



Optics, Photonics and Lasers

December 4-6, 2023 | Hiroshima, Japan



4th International
Conference on

OPTICS, PHOTONICS AND LASERS

DECEMBER 4-6, 2023 | IN-PERSON
DECEMBER 7, 2023 | VIRTUAL

Venue

Sheraton Grand Hiroshima Hotel

<https://opticsconference.org/>

08:00 - 08:30 Registrations @ Pre-Function space

08:30 - 08:40 Welcome and Inaugural Speech by
Conference Chair, **Prof. Koji Sugioka**, RIKEN Center for Advanced Photonics, Japan

Plenary Talk

Session Chairs: **Wu Lin**, Singapore University of Technology & Design (SUTD), Singapore
Jeremy Sylvester, University of Rhode Island, RI, USA

08:40 - 09:20 **Ursula Keller**, ETH Zurich, Switzerland
Single-Cavity Dual-Comb Lasers and Applications

Keynote Talks

09:20 - 09:50 **Koji Sugioka**, RIKEN Center for Advanced Photonics, Japan
Ultrafast Laser 3D Processing

09:50 - 10:20 **Godai Miyaji**, Tokyo University of Agriculture and Technology, Japan
Direct Surface Nanopatterning with Intense Femtosecond-Laser-Induced Plasmonic Near-Fields

10:20 - 10:50 **Yoshiki Nakata**, Osaka University, Japan
Macro and Micro Beam Shaping and Nanoprocessing

10:50 - 11:00 **Coffee Break** @ Pre-Function space

11:00 - 11:30 **Aiko Narazaki**, National Institute of Advanced Industrial Science and Technology (AIST), Japan
Laser-Induced Forward Transfer of Bioactive Film and Ink

11:30 - 12:00 **Toshihiko Baba**, Yokohama National University, Japan
Silicon Photonics Solid-State LiDAR with Slow-Light Grating Beam Scanner

12:00 - 12:30 **Vincent G Harris**, Northeastern University, MA, USA
Influence of Laser Process Parameters on Stoichiometry, Phase, and Texture in PLD-Grown Hexagonal Ferrite Films

12:30 - 12:40 **Group Photo**

12:40 - 13:40 **Lunch Break** @ Minami (B)

Invited Talks

Session Chairs: **Satoru Ohisa**, Japan Broadcasting Corporation (NHK), Japan
Daniel G. Suárez-Forero, University of Maryland, MD, USA

13:40 - 14:00 **Zuyi Zhang**, Future Technology R&D Center, Canon Inc., Japan
Nano Porous Silica Related to Antifogging and Low Scattering of Light

