

ADVANCE PROGRAM

13th International Conference on Optics-photonics

Design & Fabrication



“ODF'22, Sapporo”
August 3rd-5th, 2022



Sapporo Convention Center, Sapporo, Japan

Organized by

Optics Design Group of The Optical Society of Japan

Co-Sponsored by

JSAP (The Japan Society of Applied Physics)

In Cooperation with (to be confirmed)

DGaO (German Society for Applied Optics) • EOS (European Optical Society) • ICO (International Commission for Optics) • IEICE (The Institute of Electronics, Information and Communication Engineers) • IEIJ (The Illuminating Engineering Institute of Japan) • JIEP (Japan Institute of Electronics Packaging) • IIEEJ (The Institute of Image Electronics Engineers of Japan) • ITE (The Institute of Image Information and Television Engineers) • JOEM (Japan Optomechatronics Association) • JOMA (Japan Optical Measuring Instruments Manufacturers' Association) • JPS (The Physical Society of Japan) • JSMBE (Japanese Society for Medical and Biological Engineering) • Japan Photonics Council • JSPE (The Japan Society for Precision Engineering) • LSJ (The Laser Society of Japan) • OITDA (Optoelectronics Industry and Technology Development Association) • OSA (The Optical Society) • OSK (Optical Society of Korea) • SPIJ (The Society of Photography and Imaging of Japan) • The Color Science Association of Japan • The Astronomical Society of Japan • The Spectroscopical Society of Japan • SID Japan Chapter (Society for Information Display Japan Chapter)



Post-Deadline Paper Submission: June 30th, 2022

Early-Bird Registration Deadline: June 30th, 2022

<http://www.odf.jp/>

TIME TABLE

1st Day
August 3, 2022 (Wed)
Registration (8:00-17:00)

9:00	Opening Session
9:15	Plenary Session 2 (CLEO-PR2022/ODF'22)
11:30	
	Lunch
13:30	ISOM/ODF Joint Session :Advanced Imaging Technologies
15:10	Coffee Break
15:30	[OWP1A] Optical Design / Simulation / Fabrication
17:05	Group Photo
17:15	Break
18:30	Banquet at Sapporo Park Hotel
20:30	

2nd Day
August 4, 2022 (Thu)
Registration (7:30-17:00)

8:15	Plenary Session 3
8:45	Break
8:50	[OThA1B] Optical Design / Simulation / Fabrication
10:40	
	Coffee Break
11:00	[OThA4A] New Technologies
12:10	Lunch
13:30	[OThP4B] New Technologies
15:05	Coffee Break
15:30	[OThP2A] Optical Components / Devices
17:10	Break
18:00	Poster Session
20:00	

3rd Day
August 5, 2022 (Fri)
Registration (8:00-12:30)

8:30	[OFA2B] Optical Components / Devices
9:25	Break
9:35	[OFA2C] Optical Components / Devices
10:30	Coffee Break
11:00	[OFA3A] Optical Systems
12:25	Lunch
13:30	[OFP3B] Optical Systems
15:05	Coffee Break
15:30	[OFPSSA] Special Session
16:45	Break
16:55	[OFPSSB] Special Session
17:45	Closing Session
18:15	

INTRODUCTION

The 13th International Conference on Optics-photonics Design & Fabrication “ODF'22, Sapporo” will be held on August 3rd-5th, 2022. Optics-photonics design and fabrication will continue to play a significantly important role in the 21st century achieving harmony between technology and the environment. ODF'22 is intended to provide an international forum for original paper presentations and discussions of optics-photonics design and fabrication-related technological and scientific topics. These topics include theory, design, fabrication, testing, applications, and others.

ODF'22 is aimed to promote international collaboration among the participants in this field including related companies' exhibition.

Collaboration and Competition make progress.

“Join us at *ODF'22, Sapporo, Japan!*”

SCOPE OF THE CONFERENCE

ODF'22 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:

Special Session: “Optics for Life Sciences”

Category 1. Optical Design / Simulation / Fabrication

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

Category 2. Optical Components / Devices

Laser, LED, OLED, Detector, Image sensor, DOE/HOE, Thin Film, Coating, Optical Waveguide, Optical Fiber, Integrated Optoelectronic Device, Active Optical Component, Optical MEMS, Photonic Crystal, Device Fabrication

Category 3. Optical Systems

Camera, Microscopy, Display, Projector, Optical Data Storage, Optical Lithography, Illumination Optics, 3D Image Acquisition, 3D Display, VR/AR, LiDAR, Automotive Optics, Biomedical Optics, Optofluidics, Optical Measurement, Optical Sensing, Spectroscopy

Category 4. New Technologies

AI Optics, Computational Imaging and Sensing, Single pixel imaging, Digital Holography, CGH, Nonlinear Optics, Ultrafast Optics, Metamaterial, Plasmonics, Near-Field Optics, Quantum Optics, Nano Structures, Optical Cloaking, Other Future Technologies in Optical Design and Fabrication

TECHNICAL PROGRAM

August 3, 2022 (Wednesday)

Opening Session (9:00-9:15)

President:

H. Tatsuno (Ricoh / Japan)

Opening Remarks

T. Omatsu (Chiba Univ. /Japan)

M. Hasegawa (Canon / Japan)

Plenary Session2 (CLEO-PR2022/ODF'22) (9:15-11:30)

President: *H. Tatsuno (Ricoh / Japan)*

Plenary2-C1 (Invited)

(9:15) Exploiting the Force of Light for Biomedicine and Precision Measurement (TBD)

K. Dholakia (Univ. of St Andrews / UK)

Plenary2-C2 (Invited)

(10:00) Fluctuation for Nanophotonics

S. Kawata (Osaka Univ. / Japan, RIKEN / Japan)

In the field of nanophotonics, fluctuations in detectors, sources, and environments may cause fatal errors in results, and suppressing them has been an important issue. In this talk, I would like to discuss rather exploiting such fluctuations as the source of signal, using micro- and nano-Raman imaging and 3D-nano fabrication as examples.

Plenary2-C3 (Invited)

(10:45) Lens Design for Parallel Super Cameras (TBD)

D. J. Brady (The Univ. of Arizona / USA)

Lunch (11:30-13:30)

ISOM/ODF Joint Session: Advanced Imaging Technologies (13:30-15:10)

President:

H. Kawano (Mitsubishi Electric / Japan)

IWPK OWP-01 (Invited)

(13:30) [Infrared Sensors and Their Application on Imaging and Sensing (tentative)] Development of T2SL Infrared Detector in JAXA

H. Katayama, M. Hirose, S. Sato, K. Shinozaki, and T. Kimura (JAXA / Japan)

We describe the development history of Type II superlattice infrared detector (T2SL) for future space applications in JAXA. Space-borne infrared detectors require higher sensitivity, higher resolution, and larger formats than ground-based infrared detectors. T2SL has preferable characteristics in terms of operating temperature and spectral sensitivity.

IWPK OWP-02 (Invited)

(13:55) Review of the Development of Infrared Cameras for Automotive Applications in the Framework of the European Project Heliaus

G. Druart, F. D. L. Barrière, J.-B. Volatier (ONERA / France), V. Reux, L. Calvez, X.-H. Zhang (Univ. Rennes / France, CNRS / France, ISCR / France), E. Tartas (LYNRED / France), R. Proux, J. Franks (UMICORE / France), and S. Ehret (FRAUNHOFER IPT / Germany)

Infrared cameras could serve automotive applications as long as low-cost and high-throughput manufacturing methods are available. We explored infrared wafer-scale optics for QVGA sensors and high index chalcogenide glasses for VGA sensors.

