systems for Pre-Design

R. Anitropov, Y. Kolesnikov, I. Livshits, and M. Letunovskaya (NRU ITMO / Russia)

Machine vision sensors are used for analysis of images to extract data for controlling a process. Most of them use lenses to get an image and transfer it to a sensor. Analysis of machine vision systems in general is useful for pre-design of it. Example is given.

13PSa-29

Fabrication of Nanopatterned Silicon Mold with High Aspect Ratio by Blue Laser Thermal Lithography and Reactive Ion Etching

R. Y. Tsai, C. T. Cheng, C. C. Huang, J. P. Chen, and Y. C. Lee (ITRI / Taiwan)

Nanopatterned silicon (Si) molds with the column structures of aspect ratio (AR, depth/width) > 3 were prepared by blue laser thermal lithography and reactive ion etching.

13PSa-30

Brain Image Positioning by Fiber-typed Swept Source Optical Coherence Tomography Catheter

R. Y. Tsai, C. W. Lu, W. C. Huang, H. C. Chiang (ITRI / Taiwan), K. W. Hsueh, A. C. Hsieh (China Medical Univ. Hospital / Taiwan), Y. C. Lee, Z. H. Liu (ITRI / Taiwan), H. J. Harn, and S. Z. Lin (China Medical Univ. Hospital / Taiwan)

Rat brain images measured by fiber-typed swept source optical coherence tomography (SS-OCT) catheter indicate the potential application of SS-OCT as an image guiding tool for targeted position of deep brain stimulation (DBS) electrode.

13PSa-31

Fiber-Based Optical Probe with High Position Accuracy for Stereotactic Scanning Applications

Z. H. Liu, H. C. Chiang, Y. C. Lee, and R. Y. Tsai (ITRI / Taiwan)

We present a fiber-based swept source optical coherence tomography (SS-OCT) probe with high position accuracy controlling. As-designed SS-OCT probe with a compact reference arm performed well in stably real-time cross-sectional scanning of biological tissues.

13PSa-32

Fabrication of Blazed Vector Grating Liquid Crystal Cells with Twisted Nematic Structure by means of One-Step Polarizer Rotation Method

K. Kawai, M. Kuzuwata, T. Sasaki, K. Noda (Nagaoka Univ. of Technology / Japan), N. Kawatsuki (Univ. of Hyogo / Japan), and H. Ono (Nagaoka Univ. of Technology / Japan)

We fabricate the blazed vector grating liquid crystal cells, in which the directors of low-molar-mass liquid crystals are anti-symmetrically distributed. The polarization states of diffracted light can be controlled by designing blazed pattern.

13PSa-33

One-dimensional multilevel anisotropic diffractive optical elements fabricated using photoreactive polymer liquid crystals

K. Noda, T. Sasaki (Nagaoka Univ. of Technology / Japan), N. Kawatsuki (Univ. of Hyogo / Japan), and H. Ono (Nagaoka Univ. of Technology / Japan)

We present that stepping photoalignment technique using photocrosslinkable polymer liquid crystals may provide one avenue to realize multilelvel anisotropic diffractive optical elements and also demonstrate multilelvel anisotropic diffractive optical elements with antisymmetric structures.

13PSa-34

Enhancement of Light Output Power of GaN-Based Light-Emitting Diodes by Optimized Design of High Reflection Electrode Under Metal Pad

Y. T. Huang, Y. Z. Chiou, C. K. Wang (Southern Taiwan Univ. of Science and Technology / Taiwan) , and T. K. Ko (Epistar Corp. / Taiwan)

The optimized design of high reflection metal (HRM) structure was investigated that the output power had 10.5% improved comparing to the conventional LED as a finger width of 3μm and a Cr thickness of 10A in HRM structure.

13PSa-35

Rapid fabrication of semiellipsoid microlens using thermal reflow with two different photoresists

Z. J. Lian (National Chung Hsing Univ. / Taiwan), S. Y. Hung, M. H. Shen (Nan Kai Univ. of Technology / Taiwan) , and H. Yang (National Chung Hsing Univ. / Taiwan)

A simple and rapid fabrication method for a semiellipsoid microlens array has been proposed in this study. Low-loss coupling can be achieved between a laser diode and a single-mode fiber. The single-mode fiber is tipped with a newly developed semiellipsoid microlens in this technique. Average array coupling loss is as low as 15%.

13PSa-36

Tilted microlens fabrication using the lift-off method and inclined thermal reflow processes

Z. J. Lian (National Chung Hsing Univ. / Taiwan), S. Y. Hung, M. H. Shen (Nan Kai Univ. of Technology / Taiwan) , and H. Yang (National Chung Hsing Univ. / Taiwan)

A new fabrication method of tilted microlens array for light control films was developed to increase the efficiency of a liquid crystal display that can collect lateral light sources and improve the dazzling problem within the viewing angle. The lift-off method was used to create a round base before the thermal reflow process.

13PSa-37

Spectral Contrast Inprovement of Silicon substrate based on Trapezoid Grating

J. R. Sze (National Applied Research Laboratories / Taiwan), and A. C. Wei (National Central Univ. / Taiwan)

The ridges of the trapezoid grating possess triangular structures with sloping side walls. Numerical investigation of the transmission spectrum of the silicon trapezoid grating indicated that the sloping side-wall of the grating ridge improves the spectral contrast.

13PSa-38

Fabrication and Optical properties of Au-coated Anisotropic Hemispherical Structure Arrays

A. Emoto, and T. Fukuda (AIST / Japan)

Au-coated hemispherical structure arrays are fabricated via a replication process with colloidal spheres. The optical properties are investigated in a spectroscopic arrangement. The array exhibits anisotropic dichroic reflection in the specular direction.

13PSa-39

Directional Discrimination using Optical Serrodyne Modulation for Non-Mechanical Scanning Laser Doppler Velocimeter

K. Maru, and K. Watanabe (Kagawa Univ. / Japan)

A non-mechanical scanning laser Doppler velocimeter with directional discrimination using optical serrodyne modulation is proposed. A LiNbO3 phase shifter is used for serrodyne modulation. The directional discrimination and scan of the measurement position are demonstrated.

13PSa-40

Theoretical research on component structure of transmission-mode Ga1-xAlxN photocathodes

M. Yang, B. Chang (Nanjing Univ. of Science and Technology / China), and M. Wang (Ludong Univ. / China)

Transmission-mode Ga1-xAlxN photocathodes consist of three layers of optical thin film, and they own “solar blind” property. To obtain the highest quantum efficiency, the optimal thickness of active layer is 0.15μm.

13PSa-41

Fabrication of Component Using in Pico-Projector by 3D Printing Technique

C. Y. Huang, C. C. Chen, W. J. Peng, T. W. Lee, H. Y. Chou, and W. Y. Hsu (National Applied Research Laboratories / Taiwan)

This paper describes the design and fabrication of a mechanical component using in pico-projector by 3D printing technique. The accuracy of the metallic and ABS component has been evaluated in this paper.

13PSa-42

Fabrication of Micro Lens Array with Glass and UV Curable Materials

C. Y. Huang, C. C. Chen, K. S. Chang, J. C. Chen, W. Y. Hsu (National Applied Research Laboratories / Taiwan), and A. C. Wang (Chien Hsin Univ. of Science and Technology / Taiwan)

This paper describes the fabrication of a hybrid micro lens array component with glass and UV curable materials. The hybrid component with the advantages of two materials can be applied in optical field has been developed.

13PSa-43

FTIR Spectrum Measurement and Sensitivity of N-type Porous silicon Membrane for Alcohol Detection

J. C. Lin(National Taipei Univ. / Taiwan), B. R. Jeng (St. John's Univ. / Taiwan), Y. C. Tsui, M. S. Wu (National Taipei Univ. / Taiwan), and S. T. Hou (St. John's Univ. / Taiwan)

Electric chemical etching is used on n-type silicon wafer to form porous silicon for alcohol detector. Using FTIR, the impact of variation on alcohol concentration can be analyzed. Also, the sensitivities are studied.

13PSa-44

Femtosecond laser process flip-chip LEDs for lighting efficiency enhancement

Y. H. Lin, Y. H. Wang (National Chung Cheng Univ. / Taiwan), P. H. Wu, C. W. Cheng (ITRI / Taiwan), Y. S. Chen and H. C. Wang (National Chung Cheng Univ. / Taiwan)

We find that laser process can induce sapphire period surface structure data is 4mW and 20 pulses, and calculating that laser still can form surface structure laser line scan velocity is 0.4mm/s.

13PSa-45

The fabrication of nanostructures CIGS thin film solar cell

J. J. Zhang, Y. S. Chen, P. C. Tsai, J. H. Lin, C. C. Hsu, H. C. Wang, and R. C. C. Tsiang (National Chung Cheng Univ. / Taiwan)

In this study, We used laser interference lithography (LIL) technique and dry etching to transfer the square and the hexagnal periodical pattern nanostructures on Copper Indium Gallium Selenide(CIGS) thin films.

13PSa-46

Prepare polystyrene nanophotonic arrays to identify the concentration of ethanol

Hsin Her Yu, Wen-Kai Kuo, and Hsueh-Ping Weng (National Formosa Univ. / Taiwan)

Polystyrene (PS) nanospheres were synthesized and then arranged self-assembly to a regular structure by dip-drawing method. PS nanophotonic arrays were used to identify the concentrations of ethanol.

13PSa-47

Prepare a lower reflectance 2D nanostructure PMMA film by soft-lithography

H. H. Yu, W. K. Kuo, S. Y. Chen, and G. F. Kuo (National Formosa Univ. / Taiwan)

Polystyrene (PS) microspheres were synthesized as colloidal crystal master mold and 2D nanostructures of PMMA films were fabricated by soft-lithography. The optical reflectance of the 2D nano-PMMA film was lowered.

13PSa-48

Nb-Si metal composite films deposited by two-target RF-DC magnetron co-sputtering for solar absorbing coatings

C. J. Tang, C. C. Jaing, and F. M. Tsai (Minghsin Univ. of Science and Technology / Taiwan)

The optical properties and residual stress of the SixNb1-x metal composite films were found in different ratio of composition. The SixNb1-x metal composite film was used to design and fabricate solar absorbing coatings.

13PSa-49

Quasi-periodic gratings and their diffraction properties

N. Gao, H. Li, and C. Xie (Chinese Academy of Sciences / China)

Here we discuss about some interesting effects from relaxing the structural periodicity of binary gratings. Self-similar diffraction pattern, suppression of high orders, and accelerating beam generation can be achieved by different choice of the quasi-periodicity.

