ADVANCE PROGRAM

11th International Conference on Optics-photonics Design & Fabrication

"ODF '18, Hiroshima"
November 28th-30th, 2018

International Conference Center Hiroshima

Organized by
Optics Design Group of The Optical Society of Japan
Co-sponsored by
JSAP (The Japan Society of Applied Physics)
The City of Hiroshima
Hiroshima Convention & Visitors Bureau
In cooperation with
ICO (International Commission for Optics) · **EOS** (European Optical Society) · **SPIE** (The International Society for Optics and Photonics) · **TPS** (Taiwan Photonics Society) · **OSA** (The Optical Society) · **OSK** (Optical Society of Korea) · **OPSS** (Optics and Photonics Society of Singapore) · **ROS** (Rozhdestvensky Optical Society) · **PIDA** (Photonics Industry & Technology Development Association) · **TOOMA** (Taiwan Optics/Optronics Manufacturers' Association) · **DGaO** (German Society of Applied Optics) · **The 179th Committee on Photonics Information Systems**, **JSPS** (Japan Society for the Promotion of Science) · **Applied Optics Meeting in Kansai** · **The Astronomical Society of Japan** · **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) · **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** (Optoelectronics Industry and Technology Development Association) · **The Spectroscopical Society of Japan** · **SPIJ** (The Society of Photography and Imaging of Japan)

(Some of above cooperative organizations are under negotiation.)

Post-Deadline Paper Submission : October 5th, 2018
Early-Bird Registration Deadline : October 28th, 2018
http://www.odf.jp/

TIME TABLE

1st Day	
November 28, 2018 (Wednesday)	
8:30	Registration (8:30-17:00)
9:30	Opening Session
9:40	Plenary Session
10:30	Coffee Break
10:45	Optical Design / Simulation (1)
11:55	Lunch
13:00	Optical Design / Simulation (2)
14:20	Group photo
14:35	Poster Session (1) (Incl. Coffee Break)
16:20	Break
16:30	Optical Design / Simulation (3)
17:55	Travel
18:30	Welcome Party at Hiroshima museum of art free to enjoy MILLET, MONET, GOGH,etc.
20:00	

2nd Day	
November 29, 2018 (Thursday)	
	Registration (8:30-17:00)
8:50	Optical Systems (1)
10:15	Poster Session (2)
12:00	Lunch
13:00	Optical Systems (2)
14:20	Break
14:30	Optical Systems (3)
15:55	Coffee Break
16:10	Optical Components / Devices (1)
18:00	Break
18:10	Post-deadline Paper Session

3rd Day	
November 30, 2018 (Friday)	
8:50	Optical Components / Devices (2)
10:40	Coffee Break
10:55	New Technologies (1)
12:30	Lunch
13:30	New Technologies (2)
15:00	Coffee Break
15:15	Special Session
16:55	Closing Session
17:20	Travel
17:40	Farewell Party invitation only

INTRODUCTION

The 11th International Conference on Optics-photonics Design and Fabrication, "ODF'18, Hiroshima", will be held at the International Conference Center Hiroshima, Hiroshima, Japan on November 28th-30th, 2018. Optics-photonics design and fabrication will continue to play a significantly important role in the future, achieving harmony between technology and the environment and building bridges for real international cooperation worldwide. ODF'18 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.

SCOPE OF THE CONFERENCE

ODF'18 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, Freeform Optics

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, LEDs, Detectors

Category 3. Optical Systems

Illumination Optics, Information Optics, Optical Data Storage, Optical Lithography, Microscopy, Displays, Computational Imaging and Sensing, Automotive Optics, Bio-Medical Optics, Optofluidics, Measurement and Sensing, Cameras

Category 4. New Technologies

Nonlinear Optics, Ultrafast Optics, Metamaterials, Plasmonics, Near-field Optics, Quantum Optics, Nano Structures, Cloaking, Other Future Science and Technology available to Optics Design and Fabrication

Special Session:

"Optics and Photonics for Intelligent Vehicles"

TECHNICAL PROGRAM

November 28, 2018 (Wednesday)

Opening Session (9:30-9:40)

Presider:

H. Tatsuno (Ricoh / Japan)

Opening Remarks

M. Shibuya (Tokyo Polytechnic Univ. / Japan)

Plenary Session (9:40-10:30)

Presiders:

M. Shibuya (Tokyo Polytechnic Univ. / Japan)
S. Hiura (Hiroshima City Univ. / Japan)

28PL-01 (Invited)

(9:40) High-speed Tracking Optical Devices and Their Applications

I. Ishii (Hiroshima Univ. / Japan)

This paper presents multithread active vision sensing using high-speed tracking optical devices by parallelizing the operations of shooting, processing, and gaze control into time-division processes to realize multiple virtual pan-tilt cameras. Several application systems, such as monocular stereo tracking, vibration sensing, and microscopic view expansion, are described.

28PL-02 (Invited)

(10:05) The Emergence of Freeform Optics: Design for Manufacture

J. Rolland (Univ. of Rochester / USA)

We describe a method for designing freeform optics based on the aberration theory of freeform surfaces that guides the development of a taxonomy of starting-point geometries with an emphasis on manufacturability.

Coffee Break (10:30-10:45)

Optical Design / Simulation (1) (10:45-11:55)

Presiders:

J. Miñano (Technical Univ. of Madrid / Spain)
T. Otaki (Nikon / Japan)

28S1-01 (Invited)

(10:45) Optical Design for Afocal Observation and Aiming Systems

D. Granciu (IOR / Romania)

Riflescopes are among the first optical devices invented by mankind and after so many years since they are manufactured their design still remains classic. This article discusses aspects of the evolution of zoom riflescopes.

28S1-02

(11:10) Technology for Reducing the Minimum Focusing Distance in a Floating Focus Optical System

Y. Sudoh (Ricoh / Japan)

We report on an optical system that has high resolution over the entire focusing distance. It shortens the minimum focusing distance using a floating focus that fixes the diaphragm to the image plane.

28S1-03

(11:25) Large Depth-of-field Compound-eye Image Scanner Using Wavefront Coding and Range Measurement

H. Kawano, S. Takushima, Y. Toyoda, M. Sugano, and T. Matsuzawa (Mitsubishi Electric / Japan)

A compound-eye image scanner with a large depth of field is developed, using a wavefront coding technique to suppress axial chromatic aberration. Images by the compound eyes are stitched by an image-matching procedure with support of range measurement.

28S1-04

(11:40) Using Swarm Intelligence: A Novel Approach to Automatic Lens Design

C. Menke (Carl Zeiss AG / Germany)

Particle Swarm Optimization (PSO) is a global optimization method that uses a "swarm" of candidate solutions to locate the optima in a multidimensional search space. The application of PSO to optical design is demonstrated.

Lunch (11:55-13:00)

Optical Design / Simulation (2) (13:00-14:20)

Presiders:

J. Heber (Fraunhofer / Germany)
Y. Suzuki (Olympus / Japan)

28S1-05 (Invited)

(13:00) Freeform Optics for Virtual Reality

J. Miñano, P. Benitez (Limbak / Spain and USA, Technical Univ. of Madrid / Spain), J. González (Technical Univ. of Madrid / Spain), P. Zamora, D. Grabovičkić, M. Buljan, B. Narasimhan, J. López, M. Nikolić, and E. Sánchez (Limbak / Spain and USA)

Virtual Reality requires novel displays and novel optical designs with extensive use of freeform surfaces to overcome multiple technological challenges: size, weight, increasing its resolution up to the human visual acuity, matching vergence and accommodation.

28S1-06 (Invited)

(13:25) Micro-optical Free-Forms: Design and Fabrication

U. Zeitner (Fraunhofer Inst. of Applied Optics and Precision Engineering Jena / Germany, Friedrich-Schiller-Univ. Jena / Germany), P. Schleicher (Fraunhofer Inst. of Applied Optics and Precision Engineering Jena / Germany), G. Widholz (Friedrich-Schiller-Univ. Jena / Germany), R. Leitel, and D. Michaelis (Fraunhofer Inst. of Applied Optics and Precision Engineering Jena / Germany)

Free-form optical elements can be advantageously used to tailor diffractive optical functions, e.g. their chromatic behaviour. Their realization requires dedicated high-precision lithographic fabrication technologies.

28S1-07
(13:50) Spatial Beam Shaping in Amplitude and Phase for Multispectral Applications Using Binary Amplitude Modulators and Phase Masks

M. Roth (Dresden Univ. of Tchnology / Germany), J. Heber (Fraunhofer Inst. for Photonic Microsystems / Germany), and K. Janschek (Dresden Univ. of Tchnology / Germany)

The article proposes a combination of binary amplitude modulators with specially designed phase masks for the high-speed, high-resolution modulation of amplitude and phase. This system enables linear optical arrangements and thereby supports multispectral applications.