IWPK OWP-03 (Invited)**(14:20) Beam and Image Steering by MEMS Array for AR and Lidar Applications**

Y. Takashima (The Univ. of Arizona / USA)

Beam and image steering by Micro Electro Mechanical Systems (MEMS) display enables unique features such as adaptive foveation, side-lobe rejection for lidar, and pixel pitch reduction, field-of-view expansion, pupil steering for Augmented Reality (AR) devices.

IWPK OWP-04 (Invited)**(14:45) Long Range Automotive FMCW LiDAR with Solid State Scanning**

A. Rueda (Scantinel Photonics / Germany)

We report on the development of a commercially available solid-state FMCW LiDAR improving the system's reliability, lifetime, production costs and compatibility to the automotive industry requirements.

Coffee Break (15:10-15:30)**[OWP1A] Optical Design/Simulation/Fabrication (15:30-17:05)****Presiders:**

T. Otaki (Nikon / Japan)

Y. Fang (National Kaohsiung Univ. of Science and Technology / Taiwan)

OWP1A-01 (Invited)**(15:30) FORMOSAT Satellites, Taiwan and Its Further**

Y. Fang, S. Lin, and P. Huang (NSPO / Taiwan)

With the next coming Space 4.0 era, 3rd phase of Taiwan's national space project has been kickoff since 2019 for further indigenous space technology. Developments of FORMOSAT Satellites in National Space Organization, Taiwan will be introduced.

OWP1A-02**(15:55) Gradient-Index Mapping Method Using Neural Network**

H. Ohno and T. Usui (Toshiba / Japan)

Based on a spatial parametric ray equation, an iterative gradient-index (GRIN) mapping method using the neural network is constructed to map a GRIN distribution that enables light rays to trace corresponding desired paths.

OWP1A-03**(16:10) Freeform for Visible and Thermal Infrared Applications**

G. Druart, L. Duvéau, Cl. Freslier, J. Volatier (ONERA / France), and T. Lépine (Univ. Lyon / France)

Panchromatic catoptric systems using the freeform technology are investigated. We study a classical Three Mirror Anastigmat configuration and a more uncommon αZ configuration. Images in infrared and visible are presented for the αZ configuration.

OWP1A-04 (Invited)**(16:25) Snapshot Multispectral Imaging Using a Pixel-Wise Color Polarization Image Sensor**

S. Ono (FUJIFILM / Japan)

A new snapshot multispectral-imaging technique is proposed herein. An imaging lens that incorporates multiple spectral filters and polarizing filters is combined with a pixelwise color polarization image sensor. The prototype of a nine-band can take a multispectral video image.

OWP1A-05**(16:50) Concept for Enabling Industry 4.0 in the Context of Design and Assembly of Optical Systems**

M. Prochnau, G. König (RWTH Aachen Univ. / Germany), S. Scheres (Fraunhofer Inst. for Laser Technology / Germany), F. Zerbes (RWTH Aachen Univ. / Germany), J. Stollenwerk (RWTH Aachen Univ. / Germany, Fraunhofer Inst. for Laser Technology / Germany), and C. Holly (RWTH Aachen Univ. / Germany)

This paper reflects possibilities of transferring technological achievements of Industry 4.0 into the automated design and assembly of optical systems. Intelligent algorithms and high-precision assembly robotics enables the expert-independent, purely system-guided production of optical systems.

**Banquet (18:00-)
(At Sapporo Park Hotel)**

August 4, 2022 (Thursday)

Plenary Session3 (8:15-8:45)

Prsider:

M. Hasegawa (Canon / Japan)

Plenary3-O1 (Invited)

(8:15) Lens Optics Brilliant Forever ---Introducing new theories related to imaging

M. Shibuya (Tokyo Polytechnic Univ. / Japan)

Lens optics is an old, new, and eternal technology. The theory of lens optics continues to advance in various ways. In this presentation, I will introduce two theories which have not been discussed.

Break (8:45-8:50)

[OThA1B] C1. Optical Design/Simulation/Fabrication (8:50-10:40)

Prsiders:

Y. Suzuki (Evident / Japan)

R. Youngworth (Riyo / USA)

OThA1B-01 (Invited)

(8:50) Advances and Insights into Fundamental Optics Standards

R. N. Youngworth (Riyo / ISA), E. Herman (Zygo / USA), and D. M. Aikens (Savvy Optics / USA)

A summary of key developments in fundamental optical standards from 2010 to early 2022 is given in this paper. The work includes not only ISO 10110, but also incorporates information on other key fundamental optics standards in ISO/TC 172/SC 1.

OThA1B-02

(9:15) Modular Cross-Dispersion Spectrometer MOBIUS for Large Binocular Telescope

D. Kim (Large Binocular Telescope Observatory / USA, The Univ. of Arizona / USA), H. Kang (The Univ. of Arizona / USA), J. Wiese, H. Choi (Large Binocular Telescope Observatory / USA, The Univ. of Arizona / USA), A. Conrad (Large Binocular Telescope Observatory / USA), and D. Thompson (Large Binocular Telescope Observatory / USA)

MOBIUS is a modular optical system designed to fit within the focal plane mask frame of the LUCI spectrograph. MOBIUS provides cross-dispersion, allowing spectra to be recorded covering all four near-infrared bands.

OThA1B-03 (Invited)

(9:30) Modeling of Optical Fabrication Chains during Optics Design

O. Faehle (OST Univ. of Applied Sciences / Switzerland)

Results of computer modeling and simulation of the optimal fabrication chain (at minimum cost and risk) for given optical systems design is presented, enabling cost impact analysis during the optical design stage.

OThA1B-04

(9:55) Apodized Phase Contrast Microscopy Reveals Motion of Cellular Organelles

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

We have developed a high magnification objective performed with apodized phase-contrast bright high, for observing intracellular structures. It reveals motion of organelles such as the endoplasmic reticulum, which was hard to observe in unstained cells.

OThA1B-05

(10:10) Si-Microring Resonator with Sidewall Nano-Grating Structures for High-Q Resonance Modes

A. Igarashi, K. Murooka (Tohoku Univ. / Japan), Y. Ohtera (Toyama Prefectural Univ. / Japan), and H. Yamada (Tohoku Univ. / Japan)

Microring resonators with sidewall nano-grating structures were able to realize resonance modes with concentric magnetic-field distributions by FDTD simulation. The microring structures could optimize Q-values of the resonance modes for a high-performance photonic circuit.

OThA1B-06

(10:25) Development of High-Speed and High-Precision Alignment Technology Using the 3D Chart

M. Negishi, D. Matsunaga, K. Chiba, and H. Ogawa (CCTECH JAPAN / Japan)

The 6-DOF active alignment is important for mobile camera mass production. We propose a new method using the 3D chart. The experimental result showed 3 times faster and more accurate than the conventional methods.

Coffee Break (10:40-11:00)

[OThA4A] C4. New Technologies (11:00-12:10)

Presider:

Y. Saita (Wakayama Univ. / Japan)

OThA4A-01 (Invited)

(11:00) Dielectric Metasurfaces for Holography and Focusing at Visible Wavelengths

K. Iwami (Tokyo Univ. of Agriculture and Technology / Japan)

Dielectric metasurfaces for holography and the varifocal lens are introduced. A multicolor metasurface holographic movie consisting of 20 frames was demonstrated. A rotational varifocal metalens shows a wide focal length tuning from negative to positive.