13PSa-50

Fabrication of Large Area X-ray Diffractive Optical Elements on SiC Thin Film Window Deposited by PECVD at High Temperature

H. Li, Y. Liu, N. Gao, J. Niu, and C. Xie (Chinese Academy of Sciences / China)

A 35mm x 35mm X-ray diffractive optical element was fabricated on a silicon carbide film window, which was fabricated using plasma-enhanced chemical vapor deposition system by changing the ratio of methane and silane at 600oC.

13PSa-51

Effects of Magnesium Contents in ZnMgO Thin Films Grown by Molecular Beam Epitaxy

S. Y. Hu (Tungfang Design Institute / Taiwan), Y. C. Lee (Tungnan Univ. / Taiwan), Y. H. Weng, K. K. Tiong (National Taiwan Ocean Univ. / Taiwan), and W. C. Chou (National Chiao Tung Univ. / Taiwan)

ZnMgO thin films were prepared by Molecular Beam Epitaxy with different Magnesium contents. The effects of Magnesium on the structural and optical properties were studied by X-ray diffraction, atomic force microscopy, and photoluminescence measurements, respectively.

13PSa-52

Design and Simulation of a Counterdiabatic Directional Coupler based on SOI

Y. F. Chiu, and S. Y. Tseng (National Cheng Kung Univ. / Taiwan)

We design a counterdiabatic directional coupler on the silicon-on-insulator platform. The device performance is numerically compared with an adiabatic directional coupler using the eigenmode expansion method. The device is compact and has broadband characteristics.

13PSa-53

Fiber-optic Fabry-Perot Interferometers Based on Microlenses Formed by UV-curable Polymer

J. F. Hu, and C. P. Yu (National Sun Yat-sen Univ. / Taiwan)

We have successfully fabricated fiber-optic Fabry-Perot interferometers by making polymer microlenses on endfaces of optical fibers. The reflection interference spectra for microlenses with different radii of curvature are measured and discussed.

13PSa-54

Temperature Sensing Sensitivity of Mach-Zehnder Interferometer Based on Liquid-core Fiber

C. Chen, Y. P. Huang, and C. P. Yu (National Sun Yat-sen Univ. / Taiwan)

We have fabricated an all-fiber Mach-Zehnder interferometer (MZI) by splicing a liquid-core fiber with two single-mode fibers. The interference spectra are investigated. The MZI is employed in temperature sensing with a sensitivity of 7.348 nm/oC.

13PSa-55

Thermal Effect of Random Lasing in Hollow Optical Fibers infiltrated with Dye-doped Liquid Crystals Containing BaTiO3 Nanoparticles

Y. P. Huang, and C. P. Yu (National Sun Yat-sen Univ. / Taiwan)

We report the thermal effect of random lasing from hollow optical fibers filled with dye-doped liquid crystals (DDLCs) containing BaTiO3 nanoparticles. Experimental results show that the emission intensity can be controlled by the operation temperature.

13PSa-56

Efficiency Enhancement of Luminescent Solar Concentrators Using Slanted Grating Configuration

J. Y. Fang, H. F. Shih (National Chung Hsing Univ. / Taiwan), and W. Y. Liao (ITRI / Taiwan)

We propose a novel luminescent solar concentrator (LSC) design by using the slanted grating configuration. Simulation results show that the proposed system could provide better efficiencies of light concentration.

13PSa-57

Light sensing in pentacene-based organic phototranisistors

L. Y. Chiu, D. Y. Wu, B. R. Lin, F. S. Chou, W. Y. Chou, and H. L. Cheng (National Cheng Kung Univ. / Taiwan)

Pentacene-based phototransistors are demonstrated and characterized under light illumination in this study. The input light signal is sensed by the photo-generated current to trigger the on-off signal in the current. The mechanism of light sensing is discussed.

13PSa-58

Dual Focus Diffractive Optical Element with Extended Depth of Focus

K. Uno (Ibaraki Univ. / Japan), I. Shimizu (RIAT / Japan)

Dual focus and extended depth of focus were verified by new type of diffractive lens displayed on liquid crystal on silicon device. This type of lens is useful to read information on multilayer optical discs and tilted discs.

13PSa-59

A micrometre-grating array generation technique using a balanced-weights rotating fly-cutter mechanism

S. T. Chen, C. W. Du, and W. P. Huang (National Taiwan Normal Univ. / Taiwan)

This study presents the development of a balanced-weights rotating flycutter mechanism with a concentric rotary accuracy of 5-nm for generating a diffractive grating with a micrometric scale V-groove array.

13PSa-60

Development of a cost-effective tabletop machine tool for machining micro aspheric lighting lens mold

S. T. Chen, W. P. Huang (National Taiwan Normal Univ. / Taiwan), and H. Y. Yang (National Taiwan Univ. / Taiwan)

This study presents the development of a cost-effective, sufficient accurate tabletop machine tool and the design of an aspheric curve generator for machining the micro molds needed to produce aspheric lighting lenses.

13PSa-61

Improvement of optoelectrical characteristic of GaN-based light-emitting diodes on flexible substrate

W. W. Lin, L. C. Chen, C. C. Chen, C. A. Chiou and C. A. Hsieh (National Taipei Univ. of Technology / Taiwan)

This work presents a GaN-based thin film light-emitting diode (TF-LED) on a flexible copper (Cu) substrate prepared by electroplating and laser lift-off (LLO) method. The optoelectric characteristics of the GaN-based TF-LED on the flexible Cu substrate as chemical etching were also investigated. The GaN-based TF-LED is etched by photo-assisted chemical method to remove the residue on the surface.

13PSa-62

Refractive Index Sensor Based on a Side-Polishing Fiber with a Stress-Induced Long Period Grating

M. Y. Fu, H. Y. Chang, S. R. He, W. F. Liu (Feng Chia Univ. / Taiwan), R. L. Wu, and Y. L. Pan (Air Force Academy / Taiwan)

A refractive index sensor based on a side-polishing fiber with a stress-induced long period grating is experimentally demonstrated. The maximal sensitivity of 2.1dB/unit-index is obtained in the index ranges from 1 to 1.44.

13PSa-63

The Effect of Indium Tin Oxide Work Function on Silicon Heterojunction Thin Film Solar Cells

S. Z. Tseng, W. T. Lin, S. C. Chou, and S. H. Chen (National Central Univ. / Taiwan)

In this study, we demonstrated that varied ITO work function from 4.36 eV to 5.2 eV lead to the efficiency of silicon HJT solar cells increased from 2.4% to 8.3% by using magnetron sputtering system.

13PSa-64

Photoluminescence Study of Band-gap and Energy-state Transition at CdS/CIGS Interface for Solar Cell Performance through Post-annealing

W. T. Lin, S. H. Chan, S. Z. Tseng, J. J. He, C. W. Tseng, C. P. Lin, C. C. Lee, T. T. Li (National Central Univ. / Taiwan), S. C. Hu, W. H. Peng, Y. T. Lu (Chung-Shan Institute of Science & Technology / Taiwan), and S. H. Chen (National Central Univ. / Taiwan)

The photovoltaic performance were enhanced from 3.71% to 7.25% due to an increase of Voc and Jsc with a widely band-gap of CIGSSe growth, defect states passivation on CIGS surface and buried homo-junction of n-CIGS:Cd/p-CIGS.

13PSa-65

A Near-Infrared Range All-Optical Limiter Based On Self-Phase Modulation

T. Murakawa, R. Nagao, and T. Konishi (Osaka Univ. / Japan)

To stabilize power fluctuations of near-infrared (NIR) optical pulses, we investigate a NIR range all-optical limiter. The experimental result shows the output power fluctuation is less than 0.27 dB for the 2.9 dB input range.

13PSa-66

Study of Coupling Performance of Multimode Optical Fiber Coupler Using Integrated Elliptical Point Contacts and CMT

L. S. Supian, M. S. Ab-Rahman, and N. Arsad (Universiti Kebangsaan Malaysia / Malaysia)

Coupling characteristics of a directional coupler using lapping technique is analyzed through related theories, i.e. Hertz's elliptical point contacts and its relation with simplified couple mode theory (CMT) of the multimode fiber coupler.

13PSa-67

GaN MIS Ultraviolet Photodetectors with the CaF2 Insulating Layers

C. H. Chen (Cheng Shiu Univ. / Taiwan), C. M. Tsai (National Kaohsiung Univ. of Applied Sciences / Taiwan), W. C. Lin, M. H. Yang (Cheng Shiu Univ. / Taiwan), and S. K. Liu (National Kaohsiung Univ. of Applied Sciences / Taiwan)

This study reports the fabrication of GaN metal-insulator-semiconductor (MIS) ultraviolet (UV) photodetectors (PDs) with an CaF2 insulating layer. The dark current was substantially reduced, and the UV-to-visible contrast ratio was enhanced by inserting the CaF2 layer. These results should be attributed to the use of the CaF2 insulating layer, which can build high Schottky barrier height between the metal and the semiconductor.

13PSa-68

The transcription effects of precised pressing die on glass molding

L. Tasi, A. C. Wang (Chien Hsin Univ. of Science and Technology / Taiwan), C. Y. Huang (National Applied Research Laboratories / Taiwan), and K. L. Wu (Tungnan Univ. / Taiwan)

Precision of pressing dies affect the quality of micro lens array in glass molding, this study utilizes the pressing dies to produce micro lens array and then characterize the transcription effect of these lens.

13PSa-69

Bistable switching of liquid crystals on self-structured 2-dimensional groove pattern

M. K. Park, J. S. Park, C. Lee, S. H. Yoo, M. Kim, and H. R. Kim (Kyungpook National Univ. / Korea)

We demonstrated monostable or bistable liquid crystal (LC) alignment methods by using a surface topological effect on 2-dimensional (2D) groove structure which could be fabricated by self-structuring and imprinting process.

13PSa-70

The Side-Polished Surface Plasmon Resonance Fiber Sensor Employed to Sucrose Concentration Measurement and Simulation: Featuring Polished Depth and Detecting Wavelength

Y. C. Hsu, W. J. Cheng, and S. H. Lin (National Pingtung Univ. of Science and Technology / Taiwan)

The side-polished surface plasma resonance fiber sensor is demonstrated and Employed to sucrose concentration measurement and simulation. The effect of gold film coating, polished depth and detecting wavelength are discussed.