- 14:00 - 14:20 **Ya Zhang**, Tokyo University of Agriculture and Technology, Japan
A Stroboscopic DIC Microscopy with Enhanced Temporal Resolution for Visualizing the Vibrations in MEMS Devices
- 14:20 - 14:40 **Takahiro Kodama**, Kagawa University, Japan
Point-To-Multipoint Coherent WDM System with Bypass/Backup Link Switching
- 14:40 - 15:00 **Tenio Popmintchev**, University of California San Diego, CA, USA
Quantum Optics Meets Strong Field Physics: Novel Regimes of Coherent X-ray Generation with Strong Electron Correlation Dynamics and Attosecond Rabi Oscillations
- 15:00 - 15:20 **Kok Wai Cheah**, Hong Kong Baptist University, China
Optical Mode Coupling in a Twin Nano-Cavit
- 15:20 - 15:40 **Jeremy Sylvester**, University of Rhode Island, RI, USA
Highly Sensitive Setup for Ultrafast Time-Resolved Coherent Raman Studies
- 15:40 - 15:50 **Coffee Break** @ Pre-Function space
- 15:50 - 16:10 **Satoru Ohisa**, Japan Broadcasting Corporation (NHK), Japan
Common Metals as Electrodes for Organic Light-Emitting Devices
- 16:10 - 16:30 **Suguru Yamaoka**, NTT Corporation, Japan
Uncooled and Ultrafast Operation of Directly Modulated Membrane Lasers on SiC
- 16:30 - 16:50 **Daniel G. Suárez-Forero**, University of Maryland, MD, USA
Chiral Optical Nanocavity with Atomically Thin Mirror
- 16:50 - 17:10 **Sergey Ponomarenko**, Dalhousie University, Canada
Structured Random Light, Classical Entanglement, and Wave Revivals
- 17:10 - 17:30 **A R Ganesan**, Indian Institute of Technology Madras, India
Optical Phase Measurement Techniques and Applications in Applied Optics & Adaptive Optics
- 17:30 - 17:50 **Jiahao Huang**, Sun Yat-Sen University, China
Machine Optimized Quantum Metrology
- Flash Talks**
- 17:50 - 17:55 **Yongjie Huang**, Hong Kong Baptist University, Hong Kong
Energy Transfer in F8xBTy Lasing Polymer
- 17:55 - 18:00 **Mai Jianming**, Hong Kong Baptist University, Hong Kong
Mode Coupling in Non-Hermitian Heterostructure
- 18:00 - 18:05 **Fengren Cao**, Soochow University, China
Stable, Semitransparent and Self-Powered Conjugated-Polymer/CsPbI₂Br UV-Vis-NIR Photodetector via Crystal Growth Control
- 18:05 - 18:10 **Sibo Chen**, University of Tsukuba, Japan
Solving the Resource Allocation Problem in SDM-EONs via a Reinforcement Learning-Based Mode
- 18:10 - 18:15 **Yuliya Kozlova**, RUDN University, Russian Federation
Effect of the Erbium Laser on the Dentin Surface of the Tooth
- 18:15 - 19:00 **Networking Drinks** @ 7F Miyabitei

Session I - BIOMEDICAL OPTICS AND APPLICATIONS

Session Chairs: **Shu Jia**, Georgia Institute of Technology, GA, USA
Yusuke Oshima, University of Toyama, Japan

- 08:00 - 08:20** **Wu Lin**, Singapore University of Technology & Design (SUTD), Singapore
Plasmonic Nanopore: Toward On-Chip Quantum-Based Genome Sequencing
- 08:20 - 08:40** **Yusuke Oshima**, University of Toyama, Japan
Development of Raman Arthroscopy System for Intra-Operative Detection of Degenerative Changes in Articular Cartilage
- 08:40 - 09:00** **Wataru Inami**, Shizuoka University, Japan
High Resolution Bio-Imaging and Cell-Stimulation with Electron Beam Excitation Assisted Microscopy
- 09:00 - 09:20** **Ksenia Maximova**, Australian National University, Australia
Femtosecond Lasers for Modern Dentistry: Treatment of Hard Tissues and Restorative Materials
- 09:20 - 09:40** **Karuna Nambi Gowri**, North Carolina State University, NC, USA
Fabrication of Wound Closure Device using Ultra Short Pulsed Lasers (USPL)
- 09:40 - 10:00** **Yasutaka Hanada**, Hirosaki University, Japan
Microfabrication Using Laser-Induced Bubble (microFLIB) of Soft Materials and its Biochip Applications
- 10:00 - 10:20** **Shu Jia**, Georgia Institute of Technology, GA, USA
Toward Systems Biophotonics: Imaging Biology across High Spatio-Temporal Dimensions and Scales
- 10:20 - 10:40** **Guillermo Aguilar**, Texas A&M University, TX, USA
An Overview of Mechanical Engineering Concepts as Applied to Biomedical Optics and Medical Laser Problems

10:40 - 10:50 **Coffee Break** @ Pre-Function space

Session II - OPTICAL DESIGN AND INSTRUMENTATION

Session Chairs: **Martijn Anthonissen**, Eindhoven University of Technology, Netherlands
Kosuke Suzuki, Gunma University, Japan