OThA4A-02

(11:25) Vacuum Ultraviolet Light-Generating Metalens

M. Tseng (National Yang Ming Chiao Tung Univ. / Taiwan, Academia Sinica / Taiwan), M. Semmlinger, M. Zhang, C. Arndt (Rice Univ. / USA), T. Huang, C. Chu (Academia Sinica / Taiwan), V. Su (National United Univ. / Taiwan), H. Kuo (Academia Sinica / Taiwan), M. Chen, D. P. Tsai (City Univ. of Hong Kong / Hong Kong), J. Yang, B. Cerjan, P. Nordlander, and N. Halas (Rice Univ. / USA)

Vacuum ultraviolet (VUV) light is of great importance to many applications such as photochemistry and nanolithography. In this talk, a nonlinear metalens composed of ZnO nanoantennas for VUV generation and focusing will be reported.

OThA4A-03

(11:40) Stereophonic Lithography Using a Parabolic Mirror Projection System and One-sided Illumination

T. Horiuchi, J. Iwasaki, and H. Kobayashi (Tokyo Denki Univ. / Japan)

Stereophonic projection lithography using parabolic mirrors was examined. To extend the patterned area, one-sided illumination was investigated, and improved patterning performances were demonstrated. In addition, subjects to be studied further were also shown and discussed.

OThA4A-04

(11:55) Enhancement of Lighting Quality for the Product of Phosphor Converted White Light Emitting Diodes

C. Sun (National Central Univ. / Taiwan, National Yang Ming Chiao Tung Univ. / Taiwan), Q. Nguyen (National Central Univ. / Taiwan), T. Lee (National Taiwan Univ. of Science and Technology / Taiwan), S. Lin, C. Wu, T. Yang, and Y. Yu (National Central Univ. / Taiwan)

The proposed method is applied for the pc-WLEDs to cause a significant luminous flux quenching that allows the user's eyes to be actively protected in order to avoid exposure to the bluish light.

Lunch (12:10-13:30)

[OThP4B] C4. New Technologies (13:30-15:05)

Presider:

N. Yoneda (Kobe Univ. / Japan)

OThP4B-01 (Invited)

(13:30) Ray Files Reconstruction Based on the Computational Photometric Measurement (TBD)

L. Cao (Tsinghua Univ. / China)

OThP4B-02

(13:55) Ghost Imaging with Complementary Correlation Calculations Using Deep Learning

S. Kataoka, Y. Mizutani, T. Uenohara, Y. Takaya (Osaka Univ. / Japan), and O. Matoba (Kobe Univ. / Japan)

For nano defects inspection, a fast and robust method is required. Combining ghost imaging with deep learning reduces measurement time but decreases robustness. This report uses deep learning to complement the correlation calculation improves robustness.

OThP4B-03

(14:10) Experimental Verification of Fluorescence Tags Using FRET Networks Responding to Molecular Inputs

K. Hayashi, Y. Ogura, S. Shimomura, T. Nishimura, and J. Tanida (Osaka Univ. / Japan)

We present experimental verification of fluorescence tags using FRET networks which change the fluorescence spectra in response to molecular inputs. Experimental results demonstrate the basic function of the fluorescence tag for quantitative molecular sensing.

OThP4B-04 (Invited)

(14:25) Extraordinary Computational Imaging Technologies with Ordinary Optical Modulators

V. Anand (Univ. of Tartu / Estonia, Swinburne Univ. of Technology / Australia), S. Ng, J. Maksimovic, T. Katkus, M. Han (Swinburne Univ. of Technology / Australia), D. Linklater (RMIT / Australia), A. Klein, K. Bamberg, M. Tobin (Australian Synchrotron / Australia), E. Ivanova (RMIT / Australia), J. Vongsivut (Australian Synchrotron / Australia), and S. Juodkazis (Swinburne Univ. of Technology / Australia, Tokyo Inst. of Technology / Japan)

Computational imaging technology (CIT) has revolutionized the field of imaging. CITs based on two genres namely random and deterministic optical fields generated by common optical modulators with extraordinary imaging capabilities are discussed.

OThP4B-05

(14:50) Auto-differentiation Based Computational Lensless Imaging for EUV Metrology

Y. Shao, S. Weerdenburg (Delft Univ. of Technology / Netherlands), J. Seifert (Utrecht Univ. / Netherlands), R. Horsten (Delft Univ. of Technology / Netherlands), and W. Coene (Delft Univ. of Technology / Netherlands, ASML Holding N.V. / Netherlands)

As the semiconductor industry approaches the manufacturing ability of a few nanometers, EUV computational lensless imaging is of great interest for future metrology applications to determine certain features, e.g. the critical dimension and the overlay, of wafer structures and to detect defects. We present an auto-differentiation based ptychography algorithm implemented on the TensorFlow platform and validation results on the EUV setup.

Coffee Break (15:05-15:30)

[OThP2A] C2. Optical Components / Devices (15:30-17:10)

Presiders:

A. Seifert (CIC nanoGUNE / Spain)

K. Ikeda (Osaka Metropolitan Univ. / Japan)

OThP2A-01 (Invited)

(15:30) Computational Holographic Displays and Applications

H. Urey (Koc Univ. / Turkey)

OThP2A-02

(15:55) Virtual Image Suppression in Aerial Display Using Volume HOE and DCRA

T. Sakamoto, I. Nakao, S. Takeyama, and M. Yamaguchi (Tokyo Inst. of Technology / Japan)

We verify the suppression of virtual images that interfere with the observation of the real image displayed by DCRA in an aerial display system combining DCRA and volume HOEs by ray tracing and experimental methods.

OThP2A-03

(16:10) Planar Lightwave Circuit Digital Holographic Microscope with a Visible Arrayed Waveguide Grating

H. Gomi, Y. Murai, K. Nakama, K. Hayashi (The Univ. of Electro-Communications / Japan), K. Okamoto (Okamoto Lab. / Japan), and E. Watanabe (The Univ. of Electro-Communications / Japan)

We conducted experiments to extract a narrowed light wave by combining two types of arrayed waveguide gratings (AWGs), experimentally demonstrating that it is possible to achieve three-dimensional and multispectral imaging using an AWG planar lightwave circuit DHM optical system.

OThP2A-04

(16:25) Fast Phase-shift Control Method for a High-speed Planar Lightwave Circuit Digital Holographic Microscope

K. Hayashi, K. Nakama, H. Gomi (The Univ. of Electro-Communications / Japan), K. Okamoto (Okamoto Lab. / Japan), and E. Watanabe (The Univ. of Electro-Communications / Japan)

A new thermo-optical phase control method is proposed and demonstrated to realize a faster and more accurate four-step phase shift in PLC-DHM. Using this phase-shift control method, we demonstrated 66.7 fps color-moving-image imaging.

OThP2A-05

(16:40) Integrated Broadband Tunable Electro-Optic Switch in Lithium Niobate Waveguide Circuits

Q. Tseng, A. Niko, T. Pham, H. Chung, L. Deng, and Y. Chen (National Central Univ. / Taiwan)

We demonstrate an optical switch in LiNbO₃ integrated circuits based on an electro-optic (EO) polarization-mode converter and a broadband adiabatic polarizing-beam splitter. The device features high EO switching efficiency (~95%) and broadband (>100 nm) tunability.