13PSa-71

Ce3+:YAG Doped Glass-Ceramics For Energy-Saving White Light-Emitting Diode (LED)

M. A. Shvaleva, L. A. Nikulina (LLC Optogan New Technology of Light, NRU ITMO / Russia), V. A. Aseev (NRU ITMO / Russia), K. D. Mynbaev (LLC Optogan New Technology of Light, NRU ITMO / Russia), V. E. Bougrov, A. R. Kovsh, M. A. Odnoblyudov (NRU ITMO, CJSC Optogan / Russia), N.V. Nikonorov (NRU ITMO / Russia), and A. E. Romanov (LLC Optogan New Technology of Light, NRU ITMO, RAS / Russia)

New types of phosphor based on Ce3+:YAG-doped glass-ceramics were fabricated for energy-saving LEDs. Optical properties of the experimental samples are reported on. Use of such phosphor material in white LED is demonstrated.

13PSa-72

Radial spatiotemporal focusing with circularly symmetry

R. Iijima, and Y. Hayasaki (Utsunomiya Univ. / Japan)

We propose a radial spatiotemporal lens for femtosecond laser pulse focusing control implemented with a circularly symmetric diffraction grating. It performs spatiotemporal focusing with circular symmetry to optical axis.

13PSa-73

Wide angle extinction for a sliver nanorod array in a prism-coupling system

Y. J. Jen, J. W. Dai, and J. H. Chao (National Taipei Univ. of Technology / Taiwan)

In this work, a silver nanorod array deposited obliquely is arranged in a prism-coupling system to observed strong extinctance over red and green wavelengths at angles of incidence from 40deg to 70deg.

13PSa-74

Three-Dimensional Printing of Conductive Polymer Microstructures into Transparent Polymer Sheet

K. Yamada, M. Watanabe, and J. Sone (Tokyo Polytechnic Univ. / Japan)

The lateral precision of the conductive polymer microstructures were discussed by optimization of photofabrication conditions such as the repetition rate of the femtosecond pulse laser and the scanning pitch of the laser focal point.

13PSa-75

DISPLACEMENT MEASUREMENT AND STUDY OF SURFACE ROUGHNESS USING LASER SPECKLE TECHNIQUE

R. Balamurugan (Kumaraguru College of Technology / India), and S. Muruganand (Bharathiyar Univ. / India)

Laser Speckle images have been taken before and after the displacement were made. Subtraction of the speckle patterns gives the displacement. Binary speckles are used to study surface roughness and compared with stylus profilometer method.

New Technologies (3) (10:55-12:05)

Presiders:

C. C. Sun (National Central Univ, Taiwan)

13S4-09 (Invited)

(10:55) Resonant Photonic Crystal Mirrors for Miniaturization of Optical Sensors

O. Solgaard (Stanford Univ. / USA)

Photonic Crystal reflectors achieve high reflectivity within a single, high-index thin film. Such resonant reflectors have chemical, mechanical, and optical characteristics that make them ideal for challenging sensor applications the automotive, aerospace, and biomedical fields.

13S4-10

(11: 20) Two-wavelengths simultaneous time-resolved interference observation of femtosecond laser induced phenomena

S. Fukuda, and Y. Hayasaki (Utsunomiya Univ. / Japan)

We observe a femtosecond laser induced phenomena (fs-LIP). In this study, we performed two wavelengths measurement with probe pulse wavelengths of 400 nm and 800 nm for observing physical process of the fs-LIP.

13S4-11

(11: 35) Ultrasonic techniques for investigating mechanical properties of sol-gel laye

X. Dieudonne (CEA / France), A. Ayouch(Universite du Maine / France), C. Ambard, F. Compoint(CEA / France), G. Vaudel (Universite du Maine / France), K. Valle (CEA / France), V. Gusev(Universite du Maine / France), P. Belleville (CEA / France), P. Ruello (Universite du Maine / France), M. Duquennoy, D. Fall(Universite de Valenciennes / France), and H. Piombini (CEA / France)

Mechanical properties are key-parameters to improve thin layers performance under laser flux or aging. Here, several techniques are used to determine such properties of different kind of layers: a laser ?based ultrasonic experiment, SAWs , interferometry and profilometry.

13S4-12

(11: 50) Study on Power Tolerant Nonlinear Optical Device Using a Fiber Bundle

R. Nagao, T. Murakawa, H. Matsui, H. Ichida, Y. Kanematsu, and T. Konishi (Osaka Univ. / Japan)

We propose using a fiber bundle (FB) for power tolerant nonlinear optical device. Experimental results show that a FB has good controllability of self-phase modulation (SPM)-based spectral broadening without optical damage in the high-average-power range.

Lunch (12:05-13:05)

Optical Components / Devices (1) (13:05-14:30)

Presiders:

K. Maru (Kagawa Univ. / Japan)

S. Sinzinger (Technische Univ. Ilmenau / Germany)

13S2-01(Invited)

(13:05) Long-range surface plasmons and their applications

P. Berini (Univ. of Ottawa / Canada)

Recent progress on integrated photonic devices operating with long-range surface plasmons is discussed. Devices of interest operating with such waves include integrated passives, amplifiers and lasers, thermo-optic structures, Schottky-contact photodetectors, and biosensors for (bio)chemical detection.

13S2-02

(13:30) Design and Fabrication of Photonic and Plasmonic Devices Based on Photo-Thermo-Refractive Glasses

N. Nikonorov, V. Aseev, A. Ignatiev, Y. Nekrasova, S. Ivanov, E. Sgibnev, A. Sidorov, and M. Sorokina (NRU ITMO / Russia)

Novel photonic and plasmonic elements and devices have been designed and fabricated based on new photo-thermo-refractive glasses doped with rare-earth ions and metallic nanoparticles. Some technologies (photo-thermo-induced crystallization, laser treatment and etc.) have been used.

13S2-03

(13:45) Novel Light-diffusing Films with an Internal Refractive-index Distribution Structure

K. Kusama, and B. Katagiri (LINTEC Corp. / Japan)

We have developed novel light-diffusing films based on a photo-polymerization-induced phase separation. These films have internal refractive-index distribution structure inside the film. We measured the unique optical diffusion properties.

13S2-04

(14:00) Phosphor in glass based on lead silicate oxy-fluoride glassy matrix doped with rare earth for LEDs

V.A. Aseev, Y.A. Nekrasova, N.V. Nikonorov, E.V. Kolobkova (NRU ITMO / Russia), and O.A. Usov (Ioffe Physical-Technical Institute of the RAS / Russia)

A new phosphor for WLEDs has been designed and synthesized. The phosphor presents a combination of yttrium-aluminium garnet doped with cerium powder and high refractive lead-silicate oxy-fluoride glassy matrix doped with europium and manganese

13S2-05

(14:15) Highly sensitive optical fiber oxygen sensor based on Pt(II) complex and metal-coated silica nanoparticles embedded in sol-gel matrix embedded in sol-gel matrix

C. S. Chu (Ming Chi Univ. of Technology / Taiwan)

This paper presents a highly-sensitive oxygen sensor that comprises an optical fiber coated at one end with PtTFPP and silver metal-coated nanoparticles embedded in Octyl-triEOS/TEOS composite xerogel. The oxygen sensor has a sensitivity of 167.

Coffee Break (14:30-14:50)

Poster Session (2) (14:30-16:30)

13PSb-01

Development of rotation polygonal mirror scanning technology for aluminum doped zinc oxide films laser annealing

W. T. Hsiao , S. F. Tseng , C. K. Chung , C. C. Yang , K. C. Huang (National Applied Research Laboratories / Taiwan), and M. F. Chen (National Changhua Univ. of Education / Taiwan)

Laser annealing system consists of fiber-optics laser source, polygonal mirror, projection optics path and image processing technique was developed. Resulting for the advanced industries application such as aluminum doped zinc oxide (AZO) films annealing.

13PSb-02

Distance Estimation by the Intensity Difference of Feature Point (IDFP)

J. Y. Lai, H. Y. Tsai, Y. J. Chen, and K. C. Huang (National Applied Research Laboratories / Taiwan)

This paper presents a new ranging method by the image difference at two adjacent positions, which can discover feature points of image by the DIC technology and estimates the distance between objects and camera.

13PSb-03

A Study on Improved Scattering Skin Image Irradiated by Scanning NIR-LED Light

H. Y. Tsai, C. C. Yang, Y. J. Chen, and K. C. Huang (National Applied Research Laboratories / Taiwan)

The non scattering skin image irradiated by NIR-LED light can be obtained by optical scanning system, and it has advantages such as high image intensity, resolution and can be applied in biomedical examination.

13PSb-04

Multiple Image hiding based on joint transform correlator and modified Gerchberg-Saxton phase retrieval algorithm

I. Mehra, and N. K. Nishchal (Indian Institute of Technology Patna / INDIA)

We propose a novel multiple image hiding technique based on joint transform correlator and phase retrieval approach. This scheme not only hides the data but also give disguising appearance of input image in the form of ciphertext.

13PSb-05

A novel asymmetric cryptosystem for securing multiple images

I. Mehra, and N. K. Nishchal (Indian Institute of Technology Patna / INDIA)

We propose an improvement in the multiple image encryption scheme proposed by Wang and Zhao [Opt. Commun. 284 (2011) 148]. The proposed scheme offers higher level of security and is more compact.

13PSb-06

Simplified ionizing radiation inspector

T. S. Liao, C. C. Wu, C. C. Chou, C. H. Hwang (National Applied Research Laboratories / Taiwan) , D. P. Tsai(Academia Sinica, National Taiwan Univ. / Taiwan), and T. Y. Chen (National Tsing Hua Univ. / Taiwan)

Ionizing particle impact to the photo sensing cell of image sensor to generate one event which event rate statistics can be detect radiation contamination situation The article provide one novel apparatus to detect ionizing radiation using image module of smart phone.

13PSb-07

Error Analysis for Optical Fresnel Transform systems

T. Aoyagi, K. Ohtsubo, and N. Aoyagi (Toyo Univ. / Japan)

The sampling theorem for the Fresnel transform pair in polar coordinate systems is derived. Sampling functions are constituted by Bessel functions. Computer simulations are performed to demonstrate the validity of the sampling theorem.

13PSb-08

The Transient Scattered Light Method to Measure the Electric Current in Copper Wire

C. H. Chen, M. W. Hung, and K. C. Huang (National Applied Research Laboratories / Taiwan)

This study presents the transient scattered light (TSL) method to estimate the electric current in a smooth copper sheet. The results show the transient reflected light will change with different input currents.

13PSb-09

To develop a optical model for 5 degree-of-freedom spindle measurement system

C. J. Chen (National Applied Research Laboratories / Taiwan), W. Jywe (National Formosa Univ. / Taiwan), and C. L. Chang (National Applied Research Laboratories / Taiwan)

An optoelectronic 5 degree-of-freedom spindle measurement system model had established in this paper. This measurement system doesn't use material reference parts and capacitance sensor and can easy be setup on the high speed drilling machine.