- 10:50 - 11:10** **Hiroshi Ishiwata**, Evident Corporation, Japan
A Proposal of Depth of Focus Equation for an Optical System Combined a Digital Image Sensor
- 11:10 - 11:30** **Martijn Anthonissen**, Eindhoven University of Technology, Netherlands
Inverse Problems for Basic Freeform Optical Systems
- 11:30 - 11:50** **Xuan-Zhang Wang**, Harbin Normal University, China
Ghost Surface Polaritons in Hyperbolic Materials
- 11:50 - 12:10** **Laxman Mandal**, Indian Institute of Technology Madras, India
Intensity Phase Unwrapping Method for Tilt Measurement from Interference Fringe Pattern
- 12:10 - 12:30** **Yuji Tsukamoto**, Osaka University, Japan
Focused Optical Vortex Generation using Liquid Crystal Spiral Zone Plate

12:30 - 12:50 **Kosuke Suzuki**, Gunma University, Japan
Development of a Corded Aperture for high-energy synchrotron X-ray Compton Scattering Imaging

12:50 - 14:00 **Lunch Break** @ Mizuki

Session III - METAMATERIALS AND METASURFACES

Session Chairs: **Takuo Tanaka**, RIKEN Center for Advanced Photonics, Japan
Chen Chen, Nanjing University, China

14:00 - 14:20 **Chen Chen**, Nanjing University, China
Pancake Metalens for Compact Imaging Systems

14:20 - 14:40 **Wange Song**, Nanjing University, China
On-Chip Topological Light Manipulations with Curved Waveguides

14:40 - 15:00 **Jose Francisco Algorri**, University of Cantabria, Spain **Invited**
High-Q Dielectric Hollow Cuboid Metasurfaces: Externally Localized Electric Field Enhancement for Advanced Sensing Applications

15:00 - 15:20 **Junichi Takahara**, Osaka University, Japan
Graphene Perfect Absorber by Silicon Metasurface

15:20 - 15:40 **Willie Padilla**, Duke University, NC, USA
Informed Deep Learning for Electromagnetic Metamaterials

15:40 - 16:00 **Jingbo Sun**, Tsinghua University, China
Spin Photonics Based on Hyperbolic Metamaterial Films

16:00 - 16:20 **Hardik Soni**, Nav Wireless Technologies Pvt Ltd, India
Optical Wireless Communications (LiFi | FSO) Illuminating the Future of Data Transmission

16:20 - 16:40 **Takuo Tanaka**, RIKEN Center for Advanced Photonics, Japan **Invited**
Metamaterial Absorber for Ultrasensitive IR Spectroscopy

16:40 - 17:00 **Coffee and Networking** @ Pre-Function space

Session IV -LASER AND OPTICAL FIBER TECHNOLOGIES

Session Chair: **Hans Christian Hansen Mulvad**, University of Southampton, United Kingdom

- 09:00 - 09:20** **Kazuyuki Uno**, University of Yamanashi, Japan
High Repetition Rate Operation of Longitudinally Excited CO2 Laser Without He Pre-Ionization
- 09:20 - 09:40** **Kaile Wang**, Xidian University, China
Laser Ranging Using Continuous-Wave Single-Frequency Self-Sweeping Ytterbium-Doped Fiber Laser
- 09:40 - 10:00** **Hans Christian Hansen Mulvad**, University of Southampton, United Kingdom
Long-Range Kilowatt-Average-Power Transmission Over Hollow-Core Fibre
- 10:00 - 10:20** **Ruey-Ching TWU**, Southern Taiwan University of Science and Technology, Taiwan
Polymer Based Transducer for Disposable Liquid Concentration Measurement Sensors
- 10:20 - 10:40** **Shu Namiki**, AIST, Japan
Platform Photonics for Next Generation Digital Infrastructure