28S1-08
(14:05) Fundamental Ray Aberration Coefficient: Extension of Ray Transfer Matrix Analysis to the 3rd-order Region

K. Mori, Y. Hayasaki, and K. Araki (Utsunomiya Univ. / Japan)

Calculation formulae of the fundamental ray aberration coefficient for coaxial rotationally symmetric optical systems were derived. The relation with the Seidel aberration coefficient was formulated. Using the relational expression, numerical example was shown.

Group photo (14:20-14:35)

Poster Session (1) (14:35-16:20)

28PSa-01

An LED Motorcycle Headlamp

W. Sun, Y. Huang, and E. Huang (National Central Univ. / Taiwan)

A white LED motorcycle headlamp are composed of elliptical and parabolic reflectors, and a toric lens. We use non-sequential rays to improve the efficiency. The uniformity and efficiency of the high-beam are 14.17% and 66.45%.

28PSa-02

Derivation of Conventional Formula of the Third Order Aberration for Off-axial Optical System

K. Saito (Kindai Univ. Technical College / Japan)

A formula of third order aberration based on the primary aberration expansion for an off-axial optical system is investigated. The point eikonal analysis and the coordinate system using the surface normal vector lead to a simple wavefront based expression.

28PSa-03

Massively Parallel Fast Ray Tracing in Cloud Computing Environment

H. Ono (Nikon / Japan), S. Matsumura (EQN / Japan), and Z. Ushiyama (Tyco Optics / Japan)

We are developing a massively parallel fast ray tracing program. The ray tracing with decentred optical system and/or polarization ray tracing did not become a serious problem for calculation time and cost with cloud computing environment.

28PSa-04

New Solutions in Precision Lens Mounting

F. Lamontagne and N. Desnoyers (INO / Canada)

A comprehensive study performed on interaction between lens and mount has resulted in the development of new solutions to mount lenses accurately. This paper summarizes the solutions developed to mount glass and injection molded plastic lenses.

28PSa-05

3X Zoom Lenses for 10-megapixel APS-C Digital SLR Cameras

W. Sun and G. Huang (National Central Univ. / Taiwan)

Four groups of 3× zoom lens design for a 10-megapixel digital single-lens reflex camera with an advanced photo system type-C image sensor is presented. We performed the tolerance analysis, which made the design for manufacturing.

28PSa-06

The Illumination Design of Uniform Light Source for Lithography

J. Huang (National Applied Research Laboratories / Taiwan, National Taiwan Univ. / Taiwan)

The i-line source and UVLED array have been applied in the design as object to form uniform light on the output aperture. Based on tele-centric lens, and reducing the divergent methods, the uniform light sources have formed, and the best illumination performance is achieved.

28PSa-07

Modified Null-lens Testing Applied to the Form Measurement of Aspherical Mirror with Large Departure

C. Ma, R. Chen, C. Yang, and K. Huang (National Applied Research Laboratories / Taiwan)

This study presented a modified null-lens testing for a large-departure aspherical mirror by using the traditional null-lens and an extra virtual wavefront compensation which is involved to the measuring software in optical interferometer system.

28PSa-08

Design of Fast Hybrid Microlens Arrays

A. Grosso (Datalogic IP Tech Srl / Italy, EPFL / Switzerland), K. Vonmetz (Datalogic IP Tech Srl / Italy), and T. Scharf (EPFL / Switzerland)

Hybrid refractive-diffractive design is proposed to realize fast (F/1) microlens array (MLA) to improve the performance of a Light Field (LF) camera in terms of SNR and acquisition time.

28PSa-09

Lens Design of Bullet-Shaped LED for Partial Backward Lighting

T. Lee, J. Fang, and Y. Chen (National Central Univ. / Taiwan)

We propose a LED lens to be retrofitted directly over bullet-shaped LEDs on existing signs. This lens allows part of the light to be directed backward to achieve appropriate display contrast.

28PSa-10

The Influence of the Background Illumination on the Glare of Table Lamp

C. Tseng and T. Hsu (National Pingtung Univ. / Taiwan)

The simulated illumination by a table lamp with the consideration of the background illumination. The luminous intensity and discomfort glare index, UGR, of the four regions on the table were analyzed.

28PSa-11

Reduction in Computation Complexity of Fresnel Transform through Low-rank Matrix Approximation

Sheeja M. K., Nelwin Raj N. R. (SCTCE / India), Anusree L. (SCTCE / India, LBSITW / India), L. Thomas (SCTCE / India, College of Engineering / India), M. Cyriac (SCTCE / India, LBSITW / India), and Kanjana G. (SCTCE / India, LBSITW / India)

The calculation of Fresnel Transform as the convolution between space operator and light distribution of the reference plane is considered. The low rank Matrix approximation is obtained with Singular Value Decomposition technique and calculated decomposed values are used as code book for valuation.

28PSa-12

Measurement of the Azimuthal Wavefront of a Miniature Lens

H. Chang and C. Liang (National Central Univ. / Taiwan)

The unsymmetrical aberration is measured by azimuthal-scanning the optical field of the miniature lens. The proposed wavefront testing device measures the optical aberrations off an off-axis beam from a lens. The field vector aberration theory is applied in the measured data showing the field-constant coma aberration is the dominating aberration.

28PSa-13

Tunable Goos-Hänchen Shift of a Reflected Light Beam from Gold Nanoparticle Film

Y. Xu and L. Ang (Singapore Univ. of Technology and Design / Singapore)

The nanoparticle size-, and temperature-dependent Goos-Hänchen shift of reflected light beam from the interface of air/gold nanoparticle film is theoretically investigated. An optical sensor for temperature monitoring based on the Goos-Hänchen shift can be obtained.

28PSa-14

A Study of Wave-front Coding Technique Applied to Next Generation Digital Optical System

Q. Lee, C. Lee (National Central Univ. / Taiwan), Y. Fang (National Kaohsiung Univ. of Science and Technology / Taiwan), and C. Tsai (National Chung Hsing Univ. / Taiwan)

This research mainly focus on the development of wave-front coding digital algorithm and the design of an optical system which conforms to wavefront coding system.

28PSa-15

Channel Confinement Structure for Cavity-resonator-integrated Guided-mode Resonance Mirror

N. Takishita, K. Yanagida, J. Inoue (Kyoto Inst. of Technology / Japan), K. Kintaka (National Inst. of Advanced Industrial Science and Technology / Japan), and S. Ura (Kyoto Inst. of Technology / Japan)

Guided-mode-resonance mirror can give steep reflection phase spectrum. Channel confinement structure was investigated with cavity resonator integration for realizing a small aperture mirror. Device was fabricated and effectiveness of the structure was demonstrated.

28PSa-16

Evaluation of the Schottky Photodiode with the Surface Plasmon Filter

T. Eko and A. Utsumi (National Inst. of Technology, Maizuru College / Japan)

We are developing a high-sensitivity photodiode with a surface plasmon filter. In case of the surface plasmon filter with gold nanoparticles, we confirmed the improvement of sensitization by surface plasmon resonance.

28PSa-17

Multi-Spectrum Laser-Excited Remote Phosphor Light Engine Optical Design for Endoscopic Fiber Illumination Applications

T. Lee and J. Shen (National Taiwan Univ. of Science and Technology / Taiwan)

We focus on the development of multi-spectral laser-excited remote phosphor illumination module with destroy the existing thinking and use innovative optical design in order to improve the system efficiency and reduce system size under Étendue constraints.

28PSa-18

Measuring and Solving Method for Cemented Doublet

H. Tsay, H. Kuo, S. Chang, and M. Chen (National Applied Research Laboratories / Taiwan)

This paper proposes a method using measurement results to solve internal parameters of optical cemented doublet. Through external parameter measurement results and the optical simulation, a non-destructive calculation procedure for cemented doublet is established.

28PSa-19

Design and Fabrication of Contact Lens with Slope-constrained Q-type Aspheres for Myopia Correction

Y. Cheng (National Applied Research Laboratories / Taiwan), K. Abou-El-Hossein (Nelson Mandela Univ. / South Africa), M. M. Liman, A. Lukman (Nelson Mandela Univ. / South Africa), T. Huang, and F. Chen (National Applied Research Laboratories / Taiwan)

This paper investigates the design of a rigid contact lens (CL) with slope-constrained Q-type aspheres for myopia correction. The paper presents our methodology followed in the generation of contact lens of Q-type aspheres by single-point diamond turning process. The paper also analysis and measurement the optical surface form error.