13PSb-10

3D image reconstruction of V-groove for damage analysis

Y. H. Lin, C. C. Yang, T. S. Liao, and K. C. Huang (National Applied Research Laboratories / Taiwan)

The paper presents a new analytical method for the damaged V-grooves. A 3D image is reconstructed using a local optical imaging system. The damage rates of V-grooves are estimated.

13PSb-11

Depth Dose Measurements of Therapeutic Electron Beams Using Both Pure Scintillation and Cerenkov Signals

W. J. Yoo, S. H. Shin, D. Jeon, S. Hong, H. I. Sim, S. G. Kim, K. W. Jang, J. Y. Park (Konkuk Univ. / Korea), S. Cho (Soongsil Univ. / Korea), and B. Lee (Konkuk Univ. / Korea)

To obtain depth dose distributions for therapeutic electron beams, we measured the pure scintillation and Cerenkov signals simultaneously using an integrated fiber-optic dosimeter based on a subtraction method.

13PSb-12

Optical Intensity Mapping on V-Grooves-Array Cutting Surface of Highly Scattering Material

C. C. Yang, H. J. Huang, Y. C. Liu, D. Y. Chiang, T. S. Liao (National Applied Research Laboratories / Taiwan), T. H. an, and Y. L. Jao (Gigastorage Corp. / Taiwan)

A convenient optical intensity mapping method was used to study the surface optical response of the highly scattering material. Damage of the V-grooves-array in long-time-used silicon wafer cutting pulley was presented in FFT results.

13PSb-13

Design, fabrication and testing of a closed-loop moving magnetic laser scanning module

C. K. Chung, W. T. Hsiao, S. F. Tseng, K. C. Huang (National Applied Research Laboratories / Taiwan), and M. F. Chen (National Changhua Univ. of Education / Taiwan)

Laser scanning systems are widely used in laser marking, drilling and full screen projecting. These systems include a galvanometric unit, motor, position detector and control circuit. This study presents the development of these components.

13PSb-14

Effect of Manufacturing and Assembling Errors of Isostatic Mounts on a Reflective Mirror

C. Y. Chan, P. H. Huang, C. W. Chen, and T. M. Huang (National Applied Research Laboratories / Taiwan)

Effect of manufacturing and assembling errors of isostatic mount on a reflective mirror has been carried out experimentally and numerically. The comparision of optical aberrations under self-weight loading with given errors has also been investigated.

13PSb-15

Artifact removal from EEG by using Photoplethysmography Signal

Y. W. Tang (National Applied Research Laboratories / Taiwan), Y. D. Lin, and J. H. Jheng (Feng Chia Univ. / Taiwan)

Artifacts are the vexing components of EEG signal. In this article, these components are extracted from additional photoplethysmography and screened out from EEG signal with correlated EMD method. Experiment result shows an artefact removal EEG.

13PSb-16

Development of an Image Evaluating System for Detecting Thin Film Positioning on the Wafer Surface

M. F. Chen, Y. H. Su, P. H. Wang (National Changhua Univ. of Education / Taiwan), W. T. Hsiao, S. F. Tseng, and C. K. Chung (National Applied Research Laboratories / Taiwan)

This study focuses on automated optical inspection for evaluating the thin film on a wafer surface. The detection rate is at least 500 pieces of wafer per hour with an accuracy of 99%.

13PSb-17

Application of an Image Stitching Algorithm to Industrial Endoscopy

M. F. Chen, C. F. uang(National Changhua Univ. of Education / Taiwan), W. T. Hsiao, S. F. Tseng, and C. K. Chung (National Applied Research Laboratories / Taiwan)

This study focuses on an image stitching algorithm for industrial endoscopy. After capturing images and performing stitching procedures, the proposed method is successful in stitching multi-valve images.

13PSb-18

In-situ optical monitoring of electrospinning process and porosity characterization using binarized image

Y. K. Fuh, and C. T. Huang (National Central Univ. / Taiwan)

An optical method for in-situ monitoring the porosity of electrospun nanofibers has been presented. The proposed method based on the light scattering phenomenon and eliminates the disadvantage of traditional porosity characterization method such as SEM.

13PSb-19

Evaluation of optical absorption raised under different ambient temperatures due to chlorophyll-a of Arabidopsis Cotyledons

E. Watanabe, M. Shimizu, A. Ozawa, N. Nagata and H. Imai (Japan Women's Univ. / Japan)

Plants are performing photosynthesis. As an important element to perform photosynthesis, chlorophyll exists. Chlorophyll is formed in the process of growing. To evaluate the formation process of chlorophyll, we have grown Arabidopsis cotyledons with changing the irradiation conditions and ambient temperatures.

13PSb-20

An optical tool setting method with sub-pixel accuracy for ultra-precision diamond turning

C. C. Chen, C. Y. Huang, W. J. Peng, W. Y. Hsu (National Applied Research Laboratories / Taiwan), and Y. C. Lin (Nan Kai Univ. of Technology / Taiwan)

We developed an image processing with charastisitic calculation method for the optical tool setting with sub-pixel accuracy. A cutting test has been performed to prove the error of tool setting is 1.2 μm.

13PSb-21

Feasibility Study on Knee Angle Measuring Fiber-optic Goniometer for Diagnosis of Gait Disturbance

S. G. Kim, K. W. Jang, W. J. Yoo, S. H. Shin, D. Jeon, S. Hong, H. I. Sim, and B. Lee (Konkuk Univ. / Korea)

In this study, an optical fiber-based goniometer having capability of real-time monitoring with high accuracy was fabricated using a light-emitting diode, a plastic optical fiber and a photodiode to measure the angle of knee joint.

13PSb-22

Development of a Fiber-optic Temperature Sensor Using an OTDR

H. I. Sim , S. H. Shin , D. Jeon , S. G. Kim , S. Hong , K. W. Jang , W. J. Yoo (Konkuk Univ. / Korea), B. G. Park (Soonchunhyang Univ. / Korea), J. H. Moon (Dongguk Univ. / Korea), and B. Lee (Konkuk Univ. / Korea)

A portable fiber-optic temperature sensor is developed using two types of sensing probes and an optical time-domain reflectrometer to monitor real-time temperature at a long distance.

13PSb-23

Two-dimensional Fiber-optic Dosimeter Array System for Measuring Therapeutic Electron Beams

K. W. Jang, S. H. Shin, W. J. Yoo(Konkuk Univ. / Korea), C. Jeong, D. Shin (National Cancer Center / Korea) and B. Lee (Konkuk Univ. / Korea)

In this study, a two-dimensional fiber-optic dosimeter array system consisting of organic scintillators, plastic optical fibers and a complementary metal oxide semiconductor was characterized using therapeutic electron beams.

13PSb-24

Hardware based Near-infrared system for Silicon-base solar cell defect detection

C. F. Lin (National Applied Research Laboratories, National Chiao-Tung Univ. / Taiwan), Y. C. Chen (National Applied Research Laboratories, National Tsing-Hua Univ. / Taiwan), K. C. Huang (National Applied Research Laboratories / Taiwan), and H. Chen (National Tsing-Hua Univ. / Taiwan)

A hardware based, Near-infrared system for silicon-based solar cell defect detection method has been presented. The method can exhibit hidden cracks and the defects due to the carrier concentration distribution uniformity. The hardware method can indicate the defect of the silicon-based solar cell rapidly, and can be used in the field of quality control in mass production.

13PSb-25

Hyperspectral Two-Dimensional Display with a diffractive grating and a digital mirror device

M. Saika, T. Satoh, K. Yoshida, M. Yamada (Topcon Corp. / Japan), and T. Mihashi, K. Uchikawa (Tokyo Institute of Technology / Japan)

We built a hyperspectral two-dimensional display with a diffractive grating and a digital mirror device (DMD). We confirmed that the color space was almost fully covered.

13PSb-26

Thin-Film Characterization Measurements Based on Optimization thought Genetic Algorithms with Elitist Strategy

M. C. Li, and C. C. Lee (National Central Univ. / Taiwan)

A method to measure thin-film characterization based on white-light interferometry is described. This method through genetic algorithms with elitist strategy can speed up searching significantly and maintain the capability to search the global minimum solution.

13PSb-27

One dimensional reflective diffuser for line beam shaper with microlens array homogenizer

Y. N. Hsiao, H. P. Wu, C. H. Chen (National Tsing Hua Univ. / Taiwan), Y. C. Lin, M. K. Lee, and S. H. Liu (ITRI / Taiwan)

A laser beam shaping architecture based on microlens array homogenizer has been exploited. And use one-dimensional reflective type diffuser with well controlled diffusion angle to got a line beam.

13PSb-28

A Novel Two Dimensional Prism Designed for Two-Dimensional Deflection

W. T. Shih, B. W. Yang, H. Y. Hsiao, and T. Y. You (Ming-Hsin Univ. of Science and Technology / Taiwan)

The conventional prism with a single wedge angle deflects incident beam within the incident plane; herein a novel prism providing two-dimensional beam deflections was proposed by introducing asymmetric wedge angles into the prism structure.

13PSb-29

Evaluating the Thermal Effect of Microwave Radiation on Blood Coagulation by Optical Tweezers

B. W. Yang, C. Yeh, C. T. Chao, Y. S. Chen, H. Y. Chen, and D. C. Yeh (Ming-Hsin Univ. of Science and Technology / Taiwan)

Without bio-chemical effect, non-ionizing radiation influences bio-cells by thermal and electromagnetic effects. We estimated the percentage contribution of microwave radiation to thermal effect; on optical tweezers, we explored how microwave radiation affected blood coagulation process.

13PSb-30

Phase Correction in Shape Measurement using Fringe Projection

H. Sakuma (Tokyo Metroplitan Univ. / Japan)

Video projector and CCD camera of personal use have not linear property. Correction of detected phase is carried out by using one period of phase distribution which gets from flat surface in fringe projection.

13PSb-31

Least Square Landmarks Registration for Automatic Scanning Laser Doppler Vibrometer

K. Agusanto, T. Liu, and C. Zhu (Sunny Instruments Singapore Pte Ltd. / Singapore)

This work reported a development of an axial scanning laser Doppler vibrometer for modal testing applications. One of the key features is automatic point scanning, accomplished by using a least-square image registration method.

13PSb-32

Investigation of PQ/PMMA photopolymer for two-wavelength holographic recording using light-induced experiments

C. H. Lin, S. H. Lin, and K. Y. Hsu (National Chiao-Tung Univ. / Taiwan)

We present a four-level model to describe two-wavelength holographic recording (TWHR) in PQ/PMMA photopolymer. Then we design light-induced experiments to investigating the photochemical kinetics parameters for optimization of TWHR.