10:40 - 10:50 **Coffee Break** @ Pre-Function space

Session V - NOVEL DEVELOPMENT- OPTICAL MATERIALS AND APPLICATIONS

Session Chairs: **Anna Kozłowska**, Lukasiwicz Research Network-Institute of Microelectronics and Photonics, Poland
Liang Li, Soochow University, China

- 10:50 - 11:10** **Anna Kozłowska**, Lukasiwicz Research Network-Institute of Microelectronics and Photonics, Poland
Novel Ceramic Substrates for Lighting/Sensing Applications
- 11:10 - 11:30** **Dan Luo**, Southern University of Science and Technology, China
Light-Driven Liquid Crystal Elastomer Actuators: Polarization Manipulation and Application in Terahertz Metasurface
- 11:30 - 11:50** **Liang Li**, Soochow University, China
Perovskite Photodetectors: Material Preparation and Device Design
- 11:50 - 12:10** **Lynch Guo**, Soochow University, China
A Single Dot Perovskite Spectrometer
- 12:10 - 12:30** **Ludovic Rapp**, The Australian National University, Australia
Search for High-Pressure Silicon Phases: Reaching the Extreme Conditions with Laser Pulses at Ultra-Relativistic Intensities
- 12:30 - 12:50** **Youfeng Yue**, National Institute of Advanced Industrial Science and Technology, Japan
Crosslinked Liquid-Crystalline Polymers with Dynamic Light-Induced Orienting Motions and Photomechanical Response

12:50 - 13:10 **Yohei Kobayashi**, The University of Tokyo, Japan
AI Meets Laser Processing **Invited**

13:10 - 14:00 **Lunch Break** @ Mizuki

**Session VI - INTEGRATED OPTICS AND NANOPHOTONICS |
NONLINEAR OPTICS AND PHOTONICS**

Session Chair: Benfeng Bai, Tsinghua University, China

14:00 - 14:20 **Benfeng Bai**, Tsinghua University, China
Near-Field Probing and Visualizing Photonic Spin-Orbit Interactions and Nanoscale Defects in Nanomaterials

14:20 - 14:40 **Mitsuru Takenaka**, The University of Tokyo, Japan **Invited**
III-V CMOS Photonics Platform for Universal Photonics Applications

14:40 - 15:00 **Yasuyuki Yokota**, RIKEN Center for Advanced Photonics, Japan **Invited**
Toward Stable Measurements of Electrochemical Tip-Enhanced Raman Spectroscopy

15:00 - 15:20 **Ahmad Awad**, Gothenburg University, Sweden
Femtosecond Laser Comb Driven Selective, Controllable Spin and Elastic Waves

15:20 - 15:40 **Di Liang**, University of Michigan, MI, USA
Integrated Photonics in This New AI Era

15:40 - 16:00 **Oleg Pronin**, Helmut Schmidt University, Germany
Making Ultrashort Pulses Even Shorter. Nonlinear Optics in Multipass Cells

16:00 - 16:20 **Roberto Morandotti**, INRS, Canada
Signal Processing based on Quantum and Classical Integrated Technologies

16:20 - 16:40 **Coffee and Networking** @ Pre-Function space

Session VII -LASER SCIENCE AND TECHNOLOGY | SOLAR ENERGY AND PHOTOVOLTAICS | ATOMIC PHYSICS

Session Chairs: **Yu-Chieh Lin**, RIKEN Center for Advanced Photonics, Japan
Eiji J. Takahashi, Extreme Laser Science Laboratory, RIKEN, Japan