28PSa-20

Light Shielding Film on Edges and Draft Facets of Fresnel Lens Fabricated by Picosecond Laser Processing

T. Sakai (Toshiba / Japan)

We demonstrated the fabrication of light shielding film on draft facets of Fresnel lens. The shielding films were formed by precise picosecond laser ablation technique.

28PSa-21

Holographic Generation of a Subdiffraction-limit Light Sheet Using an Objective Lens Combined with a Cylindrical Lens

Y. Ogura, R. Kanai, and J. Tanida (Osaka Univ. / Japan)

We present holographic generation of a subdiffraction-limit light sheet with about 2-μm thickness using a set of an objective lens and a cylindrical lens. The performance was evaluated by simulation and experiment.

28PSa-22

Novel Gratings with High Dispersion and High Efficiency for Astronomical Observations

N. Ebizuka, T. Okamoto, M. Takeda, T. Hosobata, Y. Yamagata (RIKEN / Japan), M. Sasaki (Toyota Technological Inst. / Japan), I. Tanaka, T. Hattori (National Astronomical Observatory of Japan / USA), T. Kamizuka (The Univ. of Tokyo / Japan), S. Ozaki, and W. Aoki (National Astronomical Observatory of Japan)

We introduce a reflector facet transmission grating, hybrid grism (direct vision grating), volume binary grating and Si grism for the TMT (Thirty Meter Telescope), the 8.2 m Subaru telescope, other ground-based and space-borne telescopes.

28PSa-23

Design of Graded Index Type Photonic Crystal Fiber Having α-power Air Hole Diameter Distribution with α<1 for Fiber Collimator Application

M. Wakabayashi, H. Yokota, and Y. Imai (Ibaraki Univ. / Japan)

Light propagation characteristics in Gaussian beam excited graded index type photonic crystal fiber (GI-PCF) having α-power air hole diameter distribution with $\alpha<1$ were numerically studied. The structure of GI-PCF for fiber collimator application was designed.

28PSa-24

Dual-wavelengths Filter Operating at Visible Wavelength Region Using Subwavelength Grating on Waveguide Structure

Y. Takashima, M. Haraguchi, and Y. Naoi (Tokushima Univ. / Japan)

Dual-wavelengths filter was experimentally developed using subwavelength grating on waveguide structure by traditional and simple lithography techniques. Utilizing resonances in the structure, sharp reflection peaks are obtained at dual wavelengths at visible region.

28PSa-25

Evaluation of Respiratory Rate by Analysing the Fluctuation Frequency of Oxygen Saturation on Human Face

R. Chen, F. Su, K. Huang, and Y. Lin (National Applied Research Laboratories / Taiwan)

This paper presents a remote measurement method for the evaluation of respiratory rate. By a continuously measurement of the variation of the facial oxygen saturation, the human respiration could be successfully monitored.

28PSa-26

Propagation Characteristics in PCF with Tapered Air Holes for Fiber Connecting Devices

K. Koizumi, H. Yokota, and Y. Imai (Ibaraki Univ. / Japan)

The mode extent varies periodically in an air-holes-tapered photonic crystal fiber which acts as a low loss fiber connecting element to control the degree of the divergence of the output beam.

28PSa-27

Electro-Optic Directional Couplers in Aperiodically Poled Lithium Niobate

H. Chung, S. Yang, S. Yang, T. Chien, K. Huang, and Y. Chen (National Central Univ. / Taiwan)

We report highly engineerable electro-optic directional couplers in aperiodically poled lithium niobate waveguides. The fabrication tolerance and working bandwidth of the novel coupler can be increased by 2.7 and 2.4 times over conventional couplers, respectively.

28PSa-28

A New Merit Function for Mueller Ellipsometry and Its Application on Subwavelength Gratings

M. Wurm, T. Grunewald, B. Bodermann (Physikalisch-Technische Bundesanstalt / Germany), J. Reck, and U. Richter (SENTECH Instruments GmbH / Germany)

We derived a novel mathematical procedure to obtain geometry sample parameters from Mueller ellipsometry data in which uncertainties originated from depolarization are taken into account. We applied this on a measurement of a subwavelength Si-grating.

28PSa-29

Design and Fabrication of Eccentric Fresnel Lenses for a Compact Spectrometer Based on a Inline Optical Arrangement

K. Tanaka (Kyoto Univ. / Japan), T. Aburatani (Doshisha Univ. / Japan), T. Fukuda (National Inst. of Advanced Industrial Science and Technology / Japan), and A. Emoto (Doshisha Univ. / Japan)

Fresnel lens enables optical waves to focus with wavelength dispersion, which can be used for a specific spectrometer. We have designed and fabricated an effective Fresnel lens with an eccentric feature.

28PSa-30

Ag-Coated Submicron Particles of Polystyrene Formed by Dewetting Process and Their Application: Multi-Functional Biosensor-Chips

M. Taguchi (Kyoto Inst. of Technology / Japan), T. Ogami (Nara Inst. of Science and Technology / Japan), T. Fukuda (National Inst. of Advanced Industrial Science and Technology / Japan), and A. Emoto (Doshisha Univ. / Japan)

Submicron polystyrene particles based on dewetting process was prepared using spin-coating method. In addition, it is demonstrated that the particles covered by a thin Ag-layer can be used as functional biosensorchips.

28PSa-31

Development of Field Assembly Optical Connector with Low Optical Loss

S. Kim (Korea Photonics Technology Inst. / Korea, Chonnam National Univ. / Korea), J. Park (Korea Photonics Technology Inst. / Korea), H. Kim (Korea Optron / Korea), and J. Baek (Korea Photonics Technology Inst. / Korea)

The field assembly optical connectors (FAOCs) used in harsh environments should have strong reliability. FAOCs with newly developed V-groove design show less than 0.5 dB of optical loss after Telecordia GR-1209-CORE for 500 h.

28PSa-32

Fabrication of Multiple D-shaped Silicon Cored Fibers for In-line Schottky Photodetectors

W. Lu and L. Wang (National Taiwan Univ. / Taiwan)

We demonstrate a method to simultaneously fabricate multiple D-shaped silicon cored fibers for making in-line Schottky photodetectors operating at telecom wavelength. The responsivity 0.577 mA/W under -5V bias is about 2 times higher than our previous work.

Break (16:20-16:30)

Optical Design / Simulation (3) (16:30-17:55)

Presiders:

D. Granciu (IOR / Romania)
A. Nozaki (Konica Minolta / Japan)

28S1-09 (Invited)

(16:30) Combining Machine Learning with Simulation: Its Application to Telescope Stray Light Analysis

K. Kisamori (National Inst. of Advanced Industrial Science and Technology / Japan, NEC / Japan), T. Washio (NEC / Japan, Osaka Univ. / Japan), and Y. Kameda (National Inst. of Advanced Industrial Science and Technology / Japan, NEC / Japan)

We present a new method combining stochastic sampling technique and simulation for an efficient search focusing on rare and critical conditions such as stray light.

28S1-10

(16:55) Optical Design Method "Co-axis double TMA" for Astronomical Optics

T. Tsuzuki (National Astronomical Observatory of Japan / Japan)

To achieve extremely low WFE and high throughput for next-generation astronomical instruments, a new design concept "Co-axis double TMA" is proposed. The validity of the proposed concept has been confirmed by a next-generation astronomical instrument.

28S1-11

(17:10) Coherent Ray Tracing Simulation of Multi-aperture Elements for Laser Beam-shaping in Mask Aligner Lithography

R. Kirner (SUSS MicroOptics SA / Switzerland), A. Vetter (SUSS MicroOptics SA / Switzerland, Karlsruhe Inst. of Technology / Germany), W. Noell (SUSS MicroOptics SA / Switzerland), T. Scharf (EPFL / Switzerland), and R. Voelkel (SUSS MicroOptics SA / Switzerland)

Gaussian decomposition of coherent wave fronts enables ray tracing simulation of coherent illumination systems. We investigate the simulation of multi-aperture optical elements in conjunction with optical speckle enabling mask aligner lithography using a 193 nm continuous-wave laser.

28S1-12

(17:25) The Asymmetric Condenser Projector of High Efficiency and Uniform on a Digital Micro-mirror

W. Sun and T. Ku (National Central Univ. / Taiwan)

This paper presents an asymmetrical condenser for the high efficiency and uniform lighting system. The light efficiency and uniformity of the white light on a digital micro-mirror (DMD) are 56.13% and 3.31%.