13PSb-33

Quadrature Phase-shifting Interferometer Using High-speed Imaging Camera

S. Nakadate, M. Yoshii, Y. Matsumura and M. Shibuya (Tokyo Polytechnic Univ. / Japan)

High-speed deformation measurement for a specular object is performed using a polarization interferometer with an ordinary high-speed imaging camera. Fringe processing methods and experimental results are also given.

13PSb-34

Omnidirectional 3D shape measurement using digital holography

R. Saito, and N. Yoshikawa (Saitama Univ. / Japan)

We propose an omnidirectional 3D shape measurement using a Gabor-type digital holography. The outline of the object is obtained from all directions. The 3D shape is obtained by integrating all outline of the object.

13PSb-35

Holographic laser sweep using line-shaped beam for debris removal

K. Sakuma, S. Hasegawa (Utsunomiya Univ. / Japan), H. Takahashi, M. Ota (AISIN SEIKI CO., LTD. / Japan), and Y. Hayasaki (Utsunomiya Univ. / Japan)

We proposed holographic laser sweep for the debris removal in laser processing. In this system, there are several advantages including no pre- and post-processing and dry process.

13PSb-36

Recording amd reconstruction method for phase data pages with vortical phase shifting based on in-line dual-channel polarization holography

T. Tanimoto, D. Barada, K. Yamashita (Utsunomiya Univ. / Japan), T. Fukuda (AIST / Japan), Y. Hayasaki, and T. Yatagai (Utsunomiya Univ. / Japan)

In this study, in-line dual-channel polarization holography using vortical phase data pages are proposed. two vortical phase data pages are displayed on two spatial light modulators (SLMs). Diffracted and refracted beams from the SLMs are superposed on a polarization-sensitive recording medium. The recorded two data pages are simultaneously reconstructed.

13PSb-37

Active chip-on-board modules for special spectra devices: technology and control

K. A. Vinogradova, K. D. Mynbaev (Optogan Group, NRU ITMO, RAS / Russia), V. E. Bougrov, M.A. Odnoblyudov, and A. R. Kovsh (Optogan Group, NRU ITMO / Russia)

Preparation and characteristics of greenhouse spectra devices made via chip-on-board technology are presented. Efficacy "red chips + blue chips" COBs and "red phosphor + blue chips" COBs are considered.

13PSb-38

Powerful ultraviolet chip-on-board modules for medical applications: improvements in technology and characteristics

K. A. Vinogradova (Optogan Group, NRU ITMO, RAS / Russia), V. E. Bougrov, M. A. Odnoblyudov, A. R. Kovsh (Optogan Group, NRU ITMO / Russia), A. E. Romanov, K. D. Mynbaev (Optogan Group, NRU ITMO, RAS / Russia), and V. I. Nikolaev (RAS, Ltd. Perfect crystals / Russia)

The issues of light extraction from ultraviolet emitting chip-on-board modules are under consideration. The ability of at least 10% increase in energy efficiency via optimization of the arrangement of semiconductor chips is shown.

13PSb-39

Simultaneous Measurement of Refractive Index and Thickness with a Convergence Beam

K. U. Hii (Univ. of Malaya, Swinburne Univ. of Technology / Malaysia), and K. H. Kwek (Univ. of Malaya / Malaysia)

A new method of simultaneous measurement of refractive index and thickness based on the focus shifts induced by a test plate set at two different angles in a convergence beam is proposed with simulation results.

13PSb-40

Fabrication of Low Cost Laser Fiber Illuminators for Cell Experiments

C. J. Ou (Hsiuping Univ. of Science and Technology / Taiwan) C. I. Shen (National Chung-Hsing Univ. / Taiwan), and S. R. Yeh (National Tsing-Hwa Univ. / Taiwan)

Laser fiber optics had been widely applied to biomedical applications. Recently, the optogenetics technologies had been gaining many attractions, and the demands on the fiber illuminators to complete the cell experiments become critical. This report introduces the fabrication of the low cost device by using the mass production components, and the qualities are sufficient to achieve the requirements for cell stimulating.

13PSb-41

Laser Direct Imaging of Transparent Indium Tin Oxide Electrodes Using High Speed Stitching Techniques

S. F. Tseng, W. T. Hsiao, C. K. Chung (National Applied Research Laboratories / Taiwan), P. Y. Cheng, and I. C. Liao (National Chiao Tung Univ. / Taiwan)

This paper presents high speed stitching techniques used in an ultraviolet laser processing system for electrode patterning and investigates the interaction between laser beams and indium tin oxide thin films deposited on glass substrates.

13PSb-42

Rapid manufacturing precision optical components with microfeatures using micro-hot embossing

C. C. Kuo, and H. J. Hsu (Ming Chi Univ. of Technology / Taiwan)

A simple and cost-effective method for fabricating precision optical components with microfeatures using micro-hot embossing was proposed. An approximately perfect Fresnel lens can be replicated under the embossing load of 50 kgf and the embossing temperature of 170 °C.

13PSb-43

Enhancement of the Sensitivity of a Diffraction Grating-Based Surface-Plasmon-Resonance Sensor Utilizing Two Opposite-Signed Different Diffraction Orders

K. Ichihashi, Y. Mizutani, and T. Iwata (The Univ. of Tokushima / Japan)

A diffraction grating-based surface-plasmon-resonance sensor utilizing two opposite-signed different diffraction orders is proposed in order to enhance the sensitivity. For improving precision, the fill factor of the rectangular grating is optimized.

13PSb-44

Analysis of Corneal Topography Model Based on Experimental Wavefront Measurements

Y. C. Cheng (National Tsing Hua Univ., National Applied Research Laboratories / Taiwan), P. J. Wang, H. Y. Li, W. K. Li (National Tsing Hua Univ. / Taiwan), and W. Y. Hsu (National Applied Research Laboratories / Taiwan)

This paper investigates the wavefront maps of a test sample, based on anterior corneal topography model and measured by both a wavefront sensor and a stitching interferometer. Finally, the anterior wavefront maps are generated by optics simulation program.

13PSb-45

Optical Perception for Detection of Cutaneous T-cell Lymphoma by Multi-spectral Imaging

C. H. Hsu (National Chung Cheng Univ. / Taiwan), Y. P. Hsiao (Chung Shan Medical Univ. / Taiwan), Y. S. Chen, S. J. Dai (National Chung Cheng Univ. / Taiwan), C. H. Tsai (Chung Shan Medical Univ. / Taiwan), J. H. Yang (Tzu Chi Univ., Buddhist Tzu Chi General Hospital / Taiwan), C. T. Kuo(National Sun Yat-sen Univ. / Taiwan), and H. C. Wang (National Chung Cheng Univ. / Taiwan)

Cutaneous T-cell lymphoma (CTCL) is an unusual type of skin malignancies, with a low probability of occurrence. The probability of Atopic Dermatitis and psoriasis patients misinterpreted as CTCL were 5.56% and 4.55%, respectively.

13PSb-46

Fabrication of Nanotube Arrays for Dye-sensitized Solar Cells

Y. T. Wu, S. H. Chan, C. K. Chen, Y. Z. Lin, and S. H. Chen (National Central Univ. / Taiwan)

Titanium dioxide nanotube arrays were fabricated using atomic layer disposition combined with anodic aluminum oxide method. The nanotube arrays can improve the efficiency and Voc of a dye-sensitized solar cell.

13PSb-47

Silicon Spherical Nano-particles having Magnetic Resonance Fabricated by Hydrogen Annealing

Y. Abe, Y. Kanamori, and K. Hane (Tohoku Univ. / Japan)

We fabricated Si nanospheres by hydrogen annealing. These nanospheres have magnetic resonances as metamaterials in visible region. The resonances were confirmed by observing scattering light and analysing spectra.

13PSb-48

System Analysis on Full-field Reflection-type Angle-Deviation Microscope

M. H. Chiu, S. F. Huang, J. Y. Lee, and Y. H. Yang (National Formosa Univ. / Taiwan)

We proposed a non-scanning full-field reflection-type biaxial angle-deviation microscope with three-dimensional profile performance. The reflectance of each point on the surface reveals the third dimensional information. It has some merits, such as, simple structure, fast measurement, easy operation, large area test at one shot.

13PSb-49

The deflection direction effect of transmission-type three-dimensional angle-deviation optical microscope

M. H. Chiu, Y. H. Yang, and J. W. Huang (National Formosa Univ. / Taiwan)

This paper presented the deflection direction effect of three-dimensional optical transmission microscopes. Two axial directions of deflection are in discussion, the deflection angle will induce the variation of reflectivity of a prism if the incident angle is near the critical angle. The difference between them is less than 0.7%

13PSb-50

Linear Calculation Models of Chromatic Performance of White LEDs with Two Phosphors

Y. Y. Chang , C. Y. Chen , J. H. Cheng , T. H. Yang , W. S. Ji , Y. S. Jeng , H. M. Wu , and C. C. Sun (National Central Univ. / Taiwan)

Linear models to evaluate the CRI performance and CCT of white LEDs with two phosphors are proposed and demonstrated. The error in predicting the CRI is within 1 and the CCT is around 300K.

13PSb-51

Transmission Properties of Surface Plasmon Polaritons based on Carbon Nanotubes Film

Y. Wang, X. Wang (Harbin Univ. of Science and Technology / China), and L. Li (Peking Univ. / China)

Surface plasmon transmission properties of a bulls-eyes structure with periodic grooves based on carbon nanotube film have been investigated by Finite Integration Technique.

13PSb-52

On-demand Fabrication System for Optics

H. Ohmori, Y. Uehara, Y. Hachisu, and N. Tone (RIKEN / Japan)

On-machine Fabrication System has inevitably developed for Optical Fabrication of various kinds. The system has capabilities of mirror finish grinding with ELID, ultraprecision cutting and turning. Each processing unit is desktop sized and compact body.

13PSb-53

Wavelength-selective Optical Attenuators using Plasmonic Nano-resonator Array for Silicon waveguides

T. Takahashi, Y. Kanamori, and K. Hane (Tohoku Univ. / Japan)

We fabricated a wavelength-selective optical attenuator using a plasmonic nano-resonator array for silicon waveguides. Attenuation of 16 dB was obtained around 1.55 um in wavelength. Electric fields at strong resonant conditions were numerically estimated.

13PSb-54

Double layered wire-grid structure for a refractive index sensor

E. Arakane, A. Mizutani, and H. Kikuta (Osaka Prefecture Univ. / Japan)

A double layered wire-grid structure on a dielectric binary grating has been designed and fabricated for a refractive index sensor. A resonant-wavelength shift was observed as the index of solution to be tested was changed.