- 08:20 - 08:40 **Yu-Chieh Lin**, RIKEN Center for Advanced Photonics, Japan
Sub-Cycle Vortex Pulse Generation and its Application
- 08:40 - 09:00 **Baptiste Auguie**, University of Wellington, New Zealand
Modelling Light Absorption in Hybrid Core-Satellite Metal Nanostructures
- 09:00 - 09:20 **Shigeru Kubota**, Yamagata University, Japan
Design of Broadband and Omnidirectional Antireflection Coatings for Indoor Solar Cells
- 09:20 - 09:40 **Wen-Bin Jian**, National Yang Ming Chiao Tung University, Taiwan
Transmittance Blocking in a Wide Spectrum of Wavelengths for Complementary Electrochromic Smart Windows Based on WO₃ and NiO
- 09:40 - 10:00 **Zhao Suning**, Huazhong University of Science and Technology, China
Effect of Laser Cleaning on the Wettability, Microstructure and Mechanical Properties of Laser Soldering
- 10:00 - 10:20 **Eiji Takahashi**, RIKEN Center for Advanced Photonics, Japan **Invited**
Novel Amplification Method for a Single-Cycle Laser Pulse
- 10:20 - 10:40 **Yasuo Nabekawa**, RIKEN Center for Advanced Photonics, Japan **Invited**
Beamline Delivering XUV Attosecond Pump & XUV Attosecond Control & a Few Femtosecond DUV Probe Pulses

10:40 - 11:00 **Coffee Break** @ Pre-Function space

SESSION VIII -OTHER MULTIDIMENSIONAL APPLICATIONS OF PHOTONICS, OPTICS AND LASERS | QUANTUM SCIENCE, COMMUNICATIONS AND APPLICATIONS OPTICAL AND PHOTONIC COMMUNICATIONS AND SIGNALING

Session Chair: **Ahmad Awad**, Gothenburg University, Sweden

- 11:00 - 11:20 **Anton Desyatnikov**, Nazarbayev University, Kazakhstan
Vortex Rings and Ring Reconnections in Paraxial Laser Beams
- 11:20 - 11:40 **Takuma Tsurugaya**, NTT Device Technology Labs, NTT Corporation, Japan
Reservoir Computing Using Low-Power-Scale All-Optical Nonlinearity in Membrane III-V/Si Devices
- 11:40 - 12:00 **Mohamed Musa**, Gulf University for Science and Technology, Kuwait
Multiphoton Processes in Single Three-Level Atoms Interacting with One or Two Modes of Cavity in the Strong Coupling Regime
- 12:00 - 12:20 **Yasunori Saito**, Shinshu University, Japan
Fluorescence Lidar for Better Understanding Our Environment
- 12:20 - 12:40 **Keitaro Hangai**, University of Tsukuba, Japan
A Resource Allocation Model Incorporating the Split Spectrum Approach for Elastic Optical Networks

12:40 **Lunch & Departures** @ Minami (B)

Join Zoom Meeting:

<https://zoom.us/j/91271664949?pwd=eWs5MnJlM20xN2YwMHc4YThGdjJlHQ09>

Meeting ID: 912 7166 4949

Passcode: 055502

08:50 - 09:00 Joining and Welcome

Session Chair: Guilherme Gaspar, University of Lisbon, Portugal

09:00 - 09:20 Niels Verellen, Imec, Belgium

Integrated Photonics for Structured Illumination in Fluorescence Imaging

09:20 - 09:40 Gilad Marcus, Hebrew University of Jerusalem, Israel

High Power Chirped Amplitude Modulated Pulsed Laser for Nonlinear Ion Acoustic Wave

09:40 - 10:00 Salman Noach, Jerusalem College of Technology, Israel

Gain Switched Ho:YAG Laser with 3ns Pulse Duration

10:00 - 10:20 Guilherme Gaspar, University of Lisbon, Portugal

Silicon Tunnel Junctions for Tandem Solar Cells: Laser Doping Experiments and Electrical Simulations

10:20 - 10:40 Jacopo Catani, National Institute of Optics - CNR (CNR-INO), Italy **Invited**

Fluorescent Antennas for Visible Light Communication: Towards Hybrid Devices for Energy Harvesting and Communication

10:40 - 11:00 Armando Genco, Politecnico di Milano, Italy

K-space Hyperspectral Imaging of Photonic Devices and Metasurfaces

11:00 - 11:20 Inka Manek-Hönniger, University of Bordeaux (CELIA), France **Invited**