28S1-13

(17:40) Microscale Color Filter Matrix Based on Metallic Nano-Gratings Fabricated Using Electron Beam Lithography

W. Wu (Technical Univ. Braunschweig / Germany), P. Hinze, T. Weimann (Physikalisch-Technische Bundesanstalt / Germany), T. Granz (Technical Univ. Braunschweig / Germany), T. Dziomba, B. Bodermann (Physikalisch-Technische Bundesanstalt / Germany), S. Kroker (Technical Univ. Braunschweig / Germany, Physikalisch-Technische Bundesanstalt / Germany), J. Prades (Univ. of Barcelona / Spain), H. Wasisto, and A. Waag (Technical Univ. Braunschweig / Germany)

This work reports on guided-mode resonance color filter matrix fabricated by e-beam lithography. Filters contain metallic nano-gratings with ultr
anarrow gaps. The matrix will be integrated with a CMOS image sensor for a multi-spectral sensing system.

Welcome Party (18:30-20:00)
(Hiroshima Museum of Art)

November 29, 2018 (Thursday)

Optical Systems (1) (8:50-10:15)

Presiders:

R. Katayama (Fukuoka Inst. of Technology / Japan)
W. Osten (Univ. of Stuttgart / Germany)

29S3-01 (Invited)

(8:50) Computational Imaging: Optics Designed as Primary Image Processor

S. Hiura (Hiroshima City Univ. / Japan)

Computational Imaging is an emerging technology which assumes the optical components as an encoder of incoming light. In this talk I will introduce the concept of computational imaging.

29S3-02

(9:15) Telecentric Reproduction of Light Field for Near-Eye VR Displays

S. Chung, D. Kuo, K. Shih, J. Huang, and H. Chen (National Taiwan Univ. / Taiwan)

We design a telecentric light field display to alleviate the vergence-accommodation conflict existing in most stereoscopic VR devices. The 3D perception of the resulting light field is verified by using the Arizona eye model.

29S3-03

(9:30) Dual Coaxial Lens System for Depth Reconstruction

H. Ohno and H. Kano (Toshiba / Japan)

A dual-lens optical system to simultaneously take an orthogonal projection image and a perspective projection image in a coaxial frame with the two images separated by color is proposed here to measure depth information.

29S3-04
(9:45) Computational Imaging System of Focal Sweep Based on Ambiguity Function

C. Liu (Beijing Information Science & Technology Univ. / China, Capital Normal Univ. / China), S. Gao (Beijing Information Science & Technology Univ. / China), and J. Qiu (Beijing Information Science & Technology Univ. / China, Capital Normal Univ. / China)

The theoretical scheme on computational imaging modeling of focal sweep was proposed. The optical-transfer-function (OTF) with approximate 3D spatial-invariance can be achieved via the ambiguity function of focal sweep. The extended-depth-of-field (EDOF) performance was analyzed.

29S3-05
(10:00) 3D Imaging System Based on Focal Stack Using Feature Density Measure

J. Qiu and C. Liu (Beijing Information Science & Technology Univ. / China, Capital Normal Univ. / China)

We proposed a 3D imaging system from focal stack by applying the feature density to indicate the focus measure. The proposed focus measure leads to high-precision depth recovery and all-in-focus imaging algorithms.

Poster Session (2) (10:15-12:00)

29PSb-01

Multispectral LED Module with High Chromatic Uniformity within Slim Type Reflector

C. Tsuei, C. Jao (Industrial Technology Research Inst. / Taiwan), and S. Chiang (Industrial Technology Research Inst. / Taiwan, National Chiao Tung Univ. / Taiwan)

In this study, a multispectral LED module was developed with the lowest chromaticity difference <0.007 over 2700–6500 K, a 28 mm height, 30° beam angle, and 95% optical efficiency with slim reflector was considered.

29PSb-02

Measurement of Absorption Cross Section for Spark-generated Elemental Carbon Using Combination of Photometer and a Particle Counter System

J. Lee (Korea Univ. of Technology and Education / Korea)

Potential optical system is introduced to design the optical detector for measuring absorption cross section of black carbon. Current system includes multiangle photometer and scattering particle counter. Further design will be displayed in detail.

29PSb-03

Nonmechanical Laser Doppler Cross-sectional Velocity Distribution Measurements Using 48-channel Spatial Encoding

K. Maru, Y. Yoshida, M. Yukinari, and R. Kimura (Kagawa Univ. / Japan)

A laser Doppler velocimeter using 48-channel spatial encoded measurement points is proposed for dense cross-sectional velocity distribution measurements. An asymmetrical push-pull configuration and multiple PDs are employed to increase the number of the measurement points.

29PSb-04

The Calibration of Distortion in Galvanometric Scanning System Using Modified 2D Compensation Method

Y. Hsieh, W. Hsiao, and K. Huang (National Applied Research Laboratories / Taiwan)

The galvanometric scanner (GS) is one of the critical components in laser processing system. We proposed modified 2D compensation method to reduce the distortion of GS system.

29PSb-05

A Directly Sensing Near Infrared Image Sensing System

Y. Tang, M. Hung, and K. Huang (National Applied Research Laboratories / Taiwan)

To simplify the operation of NIRI system, a directly sensing camera module is designed and adopted in this study. It can provide a local energy variance while monitoring the blood oxygen concentration change.

29PSb-06

Head-mounted Optical System for Detecting the Subcutaneous Eyeball Position of Patients with Epilepsy

M. Hung and H. Chang (National Applied Research Laboratories / Taiwan)

Developing a head-mounted infrared optical system, including a matrix infrared LED design, and a macro CCD imaging module to detect the subcutaneous eyeball position of epilepsy patients to determine the status of epileptic seizures.

29PSb-07

Exploring the Non-flow N_2 and CO_2 Preservation Performance for Coated Lenses

C. Hsu and M. Hung (National Applied Research Laboratories / Taiwan)

Nitrogen can reduce the humidity in a preservation tank to less than 10% to preserve precision lenses. This study investigated whether CO_2 can also provide a favourable environment for the preservation of coated optical lenses.

29PSb-08

The Illumination Design of High Power Ultra-violet Source by Optical Hydraulic Lens for Lithography

J. Huang (National Applied Research Laboratories / Taiwan, National Taiwan Univ. / Taiwan)

The illumination optics with optical water lens has been designed for lithography. The uniformity is achieved 98% within ambient temperature.

29PSb-09

Rapid Illumination Uniformity Measurement for Two Dimensional Light Field Generated by a UV LED Module

L. Chao, W. Haiso, M. Hung, and K. Huang (National Applied Research Laboratories / Taiwan)

A high-speed, planar illumination measurement using a detection module combined with photo detector and linear stages is proposed and performed to monitor the illumination uniformity generated by a UV LED module on a wafer surface.

29PSb-10

Uniformity Analysis of Printed Matters Using a Portable 2D Chroma Meter

C. Li, M. Hung, K. Huang, and Y. Lin (National Applied Research Laboratories / Taiwan)

The paper presents an optical imaging system for the colour distribution measurement of objects. It has the advantages of portable, accuracy and high resolution. The uniformity of the printed papers has been successfully analysed.

29PSb-11

Development of Vascular Imaging System Using Micro-grating Laser Fabrication and Image Processing Technology

Y. Lin, C. Yang, W. Hsiao, Y. Lin, and Y. Tang (National Applied Research Laboratories / Taiwan)

In vascular image capture field, the complex ambient light condition will blur the vascular image. A grating fabricate on ITO glass applied in front of CCD camera to enhance the vascular image contrast were proposed.

29PSb-12

Multi-wavelength Light Source Applied to Denture Defect Identification Based on Teeth Shade Guide

W. Chuang, C. Hsu, Y. Lin, Y. Yang, and H. Tsai (National Applied Research Laboratories / Taiwan)

5500-6000K white light source is used in the traditional dentures identification method. Multi-wavelength light sources are induced to enhance the physical characters and extract color-related detail information to improve similarity between dentures and natural teeth.

29PSb-13

A Non-contact Method to Inspect Skin Hydration and Sebum Based on the Optical Reflected Skin Images

F. Su, C. Ma, K. Huang, and H. Tsai (National Applied Research Laboratories / Taiwan)

The skin hydration and sebum at wavelength 540 and 770nm, respectively. This study presented a non-contact method to estimate the skin hydration and sebum base on the reflected skin images.

29PSb-14

Displacement Measurement Using Varifocal Lens with Image Contrast

P. Wu, C. Fan (National Chiao Tung Univ. / Taiwan), C. Weng (National Applied Research Laboratories / Taiwan), and P. Cheng (National Chiao Tung Univ. / Taiwan)

This research propose a method that use a varifocal lens, microscope, CCD camera, and image processing to determine the relationship between displacement of the sample and focal power of varifocal lens.