OThP2A-06

(16:55) Optical Birefringence Arrangements Using Molecular Diffusions Under Photopolymerization

K. Maruyama, Y. Tokizane, and A. Emoto (Tokushima Univ. / Japan)

Molecular diffusions often generate molecular orientation which results in the formation of optical birefringence. It is expected that such molecular orientation is also existed under photopolymerization. We employed this phenomenon to prepare functional optical devices.

Break (17:10-18:00)

Poster Session (18:00-20:00)

P-OTh-01

Optical Simulation of Lens-Sensor Misalignment Detection Based on Amplitude and Phase of Image

K. Kobayashi, T. Kawamata, and K. Nishi (The Univ. of Electro-Communications / Japan)

Misalignment between lens and image sensor causes an asymmetric defocus and distortion. We propose a method to detect the misalignment by using the amplitude and phase of image and verify it through an optical simulation.

P-OTh-02

WFE Derived MTF Values of Cassegrain Telescopes

H. Tsay, P. Lin, C. Lien, H. Kuo, and M. Chen (Taiwan instrument research Inst. / Taiwan, National Applied Research Laboratories / Taiwan)

In this article, we compared wavefront error (WFE) results with what got from modulation transfer function (MTF) measuring setup for Cassegrain telescopes. Measured MTF values at specified frequency were compared with those derived from WFE measurements. It was concluded that MTF values derived from WFE measurements being a good estimate to telescope performance in camera resolution performance.

P-OTh-03

Optical Model of the Volume-Holographic-Optical-Element Based Near-Eye Light-Field Display

Y. Yu, C. Chen, C. Chen, C. Kuo, P. Huang, and C. Sun (National Central Univ. / Taiwan)

The issue of volume holographic optical element (VHOE) should be considered in the reflection grating, when it is used in the near-eye light-field display. Therefore, we propose the simulation models of the VHOE to make simulations.

P-OTh-04

Approach a UV-C LEDs Optical Modeling with Aid of Fluorescent Material

T. Le, S. Lin (National Central Univ. / Taiwan), C. Sun (National Central Univ. / Taiwan, National Yang Ming Chiao Tung Univ. / Taiwan), Q. Nguyen, C. Wu, T. Yang, and Y. Yu (National Central Univ. / Taiwan)

We present a precise mid-field model for 275 nm UV-C LED by comparing the 2-dimension simulated irradiance pattern and the gray-level image captured by a mono-CMOS with aid of fluorescent film in re-emitting visible light.

P-OTh-05

The Miniature Light-Field Camera with High Spatial Resolution

Y. Chen, M. Xie, H. Yang (National Central Univ. / Taiwan), Y. Cheng (National Applied Research Lab. /

Taiwan), and C. Wang (National Central Univ. / Taiwan)

We propose a new type of microlens array for the light-field camera. The microlens array consists of a large microlens at the center to improve spatial-frequency resolution and surrounding microlenses to provide field-angle information. A PDMS microlens array is fabricated by using nanoimprint technology. Via the proposed microlens array, we can simultaneously obtain field-angle information and high spatial resolution images with a one-shot image.

P-OTh-06

Low Aspect Ratio Dielectric Metasurface based on Sandwich Nano-Fin

W. Hsu, H. Lai, Y. Chen, and C. Wang (National Central Univ. / Taiwan)

We propose a sandwich nano-fin to further reduce the aspect ratio requirement of PB-phase metasurfaces. The phase modulation ability and polarization conversion efficiency (PCE) of GaN/amorphous silicon (a-Si)/GaN sandwich nano-fin were investigated. Compared with GaN nano-fin, the aspect ratio of sandwich nano-fin dropped from 6 to 4. Moreover, the PCE was up to 69.36%, which was 1.56 times higher than the GaN nano-fin under the same aspect ratio.

P-OTh-07

Design of Matrix Light Source Applied to Small-Sized Headlamp

C. Wu, S. Lin, T. Le, Y. Lin, X. Lee, Y. Yu, T. Yang (National Central Univ. / Taiwan), T. Lee (NTUST Univ. / Taiwan), and C. Sun (National Central Univ. / Taiwan)

In this paper, we design a thirty mini-LEDs array as the light source of low/high beam for the small-sized mechanism of the bicycle headlamp. From the ray-tracing simulation results, the mini-LED array is compatible with the small reflector of the bicycle headlamp. The light patterns of low/high beam meet the K-mark regulations.

P-OTh-08

1-Megapixel Depth Camera Lens Design and Analysis for a Fixed Lens with Object Distance from 0.55 m to 10 m

S. Tsai, W. Sun, C. Sun (National Central Univ. / Taiwan), Y. Su (Taiwan Instrument Research Inst. / Taiwan, National Applied Research Laboratories / Taiwan), and J. Yu (National Central Univ. / Taiwan)

We design a fixed lens for a depth camera which designed object distance was 750 mm with the field angle of the lens was 100.59° and the object distance from 0.55 m to 10 m.

P-OTh-09

A Patternable Lighting System to Phototherapy

C. Chou, Y. Su, C. Yang, Y. Lin, H. Tsai, and K. Huang (National Applied Research Laboratories / Taiwan, Taiwan Instrument Research Inst. / Taiwan)

In the paper, we presented a patternable lighting system to phototherapy. The lighting system could change light field graphics and adjust the light dose according to the hair density in the affected area. The light field would focus on the affected area to improve the treatment efficiency. The lighting system illumination uniformity was over 91% and the maximum irradiance was 160 mW/cm². The patternable resolution was 20mm. In the future, we want to build the lighting system and conduct clinical trials. The system could use to realize high efficient and precision treatment.

P-OTh-10

10 × Optical Zoom Phone Camera Design

Y. Liu and W. Sun (National Central Univ. / Taiwan)

In this paper, we design a 10 × optical zoom camera with 8-megapixel sensor, and the lens depth equals to 8.9mm.

P-OTh-11

Performance of Downsized High-power Optical Isolator Using Novel Glass with High Verdet Constant

F. Suzuki, T. Furuyama, F. Sato, N. Masuda (Nippon Electric Glass / Japan), and K. Tanaka (Kyoto Univ. / Japan)

Magneto-optical glass with a large Verdet constant has been developed. The glass was utilized as a Faraday rotator in the optical isolator, and the downsizing of the isolator was achieved.

P-OTh-12

Diffusive Application of Aperiodic Microlens Array

N. Hanashima, K. Shibuya, K. Hayashibe, and H. Takekuma (Dexerials / Japan)

A microlens array (MLA), which converges and diverges incoming light for focusing and diffusing purpose, is widely used in various optical applications. This paper presents and demonstrates a diffusive application of aperiodic MLA(s).

P-OTh-13 Withdraw

P-OTh-14

Power Conversion Efficiency of RGB Phosphor by Excitation of 385nm Ultraviolet LED

Y. Muramoto, M. Kimura, T. Morii, and A. Kondo (NITRIDE SEMICONDUCTORS / Japan)

Power conversion efficiencies (wall-plug efficiency, WPE) of 22.4%, 21.4%, and 26.4% were obtained for red, green, and blue phosphors irradiated by UV LED with 385nm peak wavelength, respectively.