Optical Components / Devices (2) (14:50-16:25)

Presiders:

K. Konno (Konica Minolta / Japan)
P. Berini (Univ. of Ottawa / Canada)

13S2-06 (Invited)

(14:50) Microstructured and freeform optical elements for imaging systems

S. Sinzinger (Technische Univ. Ilmenau / Germany)

The integration of compact optical microsystems requires additional design freedom which may be gained from the use of complex optical elements. We discuss the fabrication, characterization and integration of optimized freeform optical elements.

13S2-07

(15:15) Vibrating circular symmetric diffuser to reduce laser speckle in the laser mini-projector

C. H. Shih, Y. J. Chen, Y. C. Huang, C. W. Chiang, Y. K. Hus (National Chiao Tung Univ. / Taiwan), and J. W. Pan (National Chiao Tung Univ., Chi Mei Medical Center / Taiwan)

The key design is that two diffusers are located in the two sides of the light pipe. By vibrating the diffuser, the speckle contrast value can be decreased to 2.8% which is human eye invisibly.

13S2-08

(15:30) Combiner for Head-up Displays Using Translucent Fresnel Reflector

K. Horiuchi, S. Shimakawa, and N. Okada (Toshiba / Japan)

A combiner for head-up displays using translucent Fresnel reflector to minimize the unit volume has developed. Ghost image is eliminated by Fresnel pattern with variable pitch sandwiched by the materials with the same refractive index.

13S2-09 (Invited)

(15:45) MEMS Deformable Mirrors for Compact Camera System

G. D. J. Su (National Taiwan Univ. / Taiwan)

A pair of organic deformable mirrors as reflective elements in an optical zoom system is presented. Deformable mirrors are made of polydimethylsiloxane because of its low Young's modulus and residual stress. The thickness of this optical zoom module is less than 10 mm in design. The smallest effective focal length is 4.7 mm at full field angle of 52° and the f/# is 4.4. The demonstrated optical zoom was 1.3 times.

13S2-10

(16:10) Adaptive optics device for laser scanning microscopy using liquid crystals

A. Tanabe, M. Yokoyama, K. Matsumoto, M. Kurihara and N. Hashimoto (Citizen Holdings / Japan), T. Hibi, S. Ipponjima and T. Nemoto (Hokkaido Univ. / Japan)

We have developed simple adaptive optics devices for laser scanning microscopy using liquid crystals. This device corrects aberrations due to deep observations without touching an objective lens.

Coffee Break (16:25-16:40)

Optical Components / Devices (3) (16:40-18:05)

Presiders:

C. W. Liang (National Central Univ. / Taiwan)

S. Ura (Kyoto Inst. Tech. / Japan)

13S2-11 (Invited)

(16:40) Polarization-Independent High-Index-Contrast Subwavelength Grating VCSELs and Their Applications

H. Kawaguchi (Nara Institute of Science and Technology / Japan)

We proposed a high-index-contrast subwavelength grating vertical-cavity surface-emitting laser coupled with two in-plane waveguides in orthogonal directions. The output waveguide can be switched by changing the lasing polarization.

13S2-12

(17:05) The High Density Sub-aperture Stitching Interferometer by Vibration-Modulated Interferometry

H. S. Chang, P.C. Lin, C. W. Liang, Y. C. Chen, and C. C. Lee (National Central Univ. / Taiwan)

By adapting the vibration-modulated interferometry, the interferogram is acquired on the fly without stopping the rotational stage and both on very high resolution. The stitch error is significantly decreased by increasing the resolution of sub-aperture.

13S2-13

(17:20) THz Vector Beam generated by Achromatic Axially Symmetric Wave Plate

T. Wakayama (Saitama Medical Univ. / Japan), K. Sakaue (Waseda Univ. / Japan), T. Higashiguchi, Y. Otani (Utsunomiya Univ. / Japan), M. Washio (Waseda Univ. / Japan), M. Yonemura (Saitama Medical Univ. / Japan) and T. Yoshizawa (NPO 3D Associates / Japan)

We have developed an achromatic axially symmetric wave plate based on Fresnel's reflections to generate THz vector beam. Two-dimensional polarization distribution of THz vector beam is demonstrated by using the rotating analyzer technique.

13S2-14

(17:35) Near infrared controlled light valve using PDLC and BSO:Ru substrate

V. Marinova, R. C. Liu, S. H. Lin, Y. H. Lin and K. Y. Hsu (National Chiao Tung Univ. / Taiwan)

A novel hybrid device combining excellent photoconductivity of BSO:Ru crystal and PDLC strong birefringence is proposed. The structure doesn't require ITO contacts, alignment layers and allows all the processes to be controlled by near infrared light.

13S2-15

(17:50) Period and duty-ratio dependence of dynamic microbend in Q-switched Tm fiber ring laser

K. Kimpara, K. Komori, M. Tomiki, and H. Sakata (Shizuoka Univ. / Japan)

We demonstrate Q-switched Tm fiber lasers with peak pulse power of 9 W by designing the spatial period and the duty-ratio of comb-like plates that form dynamic periodic microbend in the fiber ring resonator.

February 14, 2014 (Friday)

Optical Systems (1) (9:00-10:35)

Presiders:

T. Konishi (Osaka Univ. / Japan)
R. Katayama (Fukuoka Institute of Technology / Japan)

14S3-01(Invited)

(9:00) Computational Interferometry: A Tutorial Overview

M. Takeda (Utsunomiya Univ. / Japan)

Basic concept and techniques of computational interferometry will be introduced with emphasis on methodological analogies between optical design and model-based optical metrology.

14S3-02 (Invited)

(9:25) Differential Phase Contrast 3-D X-ray Imaging

L. Hesselink (Stanford Univ. / USA)

Abstract not available.

14S3-03

(9:50) Optical frequency comb profilometry

Q. D. Pham, Y. Hayasaki (Utsunomiya Univ. / Japan)

We demonstrate an optical frequency comb profilometry implemented with an ultra-stable mode-locked frequency comb femtosecond laser, an optelectronic intefererometer in radio frequecny region, and a single pixel camera.

14S3-04

(10:05) Approach to Sub Femtogram Mass Weighting by Use of Adaptive Interferometer

R. Romashko, Y. N. Kulchin (RAS, Far-Eastern Federal Univ. / Russia), and T. A. Efimov (Far-Eastern Federal Univ. / Russia)

We present experimental results of applying an adaptive interferometry technique based on dynamic hologram recorded in photorefractive CdTe crystal for measuring mass adsorbed on micromechanical resonators.

14S3-05

(10:20) Measurement of Energy Flow in an Optical Beam with Inverting Vortex

Y. Miyamoto (The Univ. of Electro-Communications / Japan), A. Wada (National Defense Academy / Japan), T. Yonemura (The Univ. of Electro-Communications / Japan), and M. Takeda (Utsunomiya Univ. / Japan)

Energy flow and angular momentum density within cross sections of an optical beam with inverting vortex are experimentally obtained. The flows are calculated from intensity and phase distributions measured with polarization based phase shifting interferometry.

Coffee Break (10:35-10:50)

Optical Systems (2) (10:50-12:15)

Presiders:

V. Marinova (National Chiao Tung Univ. / Taiwan)
K. Watabe (Toshiba / Japan)

14S3-06(Invited)

(10:50) Active Micro-Optical Components for 3D Applications

Y. P. Huang, T. H. Jen, Y. C. Chang, P. Y. Shieh, C. W. Chen, and L. Y. Liao (National Chiao-Tung Univ. / Taiwan)

A low driving voltage with fast response LC-lens was developed. By implementing the LC-lens as an array structure, it can be adaptively used for 2D/3D switching, 3D rotation, and 3D Localization on auto-stereoscopic LCDs.

14S3-07

(11:15) Spectroscopic birefringence mapping by full-Stokes polarization camera

S. Shibata, T. Onuma, and Y. Otani (Utsunomiya Univ. / Japan)

A two-dimensional birefringence distribution is measured dynamically by using rotating retarder and polarization camera which is attached pixel polarizers of this camera attach on CCD. The retardance error of retarder can be calibrated by rotating retarders.

14S3-08

(11:30) Break the diffraction barrier : Proximity Projection Grating Structured Illumination Microscopy

C. J. Chuang (National Dong Hwa Univ. / Taiwan), C. W. See, and M. G. Somekh(Univ. of Nottingham, Nottingham / UK)

The far field optical super-resolution microscopy is presented. We will describe the use of proximity projection grating, providing different intensity patterns for sample illumination; all are capable of resolution beyond the Abbe diffraction limit.

14S3-09

(11:45) Position measurements of optically-trapped gold nanoparticle

A. Sato, and Y. Hayasaki (Utsunomiya Univ. / Japan)

We describe the experimental setup composed of an optical tweezers system and a low coherence inline digital microscope, and demonstrate the result of measuring the three dimensional position of optically trapped gold nanoparticle in water.

14S3-10

(12:00) Turbidity suppression by digital optical phase conjugation based on Kitty self-pumped phase conjugate mirror

C. C. Lin, Y. W. Yu, W. H. Chen, S. Y. Chen, and C. C. Sun (National Central Univ. / Taiwan)

We propose a new method for the alignment of a digital optical phase conjugator (DOPC) based on the Kitty self-pumped phase conjugate mirror (Kitty-SPPCM). The alignment includes all benefits for DOPC from various literature methods.

Lunch (12:15-13:15)

Optical Systems (3) (13:15-14:50)

Presiders:

M. Shibuya (Tokyo Polytech. Univ. / Japan)
W. Ulrich (Zeiss / Germany)

14S3-11 (Invited)

(13:15) Optical System Enables New Solutions for Live Broadcast

M. Hanft (Carl Zeiss / Germany)

Based on the latest advancements in high-speed computing, image processing and optical technologies, new concepts for broadcasting have been developed. It is possible to identify billboards in sport scenes and replace their contents. These concepts require optical systems that are compatible with common cameras and lenses. This paper shows the implications of an application of the optics and important details of the solution.

14S3-12 (Invited)

(13:40) Optics for High Concentration Photovoltaic Systems: Recent Results

J. C. Miñano (Universidad Politecnica de Madrid / Spain)

Outdoor measurements of a high concentration 4-channel Fresnel-Kohler CPV concentrator module reaching a regressed 35.6% efficiency and a maximum peak efficiency of 36.0% (@Tcell=25oC) are presented. Cells are Solar Junction's ones with the A-SLAMTM architecture using dilute-nitrides.