29PSb-15

Cloud-Based Architecture for an Alignment Turning System

J. Wang, C. Huang, H. Kuo, F. Chen, Y. Lu, and W. Su (National Applied Research Laboratories / Taiwan)

This paper presents a cloud-based architectural framework for alignment turning system with real-time remote data acquisition. The developed system is an integrated WebAccess system which can be easy maintenance and monitor optical lens.

29PSb-16

Integration of Photoplethysmographic Optical Sensor and IoT-based Wearable Device for Sleep Physiological Signals Monitoring

L. Liao, Y. Wang, K. Kuo, D. Jhang, and Y. Lin (National Health Research Inst. / Taiwan)

We are presenting a new design concept of photoplethysmographic (PPG) optical sensor into a wearable device with ambient optical, sound and electromagnetic noise cancellation. We demonstrate the feasibility of the developed device for sleep physiological signals monitoring at home.

29PSb-17

Development of Barnacle-Like Porous Structure in a Submicron Scale for a Highly-Functional Biosensor Chip

J. Ando (Doshisha Univ. / Japan), T. Fukuda (National Inst. of Advanced Industrial Science and Technology / Japan), and A. Emoto (Doshisha Univ. / Japan)

Highly sensitive and functional biosensor chips are required to detect various bio molecules or chemical substances. We propose an available biosensor chip with both distinct optical resonances and target-collection effect.

29PSb-18

Reverse Modeling of LED-based Spectrally Tunable Source

S. Chiang (National Chiao Tung Univ. / Taiwan, Industrial Technology Research Inst. / Taiwan) and C. Tien (National Chiao Tung Univ. / Taiwan)

In this investigation, PCA modeling provided reversed modeling of a spectrally tunable LED system. For the target spectrum, our results explored small sets of PCs to reconstruct the broadband SPD with an appropriate level of quality. The chromaticity in x, y was able to be reduced to 0.007 and 0.0015.

29PSb-19

The Modelling and Optimization of Stadium Lighting by Genetic Algorithm

S. Chiang (National Chiao Tung Univ. / Taiwan, Industrial Technology Research Inst. / Taiwan) and C. Tien (National Chiao Tung Univ. / Taiwan)

For the stadium lighting, this study develops the numerical model of the beam shape for various parameters. Depending on the genetic algorithm, the build-up time is 1% time consumption than human experiences. The illuminance is 752 lux and uniformity is 0.88 as well as 7% reduction of luminaires.

29PSb-20

Calibration of Luminance Distribution Detection with Imaging Sensor

S. Lin, P. Hsieh, Y. Hsiao, Y. Yu, T. Yang, and C. Sun (National Central Univ. / Taiwan)

A dedicated calibration procedure is executed on the luminance distribution measurement with imaging sensor. The measuring time is highly reduced by introducing a Lambertian diffuser transmitting screen. Some testing examples are also presented.

29PSb-21

A Morphological Texture Enhancement Approach for Optical Texture Images

P. Subudhi, N. Chakraborty, and S. Mukhopadhyay (Indian Inst. of Technology / India)

A texture enhancement approach is proposed. Opening and closing are performed on the local maxima and minima respectively. The enhanced image is obtained by combining the bright and dark top hat transforms with original image.

29PSb-22

Projecting a Flat-Surface Object to a Spherical Surface

K. Kawai, S. Tominaga, and H. Yamamoto (Utsunomiya Univ. / Japan)

This paper proposes a method to projection a flat-surface object to a spherical surface. Original optical system converges image on the curved surface to reduce the blur of the projected image.

29PSb-23

Measurement a Reflectance of the Concave Spherical Reflector Using the Single Optical Fiber Type Spectrometer Equipped with Light Source

K. Muro (Asahi Spectra Co., Ltd. / Japan)

We propose a spectrometer that guides irradiation light and measuring light to a single optical fiber, and showed that the reflectance inside the reflector can be measured conveniently.

29PSb-24

A SIS System Served as Scatterometer and Intensity Distribution Meter

Y. Yu, T. Yang, C. Sun, M. Le, Y. Lin, C. Lin, X. Lee, and P. Hsieh (National Central Univ. / Taiwan)

A screen image synthesis system combining scaterometer with intensity distribution meter is proposed and demonstrated. The measuring time is dramatically improved, and the normalized correlation coefficient between the proposed SIS system and goniophotometer are better than 97.5%.

29PSb-26

A Common-path Phase-Shifting Interference Microscope Using RGB Lasers

J. Chen (Tokyo Polytechnic Univ. / Japan) and J. Endo (FK Optics Laboratory / Japan)

A common-path phase-shifting interference microscope using RGB lasers is presented. In this system, a Wollaston prism is used as both a beam splitter and a phase shifter. Experimental results for measuring phase objects are shown.

29PSb-27

Optimization of Computer Generated Holograms for Multi-layered Spatial Light Modulators with Directional Backlight

J. Cho, K. Bang, D. Lee, and B. Lee (Seoul National Univ. / Korea)

Optimization method of computer-generated hologram for multi-layered spatial light modulators is proposed to reconstruct multiple images along the backlight direction.

29PSb-28

Observation of the Effects of Traditional Acupuncture and Laser Irradiation on the Treatment of Induced Focal Ischemia and Hypertension in Rats

K. Oh, D. Kim, S. Bong, W. Choi, H. Jung (Jeonnam Technopark Stiftung / Korea), Y. Kim, Y. Jang (Raontech Co., Ltd. / Korea), and D. Youn (Dongshin Univ. / Korea)

Comparative investigate the effects of traditional acupuncture and low level laser irradiation on the treatment of the focal ischemia induced by intraluminal filament insertion and the hypertension induced by two-kidney-one-chip in rats are performed in this paper.

29PSb-29

Modeling of a Pulsed, Single Cavity Yb-Bi Fiber Laser Taking Mode Field Area Mismatch Into Consideration

M. Tao (Northwest Inst. of Nuclear Technology / China), X. Ye (Chinese Academy of Sciences / China), H. Chen, Y. Shen (Northwest Inst. of Nuclear Technology / China), T. Yu (Chinese Academy of Sciences / China), and J. Zhao (Northwest Inst. of Nuclear Technology / China)

A theoretical model concerning a pulsed Yb-Bi fiber laser is established. Simulations show that, for single cavity Yb-Bi fiber laser, stable passive Q-switching could be attained in a relatively wide wavelength range.

29PSb-30

Intelligent Alignment Turning System for Large Optical Lens Cell

C. Huang, J. Wang, C. Ho, J. Chen, H. Kuo, and F. Chen (National Applied Research Laboratories / Taiwan)

This paper introduces the intelligent techniques applied in alignment turning system to increase the stability, efficiency, and precision of optical system. The alignment turning system used to fabricate precise lens cell with very low centration error.

29PSb-31

Development of Intelligent Grinding System for Large Aspheric Glass Lens

C. Huang, C. Kuo, Z. Yu, H. Kuo, K. Chang, and H. Chen (National Applied Research Laboratories / Taiwan)

An intelligent grinding system for large glass lens has been developed in this paper. The temperature/vibration sensors were built-in the machine, and an aspheric lens had been used to evaluate the ability of performance system.

29PSb-32

Desktop Fabrication of Microfluidic Cells Based on Molecular Migrations under Photopolymerization as a Concept of "Minimal Fab"

T. Kimoto (Doshisha Univ. / Japan), T. Fukuda (National Inst. of Advanced Industrial Science and Technology / Japan), and A. Emoto (Doshisha Univ. / Japan)

Nowadays, the importance of microfluidic cells is increasing rapidly in the fields of bio-technology and medical researches. We report on an approach allowing the desktop and on-demand fabrication of microfluidic cells using molecular migration under photopolymerization.

29PSb-33

Impact of Plasmon Parameters on Nano-patterning

S. Yoon and S. Kim (Hongik Univ. / Korea)

The surface plasmon lithography (SPL) based on the SP interference and metamaterial in bowtie and hexahedron structures is proposed and demonstrated by using computer simulations such as the rigorous coupled-wave analysis (RCWA) method and the finite difference time domain (FDTD) method.

29PSb-34

Manufacturing Execution System (MES) for Optical Fabrication

H. Kuo, H. Chen, S. Li, K. Chang, H. Chou, C. Huang, and F. Chen (National Applied Research Laboratories / Taiwan)

This paper presents manufacturing execution system (MES) for optical fabrication. Modular lens manufacturing process, data collection and data judge are introduced. A real product, autocollimator as a MES test, is reported.

29PSb-35

Electromagnetic Field Enhancement with Coupled Double Funnel Shape Metal Antennas

J. Hong, C. Kim, and B. Lee (Seoul National Univ. / Korea)

We propose a structure to enhance electromagnetic field using double funnel antennas based on numerical study. Simulation results show the maximum electric and magnetic field intensities achieve 277 and 71, respectively, in deep subwavelength volume.