P-OTh-15

High Performance, Low-Cost USB Line Scanning Sensor Board for Industrial and Research Applications

M. Osterheider, K. Sengebusch, J. Beckers, and M. Imlau (Univ. of Osnabrueck / Germany, Eureka Messtechnik / Germany)

We present our results on the development and characterization of a high performance, low-cost, USB line scanning camera board based on the TCD1304DG CCD sensor.

P-OTh-16

Planar Lightwave Circuit Digital Holographic Microscope for 3-D Imaging Through Random Media

K. Iida, M. Ohta (The Univ. of Electro-Communications / Japan), K. Okamoto (Okamoto Lab. / Japan), M. Takeda (Utsunomiya Univ. / Japan), and E. Watanabe (The Univ. Of Electro-Communications / Japan)

We designed and fabricated a new planar lightwave circuit digital holographic microscope (PLC-DMH) with adjacent point light sources. Using this PLC-DHM, microscopic 3D imaging through random media based on common-path phase-shift digital holography was experimentally demonstrated.

P-OTh-17

Design of Holographic Optical Elements for Lens Array Components and its Application in Light Field Display

C. Chen, Y. Yu, C. Sun, Y. Huang, and C. Kuo (National Central Univ. / Taiwan)

The design of holographic optical elements, including an out-coupling grating and a lens array component, for light field displays is introduced in this study. A light field display platform will also be presented.

P-OTh-18

Fluorescence Measurement Using an Optical Fiber Type Small Spectrometer

K. Muro and Y. Hattori (Teikyo Univ. / Japan)

We proposed a small spectrometer that irradiates and receives light with a single optical fiber, and measured the fluorescence of solids and liquids.

P-OTh-19

Defect Mapping of Metal Contaminated Si Wafers by a Laser Heterodyne Photothermal Displacement Method

T. Harada (Univ. of Miyazaki / Japan, JSPS Research Fellow / Japan), K. Morita, S. Harada, H. Ohyama, T. Ikari, and A. Fukuyama (Univ. of Miyazaki / Japan)

To investigate the distribution of nonradiative recombination centers of semiconductors, we developed a laser heterodyne photothermal displacement method. Mapping measurement for contaminated Si was conducted and revealed the defect patterns.

P-OTh-20

Development of an Optical System for Near-Infrared Spectropolarimeter Onboard SUNRISE Balloon-Borne Solar Observatory

T. Tsuzuki, Y. Katsukawa, F. Uraguchi, Y. Kawabata, H. Hara, M. Kubo, Y. Nodomi, Y. Suematsu (National Astronomical Observatory of Japan / Japan), and T. Shimizu (National Astronomical Observatory of Japan / Japan, Japan Aerospace Exploration Agency / Japan)

We have developed a near-infrared spectropolarimeter onboard the Sunrise balloon-borne solar observatory launched in 2022. In this paper, we present the development of the optical system from optical design to optical analysis, opto-mechanical analysis, and performance tests.

P-OTh-21

Assessment of a Laser Rangefinder Maximum Range with Continuous Polarization Attenuation Technique

C. Han and S. Jhang (National United Univ. / Taiwan)

Conventional practical maximum range test for a laser rangefinder system was the extinction ratio method, which installed many density filters in the optical path after the transmitter or before the receiver. In this work, a continuous polarization attenuation technique by employing three polarization elements was demonstrated. This approach provides the benefit of higher attenuation factor and the replacement of optical elements was not required during the measurement.

P-OTh-22

Three-Dimensional Velocity Distribution Measurement Using Spatial Encoding and Wavelength Scanning

H. Yamaji, S. Ghafar, and K. Maru (Kagawa Univ. / Japan)

We propose a differential laser Doppler velocimeter (LDV) for three-dimensional velocity distribution combining spatial encoding by bias-frequency assignment and non-mechanical scanning of measurement points. The results indicate that 3D velocity distribution measurement was successfully demonstrated.

P-OTh-23

Optical System Capturing the User from the Front Through an Interactive Aerial Display

K. Fujii, M. Yasugi, and H. Yamamoto (Utsunomiya Univ. / Japan)

We propose an optical system that shows an aerial image and captures a user from the front. Touchless interaction is realized by AIRR and a finger-position sensor. Polarization modulation eliminates the reflection of displayed images.

P-OTh-24

Automated NIR Spectrometer for the Investigation of Correlation Between Sky Spectra and Weather Parameters

Y. Ohtera, H. Tanaka, T. Takaya, and Y. Okura (Toyama Prefectural Univ. / Japan)

Monitoring system of near infrared spectra of the sky, for the investigation of correlation between spectra and weather parameters, was developed. Machine learning algorithms were applied to find an efficient model for the parameter estimation.

P-OTh-25

Multi-Laser Light Section Method Enabling Enlargement of Height Measurement Range

Y. Arai, H. Kawano, and K. Mochizuki (Mitsubishi Electric / Japan)

Resolution and range are trade-offs under a constant number of pixels in the light section method. We propose a multi-laser method and confirmed a range enlargement without increasing the number of pixels.

P-OTh-26

A Michelson Twin Interferometer for Phase-shifting Measurement

H. Tetsuo (Univ. of Yamanashi / Japan)

A Michelson twin interferometer for phase-shifting measurement with a four-step interferometric method is described in this work. Two interference signals concerning measurement and reference beams are generated from a common optical system simultaneously. Although the interference signal of each beam changes over time, they have a synchronous relationship and the error component could be removed by taking the phase difference of the two beams even in the experimental environment without special temperature control and vibration-proofing equipment.

P-OTh-27

Proposal of Reflective Optics for Wide Wavelength Band of Mid-Infrared Passive Spectroscopic Imaging

D. Anabuki, H. Adachi, Y. Morimoto, S. Yamashita, T. Kitazaki, and I. Ishimaru (Kagawa Univ. / Japan)

We intend to perform in situ micro-object measurements via mid-infrared passive spectroscopic imaging by a palm-sized image-type two-dimensional Fourier spectroscope. An expandable spectroscopic imaging wavelength band was realized by configuring the apparatus with reflective optics.

P-OTh-28

Ultra-High Luminance Laser-Based White Light Module

T. Lee and Y. Lin (National Taiwan Univ. of Science and Technology / Taiwan)

In many illumination applications, it is valuable that a light source can emit more lumens from a compact physical light-emitting area. This means that such a high-luminance light source can design an optical system with higher light intensity and a smaller beam angle. In the study, we used high-power blue laser pumping single crystal phosphor as luminescent cores, through novel optical designs such as compression optics, photon recycling, resonant cavity, etc., to reduce the gain of system étendue, improve the light output efficiency, and finally develop a laser-based white light module with ultra-high luminance performance.

P-OTh-29

Accurate Transmittance Measurement with Calibration of Integration Sphere

P. Huang, C. Kuo, Y. Huang, Y. Yu, T. Yang, and C. Sun (National Central Univ. / Taiwan)

When measuring total transmittance by integration sphere, the response is not uniform. Therefore, our team proposed a method that uses screen image synthesis system and integration sphere to calibrate response and get an accurate transmittance.

P-OTh-30

Numerical Analysis of Orthogonal Functional Systems for Finite Fresnel Transform

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

We deal with the eigenvalue problems of Fredholm integral equation of the first kind on Fresnel transforms. The orthogonal functional systems were applied to an approximation of some complex-valued functions in the vector space.

