

# Program

# 4th JSAP Photonics Workshop, 2019

paper#	Author		Title	Japanese Title	Abstract
Invited-1	Makoto Naruse	The University of Tokyo	Decision Making based on Photonics	光を用いた意思決定メカニズム	We discuss decision making accomplished by photonics. Decision making by single photons and laser chaos are presented. Entangled photons are utilized for maximizing social benefits and ensuring fairness. Theories and applications are also discussed.
Invited-2	Sadao Ota	The University of Tokyo	Networked biophotonics for imagining beyond imaging	ゴーストサイトメトリーと、これから	I will talk about what can be brought into reality beyond conventional image analysis by integrating machine learning methods with imaging strategies. As one of examples, I am introducing ghost cytometry technologies.
Invited-3	Amy Shen	OIST	Nanoplasmonic platforms for biosensing applications	Nanoplasmonic platforms for biosensing applications	
Invited-4	Takayuki Umakoshi	Department of Applied Physics, Osaka University	Recent Advances in Near-field Optical Microscopy -High Sensitivity, High Speed, and Broadband-	近接場光学顕微鏡の先端技術 -高感度化・高速化・広帯域化-	Near-field optical microscopy is one of the super-resolution optical microscopy. I will introduce recent advances in near-field optical microscopy, especially for developments for high sensitivity, high imaging speed, and broadband.
Invited-5	Fumihiko Dake	Nikon Corporation	Development of super-resolution nonlinear fluorescence microscopy using stimulated transition	誘導遷移を利用した超解像非線形蛍光顕微鏡の開発	We propose super-resolution nonlinear fluorescence microscopy using repetitive stimulated transition (REST) caused by two-color laser beams. The resulting nonlinear fluorescence that undergoes such REST processes is detectable as a signal via the lock-in technique.
Invited-6	Ryo Okamoto	Kyoto University	Quantum metrology and measurement using photons	光子を用いた量子計測技術	
PW-1P	Masataka Kobayashi	Yokohama National University	Multi-timescale Dynamics Associated with Multi-Shot LIPSS Formation in Ge2Sb2Te5 Thin Films	Ge2Sb2Te5薄膜の LIPSS 形成過程におけるマルチタイムスケールダイナミクス	In this work, by using a high-repetition rate single-shot spectroscopy, we observed the ultrafast transient transmission change of Ge2Sb2Te5 (GST) thin film for each pulse while LIPSS are gradually formed on the surface.
PW-2P	Masato Ishikawa	Chiba University	First-principles study of defect properties in TlBr	第一原理計算による TlBr の光学特性の解析	TlBr is a promising semiconductor for the fabrication of radiation detectors. And, it is known that the degradation of performance is often observed in TlBr-based detectors. In this work, we clarify the degradation, using the first-principles calculations.
PW-3P	Ryota Morioka	Osaka University	Broadband nano Raman analysis using plasmon nanofocusing	プラズモン超集束を用いた広帯域ナノラマン分光法	
PW-4P	Norihiko Nishizawa	Nagoya University	Dispersion management of all polarization maintaining Er-doped figure-9 fiber laser and application for optical frequency comb	全偏波保持 Er 添加 figure-9 ファイバレーザの共振器分散制御と光周波数コムへの展開	We developed all-polarization maintaining optical frequency comb using dispersion managed, Er-doped figure-nine fiber laser. The characteristics of dispersion management were investigated both experimentally and numerically. A highly stable operation was achieved after
PW-5P	Kenji Nishimoto	Tokushima University	Generation of a dissipative Kerr-microresonator soliton comb	マイクロソリトン光周波数コムへの発生	Frequency combs generated in microresonators have a characteristic that a broadband and a repetition frequency range from GHz to THz. In this study, we research stably generating a mode-locked comb called a soliton comb.
PW-6P	Maki Maeda	OIST	Structured Nanofibre-Based Optical Cavities for cQED	Structured Nanofibre-Based Optical Cavities for cQED	Fabrication techniques of optical nanofibre cavity using focused ion beam is introduced. We optimized the techniques to improve mechanical vibration and charging problem.
PW-7P	Ryota Koitabashi	Graduate School of Science and Technology, Niigata Univ.	Coherent control of molecular vibrational stepwise excitation using ultrashort THz pulse sequence	超短 THz パルス列による分子振動多段階励起のコヒーレント制御	We propose a highly-efficient and selective excitation method for high vibrational levels of a molecule using THz coherent control.
PW-8P	Tatsuhiko Fukuda	Keio University	Measurement of amplitude and phase spectra of semiconductors using dual-comb spectroscopy	デュアルコム分光法を用いた半導体材料の振幅/位相スペクトル測定	We performed dual-comb spectroscopy of silicon aiming at non-destructive measurement of their optical conductivities. We found a relationship between the optical information (amplitude transmission and phase difference) and the material information (dopant
PW-9P	Katsuya Nakahashi	Keio university	Highly-Sensitive Vector Magnetic Field Mapping by Multi-Frequency Simultaneously Electron Spins controlled in Diamond	ダイヤモンド中電子スピンの多周波同時制御による高感度ベクトル磁場マッピング	we improve the sensitivity for magnetic field vector sensing using multi-frequency control of electric spins of NV centers. And, we demonstrate magnetic field vector mapping using multi-frequency control of electric spins of NV centers.
PW-10P	Hidenori Koresawa	Tokushima University	Rapid polarization analysis using dual-comb spectroscopic polarimetry	デュアルコム分光偏光計を用いた高速な偏光解析	Conventional ellipsometry techniques require polarization modulation, which limits the measurement speed and accuracy. Using dual-comb spectroscopy for spectroscopic ellipsometry may be faster than conventional techniques.
PW-11P	Siyuan Gao	RCAST, The University of Tokyo	Toward magneto-nanophotonics based on thin-film yttrium iron garnet: wafer bonding and grinding for substrate preparation	Toward magneto-nanophotonics based on thin-film yttrium iron garnet: wafer bonding and grinding for substrate preparation	We report a novel fabrication process for single-crystalline yttrium iron garnet (YIG) thin-films on Silicon substrate, utilizing adhesive wafer bonding to integrate YIG with Si and grinding of YIG for thin film formation.
PW-12P	Keita Ueda	Osaka Prefecture University	A Study on Hydrogen Sensor Using Goos-Hanchen Shift at Guided-Mode Resonant Gratings	グースヘンシェンシフト計測による共鳴格子水素センサの検討	The guided mode grating was fabricated on the palladium thin film. Calculated Goos-Hanchen shift at the fabricated grating changed with a concentration of hydrogen. Maximized GH shift of 46 um was measured.