29PSb-36

Optical Mechanism Controlled by Shape Memory Alloy Spring

L. Wang, H. Xu, and M. Ishikawa (The Univ. of Tokyo / Japan)

A back and forth motion mechanism for a lens was proposed. The motion was self-activated without any electrical energy but by utilizing a shape controllable a shape memory alloy spring and a Fresnel lens.

Lunch (12:00-13:00)

Optical Systems (2) (13:00-14:20)

Presiders:

C. Menke (Carl Zeiss AG / Germany)
K. Tajima (Hitachi / Japan)

29S3-06 (Invited)

(13:00) Different Approaches for Resolution Enhancement in Optical Micro and Nano Metrology

W. Osten (Univ. of Stuttgart / Germany)

The current challenges for optical metrology and the physical limitations are addressed. Afterwards a systematisation of existing approaches for resolution enhancement is presented and some modern approaches are discussed.

29S3-07 (Invited)

(13:25) Designing Channel Structures for Multi Domain Modulated Polarimeters

J. S. Tyo, A. S. Alenin, I. J. Vaughn, J. Song (UNSW Canberra / Australia), and M. E. Gehm (Duke Univ. / USA)

Modulated optical polarimeters can be improved by designing how the polarization information is divided among the channels. We demonstrate how simultaneous modulation in multiple domains can provide better performance at the expense of increased complexity.

29S3-08

(13:50) Identification of Organelles in Unstained Living Cells Using Apodized Phase Contrast Microscopy

T. Otaki (Nikon / Japan, Tohoku Univ. / Japan), K. Katoh (National Inst. of Advanced Industrial Science and Technology / Japan), and T. Tanaka (Tohoku Univ. / Japan)

We present a new identification method for unstained organelles using apodized phase-contrast microscopy. The method utilizes the dispersion and selected wavelengths of illuminating light. Mitochondria and lipid droplets were distinguished by the proposal method.

29S3-09

(14:05) Non-contact Structural Internal Deterioration Detection Using High Speed Capturing Electronic Speckle Pattern Interferometer with Dual Beam Optics

H. Imai (NEC / Japan)

This paper describes a non-contact structural internal deterioration detection method which detects internal deterioration of concrete structures from remote using high speed capturing electronic speckle pattern interferometer with dual beam optics.

Break (14:20-14:30)

Optical Systems (3) (14:30-15:55)

Presiders:

K. Maru (Kagawa Univ. / Japan)
J. S. Tyo (UNSW Canberra / Australia)

29S3-10 (Invited)

(14:30) The Evanescent Wave Coronagraph: Design, Performance and Perspectives for Ground-based and Space-based Observations

C. Buisset (National Astronomical Research Inst. of Thailand / Thailand), T. Lépine (Inst. d'Optique Graduate School / France, Laboratoire Hubert Curien / France), E. Thiébaut, M. Langlois, M. Tallon (Univ. of Lyon / France), M.Alagao (National Astronomical Research Inst. of Thailand / Thailand), I. Tallon-Bosc (Univ. of Lyon / France), Y. Rabbia (Univ. of Cote d'Azur / France), S. Poshyachinda, and B. Soonthornthum (National Astronomical Research Inst. of Thailand / Thailand)

The Evanescent Wave Coronagraph is an instrument dedicated to the observation of star close environment with very large telescopes. In this paper, we present the prototype design, the estimated performance and the experimental results: contrasts equal to a few 10^-6 measured in unpoloarized light over the photometric I-band.

29S3-11

(14:55) Dual Orthogonal Functional Systems for Finite Fresnel Transform

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

We seek the function that its total power in the finite Fresnel transform plane is maximized, on condition that an input signal is zero outside the bounded region. The functional systems have dual orthogonal property.

29S3-12

(15:10) SpinScan Microarray Scanner Based on a Modified Optical Pickup Head

R. Tsai, J. Chen, F. Lo, C. Pien, J. Lee, J. Yang, K. Hsu, and G. Tiao (Caduceus Biotechnology Inc. / Taiwan)

A SpinScan microarray scanner based on a modified optical pickup head with autofocus and confocal functions is developed for the reading of high density microarrays.

29S3-13

(15:25) The Development of Ultra-High Power Luminaires for Stadium Lighting

S. Chiang (National Chiao Tung Univ. / Taiwan, Industrial Technology Research Inst. / Taiwan) and C. Tien (National Chiao Tung Univ. / Taiwan)

The ultra-high power LED luminaire emits 60 kilo-lumen as well as 6.59 klm/kg with high color rending(CRI:84.1). It will substitute the metal halide lamp which is 5.97 klm/kg, and 5 times lifetime.

29S3-14

(15:40) Chromatic Aberration on Extreme Ultraviolet Imaging System with Curved-Multilayer Mirrors

A. Kaneko, T. Kakudate, T. Matsumoto (Tohoku Univ. / Japan), J. Chen (Tokyo Polytechnic Univ. / Japan), and M. Toyoda (Tohoku Univ. / Japan, Tokyo Polytechnic Univ. / Japan)

Chromatic aberration resulting from multi-beam interference on EUV multilayer coatings was numerically evaluated. We showed that the aberration is relatively large against the Maréchal condition, thus it disturbs diffraction-limited imaging with curved multilayer mirrors.

Coffee Break (15:55-16:10)

Optical Components / Devices (1) (16:10-18:00)

Presiders:

C. Liang (National Central Univ. / Taiwan)
S. Ura (Kyoto Inst. of Technology / Japan)

29S2-01 (Invited)

(16:10) Micro- and Nanostructuring of Single Crystal Diamond for Photonic Applications

N. Quack, T. Graziosi, M. Kiss, S. Mi, and A. Toros (EPFL / Switzerland)

A set of methods to structure single crystal diamond at the micro- and nanoscale is discussed and experimental results underline the potential for emerging diamond photonics applications.

29S2-02 (Invited)

(16:35) Meta-lens: Fabrication, Design and Applications

D. Tsai (Academia Sinica / Taiwan, National Taiwan Univ. / Taiwan)

Metasurfaces composed of artificial nano-structures attract lots of interests due to their ability on controlling the electromagnetic phase and amplitude at subwavelength scale. Several metasurface based novel metalens for photonic applications are included.

29S2-03

(17:00) Apodization of Asymmetrical-hole Array Gratings with Adjoint Shape Optimization Method for Efficient Perfectly Vertical Coupling

A. Mizutani and H. Kikuta (Osaka Pref. Univ. / Japan)

An asymmetrical-hole array grating was designed for perfectly-vertical light coupling between a single-mode optical fiber and a silicon waveguide on a silicon-on-insulator (SOI) substrate. Hole shapes were apodized with an adjoint-based shape optimization method.

29S2-04
(17:15) Linear-polarized Widely Tunable Er:ZBLAN Fiber Laser
K. Luan, Y. Shen, M. Tao, F. Zhu, and H. Chen (Northwest Inst. of Nuclear Technology / China)
We report on a linear-polarized 2697-2842 nm tunable Er:ZBLAN fiber laser. A self-made polarization controller is adopted for linear-polarized oscillation. The maximum output power is 1.6 W under a 8 W lanched pump.

29S2-05
(17:30) GaAs/AlAs Intermixed Superlattice for Stimulated Raman Scattering
I. Tomita (Univ. of Southampton / UK, Gifu College / Japan), S. Saito (Univ. of Southampton / UK), and D. Hutchings (Univ. of Glasgow / UK)
Large stimulated Raman scattering, particularly in anti-Stokes generation that originally has a far smaller generation efficiency than that of Stokes generation, is reported via simulations using GaAs/AlAs intermixed superlattices including Kerr-induced interactions.

29S2-06
(17:45) Grating Coupled Surface Plasmon Resonance Based Salinity Sensor on Flexible Substrate
S. Mohapatra and R. Moirangthem (Indian Inst. of Technology / India)
A plasmonic-based salinity sensor was developed using metallic nanograting. The nanograting was fabricated by soft UV-nanoimprint lithography followed by gold deposition. Experimentally, bulk refractive index sensing was found to be 550 ± 20 nm/RIU.

Break (18:00-18:10)

Post-deadline Paper Session (18:10-18:40)
Presider:
M. Yamagata (Panasonic / Japan)

29PD-01
(18:10) T.B.D.

29PD-02
(18:25) T.B.D.

November 30, 2018 (Friday)

Optical Components / Devices (2) (8:50-10:40)

Presiders:

A. Seifert (CIC nanoGUNE / Spain)
H. Kikuta (Osaka Pref. Univ. / Japan)

30S2-07 (Invited)

(8:50) Optical Challenges for Next Generation Mixed Reality Headsets

B. Kress (Microsoft Hololens / USA)

The >$100B AR/VR market analysts are predicting for the next 5 years is contingent on solving critical optical hardware challenges for wearable headsets, addressing both visual and wearable comfort while increasing immersion, to provide the ultimate Mixed Reality experience to the user.