P-OTh-31

A Study on Low Color Temperature and Color Rendering Improvement in Phosphor-Converted Type Laser Illuminants

Y. Manabe, H. Fuji, K. Fujioka, K. Yamamoto (Osaka Univ. / Japan), T. Kusunoki, S. Tokumitsu, H. Kawabe, and S. Makio (Oxide / Japan)

We have proposed red laser assisted laser illuminants for blue laser pumped phosphor conversion type. The laser lighting illuminants have a low color temperature of 3000 K, high color rendering properties and high luminous efficacy.

P-OTh-32

Mid-Infrared Passive Spectroscopic Imaging for Outdoor Environmental Measurement

K. Miyamura, Y. Morimoto, T. Kitazaki, and I. Ishimaru (Kagawa Univ. / Japan)

We have been attempting to realize outdoor environmental measurements using a mid-infrared spectrometer without illumination. This work proposes a new spectroscopic method and demonstrates the utility of the method when measuring plastics and gases.

P-OTh-33

Highly Sensitive Plastic Scintillation Optical Fiber Detector for Environmental Radiation Monitoring

S. Song, J. Kim, J. Park, S. Kim, T. Lim, and B. Lee (Chung-Ang Univ. / Korea)

The detectable minimum dose rate of proposed highly sensitive plastic scintillation optical fiber detector (PSOF) is less than 0.1 $\mu\text{Sv/h}$, and it can be used to monitor environmental radiation accurately.

P-OTh-34

Design of Fourier Holographic Imaging System for Remote Projection of a Small Object

C. Yu, Y. Lan, and S. Lin (National Yang Ming Chiao Tung Univ. / Taiwan)

We present the design of Fourier holographic imaging system for remote projection of a small object. The system consists of a point light source, Fourier hologram and imaging lens. It can be proved that Fourier transformation of the hologram is obtained at the image plane of light source. We can then change the size of projected object at far distance by varying the distance between the point light source and hologram. In experiments, we have demonstrated to project 8-cm high image at 50-m away from the optical system.

P-OTh-35

Design of Optically Extended Convolutional Neural Network

X. Pan, X. Chen, S. Takeyama, and M. Yamaguchi (Tokyo Inst. of Technology / Japan)

We demonstrate the optically extended convolutional neural network (OeCNN) that integrates the optical imaging system with the digital CNN. OeCNN simplifies the imaging system by making it an optically extended convolutional layer ahead of the digital CNN.

P-OTh-36

Laser Surface Modification Technology for Improving the Properties of Metal Oxide Semiconductor Gas Sensing Thin Films

R. Chen, P. Chen, M. Chen, and W. Hsiao (Taiwan Instrument Research Inst. / TIRI, NARLabs / Taiwan)

This research developed a laser surface modification technology employing high-speed, high-precision optical scanning for gas sensing with SnO₂ metal oxide semiconductor. Only selective surface modifications were required to obtain various film and sensor properties. A metal oxide semiconductor film that underwent laser surface modification was subjected to various nitrogen dioxide (NO₂) gas concentrations (10, 30, and 50 ppm) for testing its utility for gas response and sensing and for desorption with an ultraviolet light-emitting diode method. The developed optical gas desorption mechanism can successfully desorb the target gas from a sensing film.

August 5, 2022 (Friday)

[OFA2B] C2. Optical Components / Devices (8:30-9:25)

Presider:

Y. Miyamoto (UEC Tokyo / Japan)

OFA2B-01 (Invited)

(8:30) The Search for Habitable Worlds Around Nearby Stars with Large Telescopes and Innovative Photonics

O. Guyon (The Univ. of Arizona / USA, Subaru Telescope / USA)

Jupiter-size exoplanets are imaged with current telescopes equipped with extreme adaptive optics. Habitable Earth-like planets will be studied with upcoming 30-m class telescopes, and their atmospheres probed for signs of biological activity.

OFA2B-02

(8:55) Novel Transmission Gratings for Space Applications and Astronomical Observations

N. Ebizuka, T. Okamoto, Y. Yamagata (RIKEN / Japan), M. Sasaki (Toyota Technology Inst. / Japan), I. Tanaka, T. Hattori (National Astronomical Observatory of Japan / Japan), Y. Nakauchi (JAXA / Japan), M. Nishimaki, K. Yamamoto, M. Okada (Nalux / Japan), and K. Saiki (Osaka Univ. / Japan)

We are developing volume binary gratings and trapezoid gratings with high angular dispersion, high diffraction efficiency and wide spectral rang. Simulation results, fabrication methods, and experimental results of these gratings are described in this article.

OFA2B-03 (Invited)

(9:10) DNA Detection by SERS on InGaN Quantum Wells Decorated with Al Nanoparticles

A. Nguyet, T. Nguyen, K. Lai, F. Chien (National Central Univ. / Taiwan)

DNA nucleobases were detected by the SERS performed on nanostructured InGaN QWs decorated with Al nanoparticles. The SERS intensity of 19-mer thymine was found be effectively enhanced as the Al layer thickness exceeds 40 nm.

Break (9:25-9:35)

[OFA2C] C2. Optical Components / Devices (9:35-10:30)

Presiders:

N. Ebizuka (RIKEN / Japan)

K. Lai (National Central Univ. / Taiwan)

OFA2C-01 (Invited)

(9:35) New Profilometer and Data Stitching Algorithm for Large Mirror Measurement

M. Kurita (Kyoto Univ. / Japan, Logistlab / Japan) and K. Takahashi (Logistlab / Japan)

A new metrology and data stitching algorithm for fabrication of large mirror are presented. The method is applicable to large free form mirrors. The stitching algorithm can integrate smoothly multiple data set sharing common region without inconsistency.

OFA2C-02

(10:00) Double-Frequency-Grating Phase Shearing Interferometer Used in the Holographic Data Storage

Y. Yu, T. Hou, T. Yang, and C. Sun (National Central Univ. / Taiwan)

In order to produce a robust technique in reading the multi-level phase signal in holographic data storage, we propose and demonstrate a pre-integral DFGSI with the utilization of a built-in phase-shifting function.

OFA2C-03

(10:15) Fabrication of Polarization Diffraction Element by Utilizing Photoalignable Polymer Liquid Crystal

R. Momosaki (Nagaoka Univ. of Technology / Japan), M. Sakamoto, K. Noda, T. Sasaki (Nagaoka Univ. of Technology / Japan, JST / Japan), T. Sakai, Y. Hattori (Hayashi Telempu / Japan), N. Kawatsuki (Univ. of Hyogo / Japan), JST / Japan), and H. Ono (Nagaoka Univ. of Technology / Japan, JST / Japan)

Polarization diffraction optical elements formed by the photoalignment of a polarization-sensitive polymer liquid crystal are presented. Specifically, we introduce an incident angle dependence-reduced polarization grating with biaxial anisotropy and a wavefront aberration-corrected geometric-phase lens.

Coffee Break (10:30-11:00)

[OFA3A] C3. Optical Systems (11:00-12:25)

Presiders:

H. Ohno (Toshiba / Japan)
A. Rueda (Scantinel Photonics / Germany)

OFA3A-01 (Invited)

(11:00) Deep Tissue High-Resolution Optical Imaging in the Third Near Infrared Window

M. Yamanaka (Osaka Univ. / Japan), D. Sonoyama (Nagoya Univ. / Japan), H. YUKAWA (Nagoya Univ. / Japan), Nat. Inst. For Quantum Science and Technology / Japan), M. Tokunaga (Nagoya Univ. / Japan), Y. Baba (Nagoya Univ. / Japan, National Inst. For Quantum Science and Technology / Japan), and N. Nishizawa (Nagoya Univ. / Japan)

We present our recent work on the development of optical coherence microscopy and two-photon fluorescence microscopy with NIR-III light for high-resolution deep tissue imaging.