PW-13P	Naoto Takura	The University of Yamanashi	Hydrosilylation of Nanocrystal Silicon with 1-Hexene in Supercritical CO2 fluid	超臨界 CO2流体中の 1-ヘキセンを用いたナノクリスタルシリコンのヒドロシリル化	As-formed nanocrystal silicon (nc-Si) often possesses unstable and poor luminescence. In this work, to obtain highly stable and highly efficient luminescence of nc-Si, the drying and hydrosilylation process was carried on in supercritical CO2 fluid, and the process conditions were investigated.
PW-14P	Erika Kimura	Kyoto Institute of Technology	Fabrication of a Three-Dimensional Woodpile Photonic Crystal by a Micro-Manipulator under Optical Microscope Observation	光学顕微鏡観察下でのマイクロマニピュレーターを用いたウッドパイル型3次元フォトニック結晶の作製	A semiconductor-based three-dimensional woodpile photonic crystal was fabricated by using a micro-manipulation technique under optical microscope observation. We achieved the fabrication error as low as <20nm.
PW-15P	Yuzo Kinuta	Kyoto Institute of Technology	Numerical simulation of circularly polarized radiative lifetime in a semiconductor-based chiral photonic crystal cavity	半導体カイラルフォトニック結晶共振器における円偏光自然放出寿命の数値的検討	We investigated the spontaneous emission lifetime in chiral photonic crystal cavity by calculating dipole radiation power classically using a FDTD method.
PW-16P	Lewis Ruks	OIST	Optical binding of cold atoms using nanophotonic structures	Optical binding of cold atoms using nanophotonic structures	We investigate the optical binding forces generated by multiple scattering of light between cold atoms. We derive equations of motion, and investigate the implications for atoms situated next to a 1-d waveguide.
PW-17P	Tsubasa Uyanagi	Utsunomiya University	Investigation of wave reproduction method using Rayleigh-Sommerfeld diffraction integral	レイリー・ソルマーフェルトの回折積分を用いた光波再生方法の検討	Fresnel diffraction is generally used for light propagation calculation in lens-less digital holographic microscope. In this study, it is necessary to use the Rayleigh-Sommerfeld diffraction integral in order to improve a resolution.
PW-18P	Yuki Takaku	Graduate School of Engineering, Utsunomiya University	Increasing area of subwavelength structure by optical replication using azobenzene polymer	アゾベンゼンポリマーを用いた光複製によるサブ波長構造の面積積化	A diffractive optical element with a subwavelength structure exhibits polarization characteristics. However, it is difficult to increase the area. In this study, the area is enlarged by optical replication of the subwavelength structure.
PW-19P	Yuri Morita	Utsunomiya University	Vibration and Shape Measurement by Moving Fringe Projection	ドップラー効果を用いた移動縞投影法による振動および形状計測	In this study, a method to measure the shape and vibration distribution of acoustic wave source based on fringe analysis. The phase of illuminated fringe pattern is shifted by optical Doppler effect.
PW-20P	Daichi Kino	Osaka Prefecture University	Characterization of multi-layered films containing zinc-based semiconductor nanoparticles for optical thin films	光学薄膜への応用に向けたZn 系半導体ナノ粒子積層膜の光学特性評価	The optical thin films have been prepared via layer-by-layer deposition of ZnS and ZnSe nanoparticles on glass substrates. The thickness and optical constants of the prepared thin films were determined by spectroscopic ellipsometry.
PW-21P	Ryo Oe	Tokushima Univ.	Simultaneous sensing of temperature and concentration in liquid sample using fiber optical comb	ファイバー光コム共振器を用いた液体サンプル温度・濃度同時センシング	In order to measure the refractive index of liquid with high accuracy, we propose a method for simultaneous sensing of sample temperature and concentration using an optical comb with multimode interference fiber sensor