30S2-08 (Invited)

(9:15) Understanding and Optimization of Imaging for EUV Lithography

A. Erdmann (Fraunhofer Inst. for Integrated Systems and Device Technology / Germany)

Future generations of semiconductor chips will be fabricated using extreme ultraviolet (EUV) lithography. We describe the imaging challenges of EUV projection systems and how computational lithography can be used to address these challenges.

30S2-09

(9:40) High-resolution Pixel Synthesis Structure for Full-complex Amplitude Modulation with Twisted Nematic LCD

S. Hasegawa and H. Inoue (Hiroshima Inst. of Technology / Japan)

A low-cost twisted nematic LCD is required that can independently modulate phase or amplitude. We propose a high-resolution synthesis structure for full-complex amplitude modulation and report good experimental results.

30S2-10
(9:55) CCT Stabilization of pcW-LEDs upon Heat Generation with Phosphor Compensation
C. Sun, T. Yang, S. Wu, C. Chen, Y. Chang, X. Lee, and Y. Yu (National Central Univ. / Taiwan)
A method to stabilize the CCT in pcW-LEDs from initial turn-on state to thermal equilibrium using the positive matching of the blue LED peak wavelength to the phosphor excitation spectrum is proposed and demonstrated.

30S2-11
(10:10) High Q-factor Color Filter Enabled by Interference of Two Opposite In-plane Guided Modes
V. A. Nguyen and Q. M. Ngo (Vietnam Academy of Science and Technology / Vietnam)
We present in part of current research of two orders of magnitude guidedmode resonance' Q-factor color filter enabled by interference of two opposite in-plane guided modes in photonic crystal slab. The theoretical analysis to confirm the simulated ones is also discussed.

30S2-12
(10:25) Vapors Sensing with Optical Readout Using Multilayers of Nb_2O_5
R. Georgiev, K. Lazarova, M. Vasileva, and T. Babeva (Bulgarian Academy of Sciences / Bulgaria)
Porous and dense Nb_2O_5 films are deposited using sol-gel, soft templating and spin-coating methods. The benefits of using multiple layers for optical sensing of acetone vapors instead of single one are demonstrated and discussed.

Coffee Break (10:40-10:55)

New Technologies (1) (10:55-12:30)
Presiders:
T. Lu (National Taiwan Normal Univ. / Taiwan)
W. Kim (Hanbat National Univ. / Korea)

30S4-01 (Invited)
(10:55) T.B.D.
C. Denz (Univ. of Muenster / Germany)
Abstract not available.

30S4-02 (Invited)

(11:20) Very Large-Scale Computer-Generated Hologram for 3D Display

K. Matsushima (Kansai Univ. / Japan)

Computer-generated holograms for 3D imaging have much different properties from that for optical devices. Several techniques are introduced to reconstruct high-quality monochrome and full-color 3D images by using very large-scale computer-generated holograms.

30S4-03

(11:45) Hybrid Dynamic Structures for Optical-Quality Surfaces Shape Control – Live-Mirror –

G. Moretto (École Normale Supérieure de Lyon / France, PLANETS Foundation), J. Kuhn (Univ. of Hawaii / USA, PLANETS Foundation), J. Capsal, D. Audigier, K. Thetpraphi (Univ. of Lyon / France), M. Langlois (Ecole Normale Superieure of Lyon / France, PLANETS Foundation), M. Tallon (Ecole Normale Superieure of Lyon / France), M. Gedig (Dynamic Structures Ltd. / Canada), S. Berdyugina (Kiepenheuer Inst. fur Sonnenphysik / Germany, PLANETS Foundation), and D. Halliday (Dynamic Structures Ltd. / Canada)

We describe here the novel/revolutionary Hybrid-Dynamic-Structures for optical-quality surfaces shape control – Live-Mirror – breaking areal density, stiffness, and surface smoothness limits with additive (nonabrasive) 3D-Printed new technologies.

30S4-04

(12:00) Design of Appearance Changing Objects using Multi-Material 3D Printers

S. Hiura, A. Hatadani, H. Kitamura, Y. Kawamoto, D. Miyazaki, M. Baba, and R. Furukawa (Hiroshima City Univ. / Japan)

We propose two methods to design real objects which appearances can be changed depending on the direction of illuminations using multi-material 3D printers.

30S4-05

(12:15) Optimization Design for Improving Resolution of Lensless Imaging with Fresnel Zone Aperture

K. Tajima, Y. Nakamura, K. Yamaguchi, and T. Shimano (Hitachi / Japan)

As part of our ongoing research on lensless imaging with Fresnel zone aperture (FZA), we propose a resolution and optimization method for FZA that considers the diffraction effect and specifications of an image sensor.

Lunch (12:30-13:30)

New Technologies (2) (13:30-15:00)

Presiders:

T. Shimura (The Univ. of Tokyo / Japan)
T. Shimano (Hitachi / Japan)

30S4-06 (Invited)

(13:30) Structured Light Generated by Vortex Phase Plates and the Spatial Light Modulator

T. Lu and T. Huang (National Taiwan Normal Univ. / Taiwan)

The structured light with space-variant polarization can be generated from wavelength-mismatched vortex phase plates and the spatial light modulator. The structured light possessing orbital angular momentum may provide potential applications in various fields.

30S4-07 (Invited)

(13:55) Flat Optics : from Metalenses to Structured Light

F. Capasso (Harvard Univ. / USA)

Arrays of optically thin, sub-wavelength spaced optical elements (metasurfaces) have major potential for wavefront shaping through local control of the phase, amplitude and polarization of light. Flat optics has emerged from this approach with the goals of replacing refractive lenses in most applications requiring aberrations' correction as well as conventional phase plates used in polarization optics and last but not least of providing a new path to the creation of structured light.

30S4-08 (Invited)

(14:20) Investigation to Achieve Higher Resolution in STED Nanoscopy

W. Kim (Hanbat National Univ. / Korea), G. Lim, and N. Park (Yonsei Univ. / Korea)

In this paper, we investigate several excitation methods for continuous wave (CW) STED microscopy. Research focuses on applying amplitude and phase modulation on illumination of excitation beams with incident cylindrical vector beam.

30S4-09

(14:45) Iterative Phase Retrieval Algorithm via Adaptive Dictionary Learning

J. Su and C. Tien (National Chiao Tung Univ. / Taiwan)

The adaptive dictionary learning followed by the GS algorithm was proposed to recover an image from its Fourier magnitude. The purpose of idea is to avoid converging to the local optimal solution. We experimentally demonstrate that our method can surpass the ERA and HIOA in phase retrieval problems.

Coffee Break (15:00-15:15)

Special Session (15:15-16:55) "Optics and Photonics for Intelligent Vehicles"

Presiders:

Y. Dzialowski (Argo AI / USA)
M. Kuwata (Mitsubishi Electric / Japan)

30SS-01 (Invited)

(15:15) Evolution of Automotive Safety Technology Supported by Optical Devices

Y. Iwashita (Mazda / Japan)

There are big efforts of optical devices for automobile safety. In this paper, HUD, headlights and camera are picked up, and the contribution and future expectation of these devices for driving support system is described.

30SS-02 (Invited)

(15:40) Automotive Lighting in the next Decade Challenges and Opportunities

R. Schäfer (Consulting UG / Germany)

Introduction of LED lighting in 2007 has led to tremendous innovations on functionalities and styling. This presentation will give a short overview about the past followed by a projection of automotive lighting in next decade.

30SS-03 (Invited)

(16:05) 2-Plane Head-up Display by Using Single DLP-PGU

S. Sekiya, K. Morohashi, T. Kawai, and T. Kasahara (Nippon Seiki Co., Ltd / Japan)

Future capability of the image plane in automotive HUD is discussed. We disclose 2-Plane HUD that is HMI (Human Machine Interface) with better cognition and practical package volume, and its design result with single DLP-PGU.

30SS-04 (Invited)

(16:30) New Advances in Single-Photon LiDARs and Applications for Driverless Cars

Y. Dzialowski (Argo AI / USA)

Advances in robotics, computer science and sensors have made autonomous driving a reality. LiDARs are a central element of the driverless car sensor suite. This paper will address new developments in LiDAR technology for the deployment of driverless cars.