OFA3A-02

(11:25) Coded Exposure Imaging System for Crack Inspection

Y. Hashiba, K. Mochizuki, E. Sano, S. Takushima, H. Kawano (Mitsubishi Electric / Japan), and H. Nagahara (Osaka Univ. / Japan)

We developed a crack inspection system that applied coded exposure photography. The results of field experiments in a tunnel demonstrated that our system detected 0.3-mm wide cracks when moving at 80 km/h.

OFA3A-03

(11:40) Phase Modulation Fresnel Zone Aperture for Image Resolution Improvement in Lensless Cameras

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

Use of phase modulation Fresnel zone aperture (FZA) is proposed for suppressing diffraction in FZA-based lensless camera. The effectiveness of the proposed method was experimentally verified with the developed prototype of compact lensless camera modules.

OFA3A-04

(11:55) An Eye Tracking Method to Extend the Viewing Zone in Multiview 3D Displays

Z. Yao, P. Surman (Southern Univ. of Science and Technology / China), X. Yang, G. Zhu, W. Xu (Huawei Technologies / China), and X. Sun (Southern Univ. of Science and Technology / China)

We designed a multi-view 3D display system with eye tracking using 8K panel. This provides a multi-view 3D display with high resolution and smooth motion parallax that gives the viewer good freedom of movement.

OFA3A-05

(12:10) Detection of Glucose-Induced Emission Spectra Based on Mid-Infrared Passive Spectroscopic Imaging for Non-Invasive Blood Glucose Sensor and Evaluation of Correlation of Time Series Data with Invasive Sensors

T. Kitazaki, Y. Morimoto, S. Yamashita, D. Anabuki, S. Tahara, A. Nishiyama, K. Wada, and I. Ishimaru (Kagawa Univ. / Japan)

We propose mid-infrared passive spectroscopic imaging for non-invasive blood glucose sensing to detect glucose from skin radiation without using a light source. We performed measurements at the wrist and successfully detected the glucose emission peak.

Lunch (12:25-13:30)

[OFP3B] C3. Optical Systems (13:30-15:05)

Presiders:

M. Yamanaka (Osaka Univ. / Japan)
Y. Takashima (The Univ. of Arizona / USA)

OFP3B-01 (Invited)

(13:30) Hardware Challenges for Implementing Metaverse-Compatible Use Cases on Smart Glass AR Form Factors (TBD)

B. Kress (Google / USA)

OFP3B-02**(13:55) Two-Dimensional Beam Splitter Array Waveguide for High Luminance and Large Eye-Box Head Mounted Display**

T. Kuno, R. Ukai (Hitachi /Japan), T. Mouri (Hitachi-LG Data Storage /Japan), and T. Nakamura (Hitachi /Japan)

To realize head mounted display (HMD) for outdoor use, we developed ABSA waveguide, which consists of two-dimensional beam splitter array for efficient eye-box expansion. ABSA waveguide achieved high luminance and large eye-box HMD.

OFP3B-03 (Invited)**(14:10) Optical See-Through Near-Eye Display for Augmented Reality with Focus Cue Support**

M. Choi and J. Park (Inha Univ. / Korea)

In this paper, we introduce our recent works to alleviate the discrepancy between vergence and accommodation distance, which is the main cause of visual fatigue in optical see-through near-to-eye displays.

OFP3B-04**(14:35) In-Process Height Displacement Measurement System for 5-Axis Process Control of Laser Wire Deposition**

S. Takushima, M. Fukami, N. Shinohara, D. Morita, and H. Kawano (Mitsubishi Electric / Japan)

We propose an in-process height displacement measurement system using a crossed line beam with line-section method. Our system achieved high-accuracy measurement by correcting height change at the measurement position by workpiece's tilt during 5-axis processing.

OFP3B-05**(14:50) Bimodal Vibrational Spectroscopy for Simultaneously Operating Raman and FTIR**

L. Arévalo, S. O'Brien, E. Lopez, A. Bastida (nanoGUNE / Spain), G. Singh (SMART / Singapore), and A. Seifert (nanoGUNE / Spain, IKERBASQUE / Spain)

We describe the design, construction, and calibration of a novel bimodal spectroscopy system featuring simultaneous investigation of same sample using both Raman and FTIR. Vibrational spectra of complex biomaterials validate the performance of the system.

Coffee Break (15:05-15:30)**[OFPSSA] Special Session (15:30-16:45)****Presider:**

K. Konno (Konica Minolta Inc. / Japan)

OFPSSA-01 (Invited)**(15:30) Deep Learning-enabled Computational Microscopy and Sensing**

A. Ozcan (Univ. of California / USA)

In this presentation, I will provide an overview of some of our recent work on the use of deep neural networks in advancing computational microscopy and sensing systems, also covering their biomedical applications.

OFPSSA-02 (Invited)**(15:55) Optical Sensing Technologies for Sustainable Food Production (TBD)**

N. Kondo (Kyoto Univ. / Japan)

OFPSSA-03 (Invited)**(16:20) Versatile Applications of Laser Scanning Based on the Optical Pickup Head Technology**

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

Versatile applications of laser scanning based on the optical pickup head technology, including bioimaging of cell structure, biosensing of localized surface plasma resonance, and microarray, are systematically reviewed.

Break (16:45-16:55)

[OFPSSB] Special Session (16:55-17:45)

Presenter:

T. Otaki (Nikon Corp. / Japan)

OFPSSB-01 (Invited)

(16:55) Observation of Fine Structures of the Cells with Optical Microscopes

K. Katoh (National Inst. of Advanced Industrial Science and Technology / Japan)

We focus on images of biological samples. Fine structures of the cells were observed with polarized light, apodised phase contrast, and super resolution microscopes. Future of microscope in biomedical field will also be discussed.

OFPSSB-02 (Invited)

(17:20) Low-Cost Optical Sensing Applied to Life Sciences

G. Cardoso, M. Sampaio, and R. Souza (Univ. of Sao Paulo / Brazil)

Easy-to-use low-cost health monitoring has received renewed interest in the wake of COVID-19. We will discuss non-invasive and contactless health evaluation methods that use conventional cameras and sensors in the visible and NIR.

Closing Session (17:45-18:15)

Presenter:

H. Kawano (Mitsubishi Electric / Japan) (Tentative)

Best Paper Award

(17:45)

S. Yamaguchi (Konica Minolta / Japan) (Tentative)

Closing Remarks

(17:55)

M. Hasegawa (Canon / Japan)

INSTRUCTIONS FOR SPEAKERS

All speakers are required to register for participation in ODF'22. English will be used for all presentations and printed material.

(Oral presentation)

Oral session is to be held in “Oval Room (Conference 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 their presentation files with own USB thumb drive. It is the presenter's responsibility to copy your presentation file as soon as possible in each session room at any break in advance to the session of your presentation. There are also student staff who would be supporting to copy your presentation data in the room. The file must be compatible with Microsoft PowerPoint or Adobe Acrobat on Microsoft Windows indicated above. Your presentation file will be surely deleted after the session.

(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 “Main Hall” on Thursday, 4 August.

	Time	Date
Poster Session	Preparation: 9:00-18:00 Presentation: 18:00-20:00 Removal: By 15:30 Aug.5	Thursday 4

Poster boards will be around 1.8 m high and 0.90 m wide 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. Poster number will be displayed at upper left side on the bulletin board.