14S3-13

(14:05) System Design of a Coherent Laser Doppler Wind Profiler for the Predictive Control of Wind Turbine System (WTS)

L. Shinohara, T. Beuth, and M. Fox (Karlsruhe Institute of Technology / Germany), N. Heussner(FZI Forschungszentrum Informatik / Germany), H. U. Babu, W. Stork (Karlsruhe Institute of Technology / Germany)

We present the system design of a coherent laser Doppler wind profiler for the predictive control of WTS in order to reduce mechanical stress, increase lifetime and therefore reduce the electricity price of wind energy.

14S3-14

(14:20) The impact of the revisions to the laser safety standard on the classification of scanned-beam projection systems

N. Heussner (FZI Forschungszentrum Informatik / Germany), S. Danilova, S. Bogatscher (Karlsruhe Institute of Technology / Germany), and W. Stork (FZI Forschungszentrum Informatik, Karlsruhe Institute of Technology / Germany)

The impact of the expected changes to the laser safety standard IEC 60825 Ed. 2 is evaluated for scanned-beam projectors. The vital differences are pointed out and the maximum permissible output powers for class 2 are determined.

14S3-15

(14:35) Influence of Recording Beam Offsets in Microholographic Recording

R. Katayama (Fukuoka Institute of Technology / Japan)

The offsets between the focused spot positions of two recording beams used in microholographic recording in in-plane and vertical directions of the recording medium on the readout signal were investigated through a numerical simulation.

Coffee Break (14:50-15:15)

Special Session (15:15-17:20)

Presiders:

N. Hashimoto (Citizen / Japan)
P. Craen (poLight / Norway)

14SS-01 (Invited)

(15:15) Millisecond focusing speed open new applications for classical mobile phone camera

P. Craen, V. Kartashov (poLight A.S. / Norway), and N. Tallaron (poLight S.A. / France)

Non-focused (blurred) images result of inaccurate and slow AF actuator. Fast AF actuator overcomes the issue and open new applications when it is based on the poLight technology associated with image processing

14SS-02 (Invited)

(15:40) High-speed laser beam deflector and vari-focal lens using electro-optic KTN crystals, and their applications

K. Fujiura (NTT Advanced Technology Corp. / Japan)

KTN crystal exhibits an extremely large electro-optic effect. We have successfully developed a laser beam deflector and a vari-focal lens using the KTN crystal, which are applicable to the wide field of optics and photonics.

14SS-03 (Invited)

(16:05) Novel magnetophotonic/magnonic devices and their applications

M. Inoue, H. Takagi, Y. Nakamura, P. B. Lim, and T. Goto (Toyohashi Univ. of Technology / Japan)

Flow control of optical waves in magnetophotonic crystals and spin waves in magnonic crystals are described together with their possible applications in SLMs for 3D display, highly sensitive magnetic field sensors, and so on..a

14SS-04(Invited)

(16:30) Liquid crystal active optics and its application to laser microscopy

N. Hashimoto (Citizen / Japan)

Liquid crystal active optics with segmented ITO electrodes has been developed. In this paper, its application to adaptive optics and super-resolution using Laguerre-Gauss beams for laser scanning microscopes are presented.

14SS-05 (Invited)

(16:55) Optofluidics for active micro-optics

H. Zappe (Univ. of Freiburg / Germany)

The use of optofluidic concepts and technologies for the realization of novel active and tunable micro-optical devices and systems is discussed. Examples including fluidic lenses, apertures and irises; hyperspectral systems; and fluidic optical switching are presented.

Break (17:20-17:30)

Closing Session (17:30-17:50)
Presider:
Y.Tanaka (Panasonic / Japan)

Best Paper Award
(17:30)
K.Kuroda (Utsunomiya Univ. / Japan)

Closing Remarks
(17:40)
S.Yamaguchi (Konica Minolta / Japan)

INSTRUCTIONS FOR SPEAKERS

All speakers are required to register for participation in ODF'14. English will be used for all presentations and printed material.

(Oral presentation)

Oral session is to be held in “Main Hall”. The presentation time will be 25 minutes for invited papers (including 5 minutes discussion) and 15 minutes for regular papers (including 3 minutes discussion). Attention bell will be given three times as in the table below. A PC-based data projector is available. Speakers are asked to bring in their own personal computer plus a back-up CD-R or USB memory (Windows based). Prior to the starting time of the session, the speakers are asked to contact the session chairs and to confirm the connection between their computer and the projector.

(1) Presentation time

	Presentation	Discussion	Total
Plenary Session	20min.	5min.	25min.
Special Session			
Invited Papers			
Contributed Papers	12min.	3min.	15min.

(2) Attention bell

	1st bell	2nd bell End of Speech	3rd bell End of Discussion
Plenary Session	15min.	20min.	25min.
Special Session			
Invited Papers			
Contributed Papers	10min.	12min.	15min.

(Poster presentation)

Poster session will be held in “Conference Room” on Thursday, 13 February. For the convenience of the participants, this session will be divided into two parts. The first half (10:00-12:00) is for authors in category 1 and 2 and the second half (14:30-16:30) is for authors in category 3 and 4.

	Time	Date
Poster Session(1) Optical Design/Simulation Optical Components/Devices	Preparation : 8:30-9:45 Presentation : 10:00-12:00 Removal : By 12:30	February 13
Poster Session(2) Optical Systems New Technologies(for Optical Design and Fabrications)	Preparation : 12:30-14:15 Presentation : 14:30-16:30 Removal : By 17:00	February 13

Poster boards will be around 2 m high and 0.90 m wide double sided boards, on which A0 portrait (841 x 1189mm) can be placed. Poster should have minimum font size for text of 18 pt. Text and graphics should be readable from at least one meter.

Authors must remain in the vicinity of the bulletin board for the duration of the session (120 minutes) to answer questions in English. Authors are allowed to continue the discussion after the end of session if necessary, but are required to remove all the materials on the bulletin board within 30 minutes after the session.

To start the session on time each author must complete the preparation 15minutes before. For the morning session, the “Conference Room” will be open from 8:30 current day. Poster number will be displayed at upper left side on the bulletin board.

BEST PAPER AWARD

The best paper among the contributed papers will be awarded through the examination by the program committee at the end of the conference.

POST-DEADLINE PAPERS

A limited number of post-deadline papers will be accepted for presentation in a poster session. Latest and significant results obtained after the regular deadline are most welcome. Please e-mail your 35-word Abstract & 2-page Manuscripts to the secretariat for ODF'14 (odf14@pac.ne.jp). For the layout of manuscript, please see the Guidelines on the ODF'14 website.

The deadline for submission of post-deadline papers is on December 13, 2013.

Review result will be noticed by January 20, 2014. As well as the regular submission, the copyright of the article published in the ODF'14 Technical Digest is to be transferred to the Japan Society of Applied Physics (JSAP). The authors are required to agree to the copyright transfer when the 35-word abstract and the 2-page manuscripts are submitted.

For inquiries, please contact: Secretariat for ODF'14
Tsuyoshi Hayashi
Proactive Inc.
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E-mail: odf14@pac.ne.jp
Office hours: 9:00–18:00 (weekdays only)

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ODF'14 SPECIAL ISSUE OF OPTICAL REVIEW

The special issue of OPTICAL REVIEW, the journal of the Optical Society of Japan, for ODF'14 will be published in October 2014. Every authors of ODF'14 are strongly encouraged to submit the original papers to the special issue. The deadline for submission is March 31, 2014. Application form for the special issue will be distributed on site. Please note that all the submitted papers will be judged following the editorial policy of OPTICAL REVIEW. For your information, visit the web-site

http://annex.jsap.or.jp/OSJ/opticalreview/

The submissions from invited speakers are also welcome.

If you need further information, please contact,

Dr. Yasuhiko Tanaka
Editor/Secretariat, ODF'14 Special Issue
Panasonic / Japan
E-mail: tanaka@odf.jp

REGISTRATION

● Registration Fee

The registration fee includes admission to technical sessions and one copy of Technical Digest.

As for the person who paid the registration fee, the reception fee is free.

Type	Before / on (Jan. 12th, 2014)	After (Jan. 13th, 2014)
Member[*]	JPY 30,000	JPY 35,000
Non-Member	JPY 35,000	JPY 40,000
Student	JPY 5,000	JPY 10,000
Accompanying person	JPY 10,000	JPY 10,000
Additional copy of technical digest	JPY 10,000	JPY 10,000

[*] Member of sponsor and cooperative society.

JPY : Japanese Yen

● Registration

Those who wish to attend ODF'14, Itabashi, Tokyo are required to make on-line registration. The deadline for advanced registration is **Jan. 12th, 2014**. The on-line registration page will be available at the ODF'14 web-site.

● Accompanying persons

Participants can register accompanying persons. Accompanying persons are his/her family members. Registration fee for accompanying persons includes all expenses except admission to the technical session, conference pack and one copy of the Technical Digest, but cannot participate in the conference.

● Cancellation Policy

There will be no refunds for the registration fee.

OMOTENASHI EVENTS by ITABASHI CITY

Omotenashi Spirit (hospitality) is the motto at the Itabashi City Hall. All events are free of charge.

For more detailed information and application please visit the ODF'14 website.

● Feb.12 (Wed.) - Feb.14 (Fri.)

Special exhibition
"Optical and Precision Machinery Industry of Itabashi City"
at the lobby on the 2nd floor

Please check the products and technologies of optical and precision machinery companies in Itabashi

Japanese traditional craft exhibition
"Display of Armor"
at the foyer on the 1st Floor

It is possible not only to see armor but also to be photographed wearing it!

Showcasing Cameras made in Itabashi City
at the foyer on the 1st Floor

● Feb.12 (Wed.)

Satokagura "Japanese traditional performing arts"
(Omotenashi Attraction by Itabashi City)
18:25～18:55 at Main Hall

Satokagura consists of dance and music dedicated to the deity of each shrine.

Matsuri-bayashi
"Japanese traditional performing arts"
before the Welcome party starts
at the lobby of the Conference room (venue of Welcome party)

Matsuri-bayashi is traditional Japanese music performed in local festivals and during celebratory ceremonies with Japanese drums (odaiko and shime-daiko), flutes and gongs.

Shishimai "Japanese traditional performing arts"
at the Welcome party (Conference room)

Shishimai is a graceful yet dynamic dance by lions. Lions dance to Japanese drums and flutes.

● Feb.13 (Thu.)

Experience program "Tea ceremony and Ikebana (Japanese flower arrangement)"
(Application is required)
Schedule: please check the ODF'14 website.
at the tea ceremony room and Japanese style room on the 5th floor

3D film "FURUSATO" screening
Schedule: please check the ODF'14 website.
at small hall on the 2nd floor

Furusato is a 3D film featuring world heritage sites photographed from space with the "Daichi" land observation satellite.