Innovative Femtosecond Laser Microprocessing of Dielectrics with Temporal and Spatial Beam Shaping

11:20 - 11:30 Break

Session Chair: Rishikesh Dilip Kulkarni, Indian Institute of Technology Guwahati, India

Keynote Talk

11:30 - 12:00 Fei Xu, Nanjing University, China

All-Fiber Multifunction-Integrated Devices

12:00 - 12:20 Airan Rodenas Segui, Universidad de La Laguna, Spain

3D Nanophotonics Inside Solid State Media by fs-Laser Nanolithography

12:20 - 12:40 Theo Lohmüller, LMU München, Germany

Gold Nanorod Bending and Splitting with Laser Light

12:40 - 13:00 Keyu Xia, Nanjing University, China

Quantum Nonreciprocity Based on the Susceptibility-Momentum Locking

13:00 - 13:20 Cheng Xiangnan, Shanghai Jiao Tong University, China

Application of Physics-constrained Neural Networks in Digital Image Correlation

13:20 - 13:30 Break

Session Chair: Ankit Butola, UiT The Arctic University of Norway, Norway

13:30 - 13:50 Jingdi Zhang, The Hong Kong University of Science and Technology, China
Interferometric FROG for Time-Domain Spectroscopy at Near-IR and Visible Frequencies

13:50 - 14:10 Guoqiang Li, Fudan University, China
Active Optical Elements for Vision Care

14:10 - 14:30 Xianji Piao, University of Seoul, Korea (South)
Engineering Light Flows for Hyperbolic Lattices

14:30 - 14:50 Sunkyu Yu, Seoul National University, Korea (South)
Pruning for U(N) Programmable Photonic Circuits

14:50 - 15:10 Rishikesh Dilip Kulkarni, Indian Institute of Technology Guwahati, India
Computationally Efficient Hologram Reconstruction Algorithm in Digital In-Line Holography Using Toeplitz Matrix Based Deconvolution

15:10 - 15:30 Shanta Hardas Patil, Indian Institute of Technology Guwahati, India
Laser Speckle Imaging Technique based Parametric Characterization of Surface using Singular Value Decomposition Method

15:30 - 15:50 Yaowen Hu, Harvard John A. Paulson School of Engineering and Applied Sciences, MA, USA
Integrated Electro-Optic Devices on Thin-Film Lithium Niobate

15:50 - 16:00 Break

Session Chair: Sushanta Kumar Pal, Laval University, Canada

16:00 - 16:20 David Hyland, Augusta Quantum Electrodynamics Inc, USA
Intensity Correlation Imaging and the Massive Reduction of Integration Times

16:20 - 16:40 Tian Li, The University of Tennessee at Chattanooga, TN, USA
Quantum Bio-Sensing and Networked Sensing

16:40 - 17:00 Sushanta Kumar Pal, Laval University, Canada
Focal Plane Intensity Landscapes of Tightly Focused Hybrid Order Poincare Sphere Beams

17:00 - 17:20 Aman Chandra, University of Arizona, AZ, USA
Large Scale Inflatable Membrane Optics for Next Generation Space Telescopes

17:20 - 17:40 Raktim Sarma, Sandia National Laboratories, USA
Complex Nanophotonic Systems for All-Optical Image and Data Processing

17:40 - 18:00 Jun Liu, UCLA, LA, USA
Single-Vesicle Exosomal Liquid Biopsy for Disease Diagnosis using Surface-Enhanced Raman Scattering

18:00 - 18:10 Break

Session Chair: Aman Chandra, University of Arizona, AZ, USA

18:10 - 18:30 Thomas Pertsch, Institute of Applied Physics, Friedrich Schiller University Jena, Germany
Volume metamaterials – Their Fabrication and Application

We wish to see you at
OPL-2024!



USG United Scientific Group

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