Closing Session (16:55-17:20)

Presider:

K. Konno (Konica Minolta / Japan)

Best Paper Award

(16:55)

M. Shibuya (Tokyo Polytechnic Univ. / Japan)

Closing Remarks

(17:05)

H. Tatsuno (Ricoh / Japan)

Farewell Party (17:40-T.B.D.)
(Al Mandolino, Invitation only)

INSTRUCTIONS FOR SPEAKERS

All speakers are required to register for participation in ODF'18. English will be used for all presentations and printed material.

(Oral presentation)

Oral session is to be held in "International Conference Hall, Himawari". 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

<table>
<tr><th></th><th>Presentation</th><th>Discussion</th><th>Total</th></tr>
<tr><td>Plenary Session</td><td rowspan="3">20min.</td><td rowspan="3">5min.</td><td rowspan="3">25min.</td></tr>
<tr><td>Special Session</td></tr>
<tr><td>Invited Papers</td></tr>
<tr><td>Contributed Papers</td><td>12min.</td><td>3min.</td><td>15min.</td></tr>
</table>

(2) Attention bell

<table>
<tr><th></th><th>1st bell</th><th>2nd bell
End of
Speech</th><th>3rd bell
End of
Discussion</th></tr>
<tr><td>Plenary Session</td><td rowspan="3">15min.</td><td rowspan="3">20min.</td><td rowspan="3">25min.</td></tr>
<tr><td>Special Session</td></tr>
<tr><td>Invited Papers</td></tr>
<tr><td>Contributed Papers</td><td>10min.</td><td>12min.</td><td>15min.</td></tr>
</table>

(Poster presentation)

Poster session will be held in “Large Conference Room, Dahlia” on Wednesday, 28 and Thursday, 29 November. The first day (14:35-16:20) is for authors in category 1 and 2 and the second day (10:15-12:00) is for authors in category 3 and 4.

	Time	Date
Poster Session (1) Optical Design/Simulation Optical Components/Devices	Preparation : 9:00-14:20 Presentation : 14:35-16:20 Removal : By 16:50	Wednesday 28
Poster Session (2) Optical Systems New Technologies (for Optical Design and Fabrications)	Preparation : 8:30-10:00 Presentation : 10:15-12:00 Removal : By 12:30	Thursday 29

Poster boards will be around 1.8 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 (105 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. 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

Post-deadline papers will be accepted for presentation in poster or oral sessions. 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'18 (odf18@pac.ne.jp). For the layout of manuscript, please see the Guidelines on the ODF'18 website.

The deadline for submission of post-deadline papers is on October 5, 2018.

Review result will be noticed by November 5, 2018. As well as the regular submission, the copyright of the article published in the ODF'18 Technical Digest is to be transferred to the Optical Society of Japan (OSJ). 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:
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ODF'18 SPECIAL ISSUE OF OPTICAL REVIEW

The special issue of OPTICAL REVIEW, the journal of the Optical Society of Japan, for the 11th International Conference on Optics-Photonics Design & Fabrication "ODF'18, Hiroshima" will be published in October 2019. All contributors of ODF'18 are strongly encouraged to submit their original papers for this special issue. Submissions from invited speakers are also welcome.

Submissions will be accepted from December 1st, 2018 to January 31st, 2019. Please check the website for the application form.

Please note that all the submitted papers must be at least 4 pages in length and will be accepted based on the editorial policy of OPTICAL REVIEW.

The following is the submission site of Springer, the publishing company.

http://www.edmgr.com/opre/default.aspx

If you need further information, please contact Kenji Konno at the address below:

Kenji Konno
Topical Editor, ODF'18 Special Issue
Konica Minolta, Japan
E-mail: or_special_issue@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 (Oct. 28th, 2018)	After (Oct. 28th, 2018)
Member[*]	JPY 40,000	JPY 45,000
Non-Member	JPY 45,000	JPY 50,000
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

General Participant fee includes:

・Admission to all sessions and exhibition
・Conference kit (Program book, USB memory stick containing files of Technical Digest, conference bag)
・Admission to welcome reception on Nov. 28th, 2018.
・Daily refreshments (drinks for coffee break)
・Banquet (Farewell Party) fee is NOT included.

Student fee includes:

・Admission to all sessions and exhibition
・Conference kit (Program book, USB memory stick containing files of Technical Digest, conference bag)
・Admission to welcome reception on Nov. 28th, 2018.
・Daily refreshments (drinks for coffee break)
・Banquet (Farewell Party) fee is NOT included.

*Please prepare and bring the student ID or certification of students and show them at the reception desk.

Accompanying Person fee includes:

・Admission to welcome reception on Nov. 28th, 2018.
・Daily refreshments (drinks for coffee break)
・Banquet (Farewell Party) fee is NOT included.

● Registration

Participants in ODF'18 are required to register in the online registration page. The deadline for advanced registration is October 28th, 2018.Online registration:
http://www.odf.jp/registration.html

● Cancellation Policy

There will be no refunds for the registration fee.

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(Some of above committee members are under negotiation.)

CONFERENCE SITE

ODF'18, Hiroshima, will be held at the International Conference Center Hiroshima within Hiroshima Peace Memorial Park.

Access: http://www.pcf.city.hiroshima.jp/icch/e_access.html

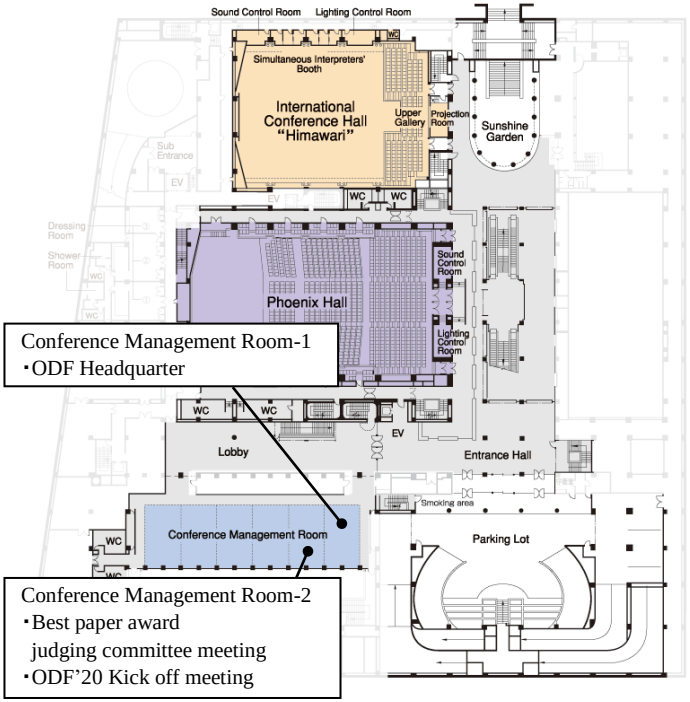
HOTEL RESERVATION

- **Hotel**

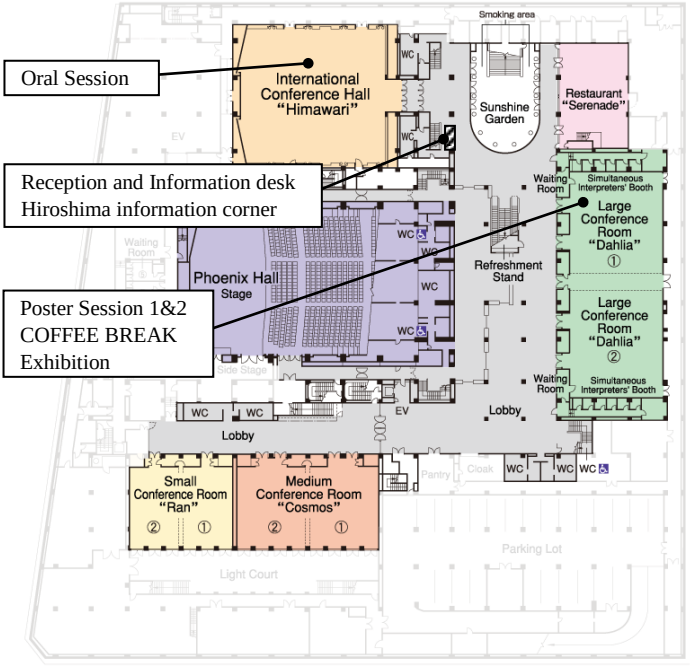
Some hotels in Hiroshima City are arranged for ODF'18 participants. Online hotel reservation system will be available on our website.

CONFERENCE CENTER FLOOR MAP

B1F : Conference Management Room



B2F : Main Floor for ODF'18



Deadlines

Post Deadline Papers:	October 5, 2018
Discount Registration:	October 28, 2018
Hotel Reservation:	November 4, 2018
Online Registration:	November 4, 2018
On-site Registration:	November 28-30, 2018

For information mail
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