Astronomical observation
(This event will be cancelled in case of rain or cloudiness)
after sunset at the field of Itabashi 1st Junior high school

Astronomical observation will be held with telescopes made by the optical company in Itabashi.

● Feb.15 (Sat.)

A tour of optical and precision machinery laboratory & companies in Itabashi
(Application is required/Free of charge except for lunch)
Schedule & Destination: please check the ODF'14 website.

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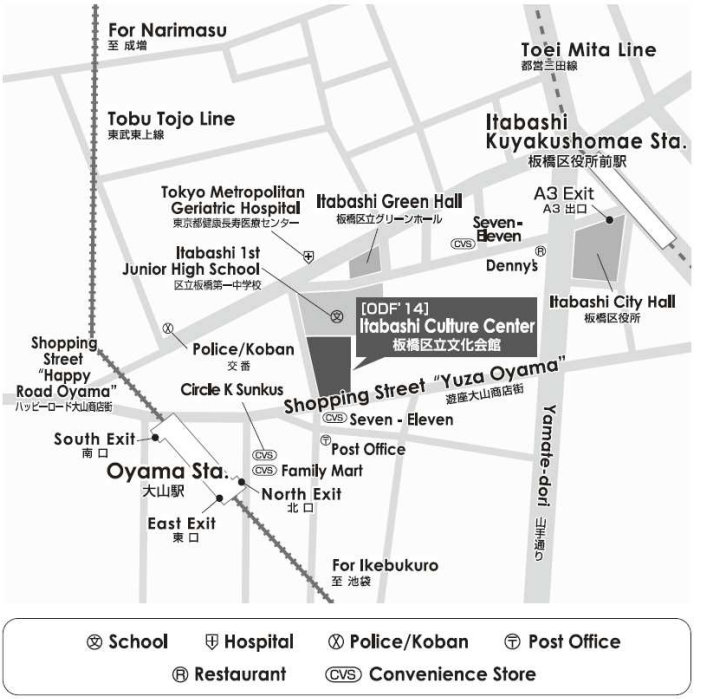
S. Watanabe (Olympus / Japan)
N. Yamagata (HOYA / Japan)

CONFERENCE SITE

ODF'14, Itabashi, Tokyo, will be held at Itabashi Culture Center. Itabashi Culture Center is located in Oyama area, where two big shopping streets are famous; “Yuza Oyama” & “Happy Road Oyama”.

“Itabashi Culture Center”
Address: 51-1 Oyama-higashicho, Itabashi City, Tokyo

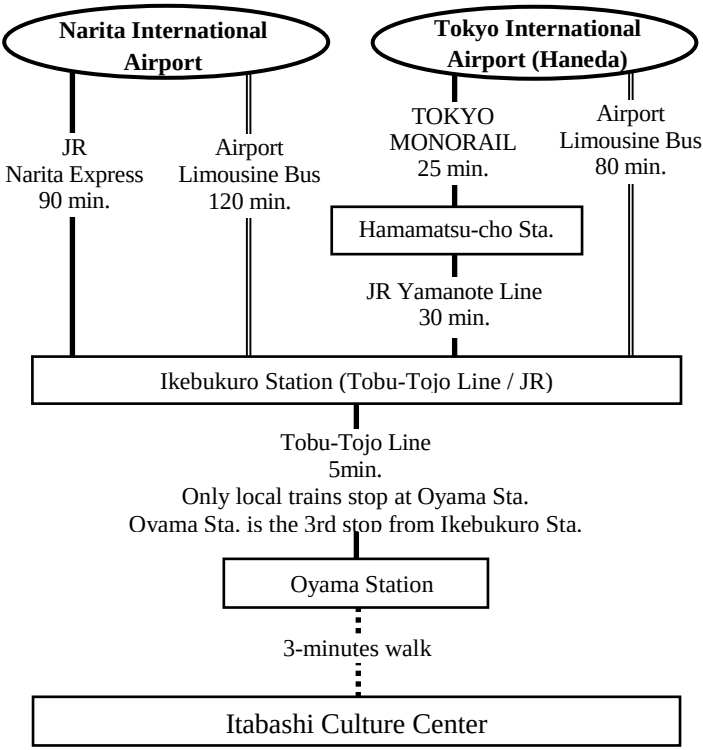


In case you come out of East Exit of Oyama Sta., you can go to the side of North Exit by underpass on the left.

From Narita International Airport (to JR Ikebukuro Station)
Board the JR Narita Express Train to JR Ikebukuro Station or the Airport Limousine Bus.

From Tokyo International Airport (to JR Ikebukuro Station)
Board Tokyo Monorail to Hamamatsu-cho Station, and connect to the JR Yamanote Line.

From JR Ikebukuro Station
Board Tobu-Tojo Line to Oyama Station. And 3-minutes walk to the conference site from the exit of Oyama Station.

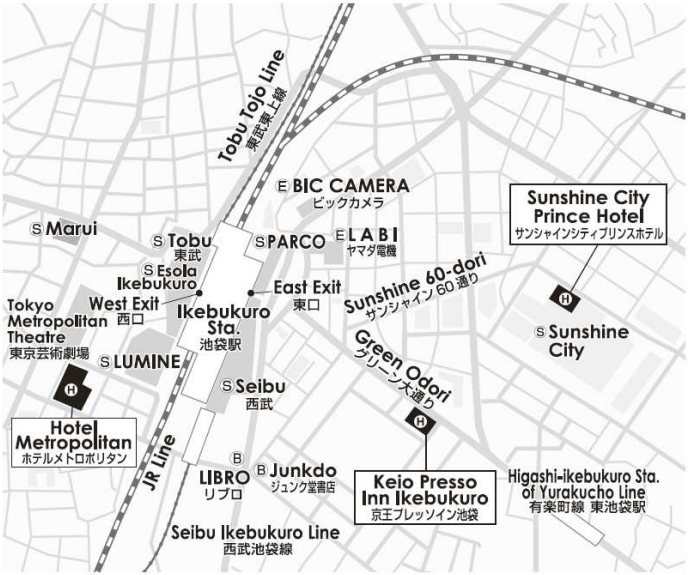


HOTEL RESERVATION

- **Hotel**

Accommodation information will be available in our website. Some hotels in Ikebukuro area are arranged for ODF'14 participants. Online hotel reservation system will be also available in our website.

MAP OF HOTEL LOCATION



Hotel Metropolitan

Address: 1-6-1 Nishi-Ikebukuro, Toshima-ku, Tokyo

Phone: +81-3-3980-7600

住所:東京都豊島区西池袋 1-6-1

Sunshine City Prince Hotel

Address: 1-5, Higashi-Ikebukuro 3-chrome, Toshima-ku, Tokyo

Phone: +81 3-3988-1111

住所:東京都豊島区東池袋 3-1-5

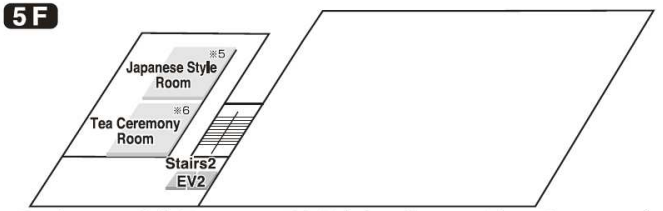
Keio Presso Inn Ikebukuro-

Address: 2-29-11 Minami-Ikebukuro Toshima-ku, Tokyo

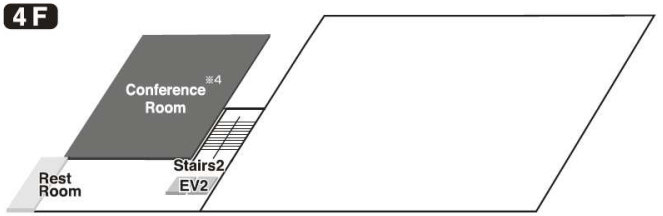
Phone: +81-3-5396-0202

住所:東京都豊島区南池袋 2-29-11

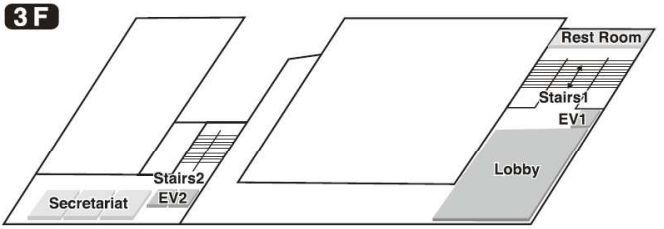
CONFERENCE CENTER FLOOR MAP

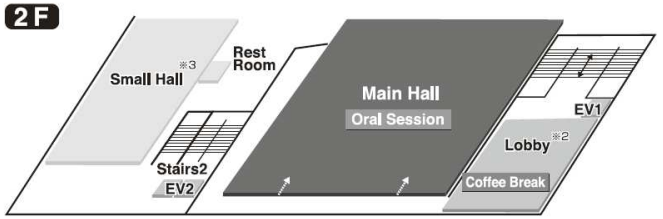


※5 ● Japanese Style Room・・・Feb.13 Ikebana(Japanese Flower Arrangement)
● Tea Ceremony Room・・・Feb.13 Tea Ceremony

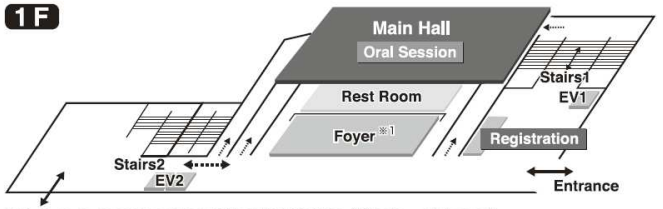


※4 ● Feb.12 Welcome Party
● Feb.13 Poster Session





※2 ● Coffee Break ● Special Exhibition "Optical and Precision Machinery Industry of Itabashi City"
※3 ● Feb.13 3D Film "Furusato" Screening



※1 ● Japanese Traditional Craft Exhibition "Display of Armor"
● Showcasing Cameras made in Itabashi City

Small Hall,Secretariat,Conference Room,Japanese Style Room and Tea Ceremony Room are accessible only by Stairs2 or EV2

DEADLINES

Post Deadline Papers:	December 13, 2013
Discount Registration:	January 12, 2014
Hotel Reservation:	January 17, 2014
Online Registration:	January 17, 2014
On-site Registration:	February 12-14, 2014

For information mail
ODF'14 Secretariat:

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