Poster presentations consist of on - site presenters at the poster session venue and online presenters.

During the poster session, the on - site presenters are required to attend relevant Q&A sessions at the poster session venue. Online presenters are required to respond to questions through zoom break-out room which is prepared for each presenter.

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 sessions. Latest and significant results obtained after the regular deadline are most welcome.

35-word Abstract: The 35-word abstract should be a brief summary of the work. If the submission is accepted for presentation, this 35-word abstract will be included in the Advanced Program.

2-page Summary (up to 2 pages maximum): the author must include all text, including the 35-word abstract, title, authors, equations, tables, photographs, drawings, figures, and references. The text should be typed single-spaced. Refrain from use of asterisk, job descriptions, or footnotes.

Page Format: A4, 8.27 in. × 11.69 in. paper (210 mm by 297 mm) with 1-inch margins (2.54 cm) on all sides

Accepted 2-page summaries will be disclosed on the first day of the conference;

Please upload your 35-word Abstract & 2-page on the website (<https://www.cleopr2022.org/submission.html>) . For the layout of manuscript, please see the Guidelines on the ODF'22 website.

The deadline for submission of post-deadline papers is on June 30, 2022.

Review result will be noticed by July 9, 2022. As well as the regular submission, the copyright of the article published in the ODF'22 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:

General inquiries : secretariat@cleopr2022.org

Abstract submission : submission2022@or.knt.co.jp

ODF'22 SPECIAL ISSUE OF OPTICAL REVIEW

The special issue of OPTICAL REVIEW, the journal of the Optical Society of Japan, for the 13th International Conference on Optics-Photonics Design & Fabrication "ODF'22, Sapporo" will be published in July 2023. All contributors of ODF'22 are strongly encouraged to submit their original papers for this special issue. Submissions from invited speakers are also welcome.

Submissions will be accepted from August 6th, 2022 to October 31st, 2022. 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 Hiroyuki Kawano at the address below:

Topical Editor, ODF'22 Special Issue: Dr. Hiroyuki Kawano

Mitsubishi Electric Corp.

E-mail: Kawano.Hiroyuki@ap.MitsubishiElectric.co.jp

REGISTRATION

- **Registration Fee**

The registration fee includes admission to technical sessions, online Technical Digest and Welcome reception.

Type	Before / on Jun. 30th, 2022 (JST)	After Jun. 30th, 2022 (JST)
Member*	JPY 60,000	JPY 70,000
Non-Member	JPY 70,000	JPY 80,000
Student	JPY 25,000	JPY 30,000

[*] Member of sponsor and cooperative society
(OSJ, IEEE, IEICE-CS, IEICE-ES, JSAP, LSJ, OPTICA)
JPY: Japanese Yen

- **Registration**

Participants in ODF'22 are required to register in the registration page. The deadline for advanced registration is June 30th, 2022.

Online registration: <https://www.cleopr2022.org/registration.html>

- **Cancellation Policy**

There will be no refunds for the registration fee.

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T. Otaki (Nikon / Japan)
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CONFERENCE SITE

ODF'22, Sapporo, will be held at Sapporo Convention Center, Sapporo.

Access: <https://www.sora-scc.jp/eng/>

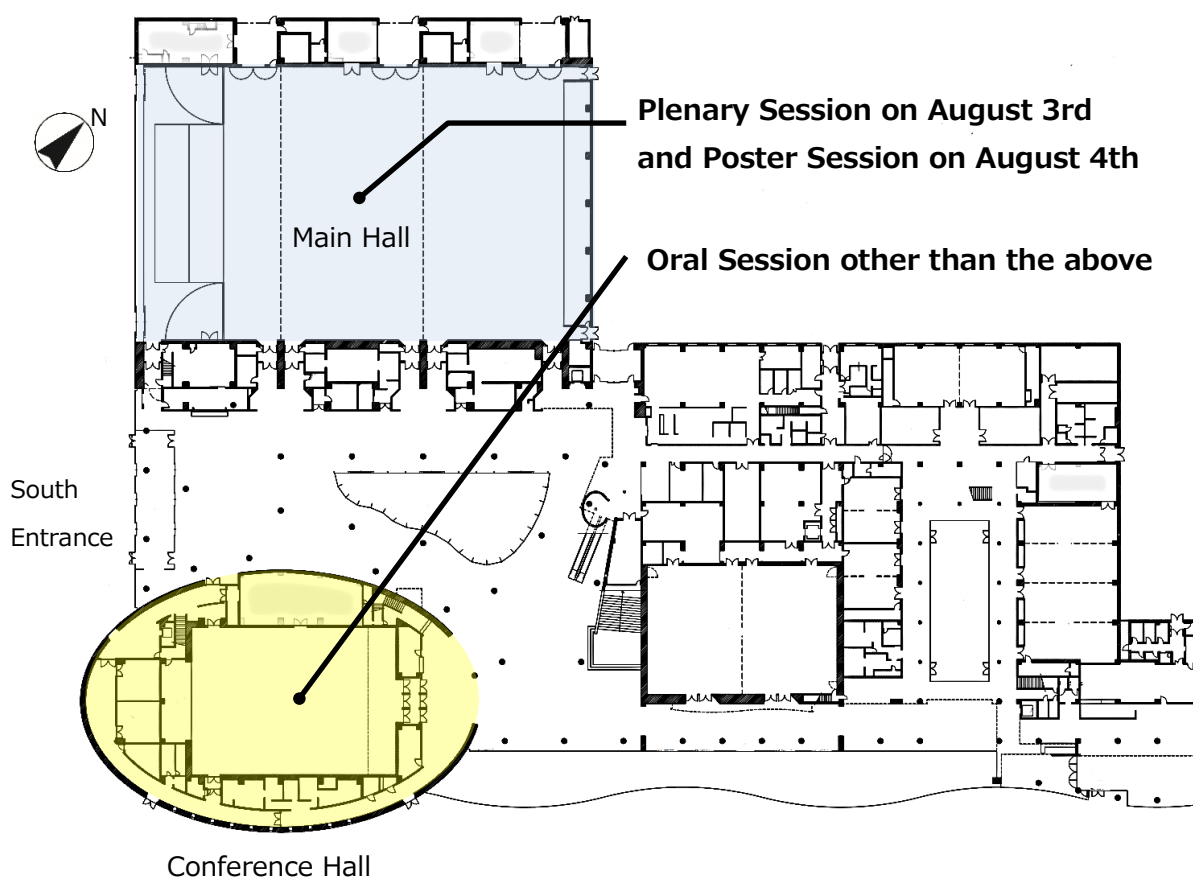
HOTEL RESERVATION

● Hotel

Some hotels in Sapporo City are arranged for ODF'22 participants. Online hotel reservation system is available on our website.

<https://www.cleopr2022.org/registration.html>

CONFERENCE CENTER FLOOR MAP



Deadlines

Post Deadline Papers:	June 30, 2022
Discount Registration:	June 30, 2022
Hotel Reservation:	No deadline
Online Registration:	No deadline
On-site Registration :	July 31-August 5, 2022

For information mail

About Post-deadline papers, Registration and Hotel reservation:

secretariat@cleopr2022.org

About Best paper award and ODF'22 special issue of optical review:

Kawano.Hiroyuki@ap.MitsubishiElectric.co.jp