

## Room I (203)

**Session Title** 27I2 / [T13] Advanced Imaging Techniques  
**Date & Time** Thursday, 27 August, 15:45 ~ 17:45  
**Session Chair** Jae-Hyeung Park (Inha University, Korea)

[27I2-1] 15:45~16:15 **Invited Talk**

### Classical Imaging Seasoned with Quantum Concepts

Tomohiro Shirai

National Institute of Advanced Industrial Science and Technology, Japan

As one of quantum-mimetic classical imaging techniques, we outline the basic principle and potential applications of recently proposed intensity-interferometric spectral-domain optical coherence tomography that enables dispersion insensitive, scanless cross-sectional imaging with resolution improvement.

[27I2-2] 16:15~16:45 **Invited Talk**

### Intelligent Video Surveillance System based on Distributed Fiber Vibration Sensing Technique

Kun Liu, Tiegeng Liu, Junfeng Jiang, Qinnan Chen, Chunyu Ma, Yu Li, and Dingjie Li

Tianjin University, China

An intelligent video surveillance system was proposed together with distributed fiber vibration sensing technique and advanced intelligent identification algorithm, in order to monitor all kinds of real-time disturbance and intrusion on the cable.

[27I2-3] 16:45~17:00

### Optical Detection of Micro Defect by Single-pixel Imaging

Kyuki Shibuya, Yauhiro Mizutani, Hirotsugu Yamamoto, Takeshi Yasui, and Tetsuo Iwata

The Tokushima University, Japan

We propose an optical detection method of micro defect by single-pixel imaging microscopy. Our results demonstrate the micro defect imaging by detecting an anisotropic scattered light on mirror surface.

[27I2-4] 17:00~17:15

### Digital Holographic Microscopy using Partially Coherent, Instantaneously Bright, Femtosecond Pulse Light

Dahi Abdelsalam<sup>1,2</sup>, Hirotsugu Yamamoto<sup>2,3</sup>, and Takeshi Yasui<sup>1,2</sup>

<sup>1</sup>The Tokushima University, Japan, <sup>2</sup>JST, Japan, <sup>3</sup>Utsunomiya University, Japan

Digital holographic microscopy utilizing partially coherent light is employed to feature a sarcomere sample precisely. Merits of the presented technique include real time, high resolving power, and no spurious noise in the reconstructed object wave.

[27I2-5] 17:15~17:30

### Upconversion Properties and Mechanisms in Er<sup>3+</sup> ions upon 800 nm Excitation

Xiaoying Shang and Tianqing Jia

State Key Laboratory of Precision Spectroscopy, China

We researched the spectral properties of upconversion luminescence in Er<sup>3+</sup> doped NaYF<sub>4</sub>-glass ceramics, and found that the upconversion mechanisms of Er<sup>3+</sup> ions are different between excitation of CW laser and fs laser.

[27I2-6] 17:30~17:45

### Manufacturing of Smartphone Based Real-time Cell Observation Microscope

Taerim Yoon and Kyujung Kim

Pusan National University, Korea

In this study, we designed microscope for real-time observation of the cells. This microscope uses a smartphone as detector. Therefore, we can observe in real time cells through the remote control of smartphone.

## Room J (204)

**Session Title** 27J2 / [T12] Microcavity Integrated Devices  
**Date & Time** Thursday, 27 August, 15:45 ~ 17:45  
**Session Chairs** Yun-Feng Xiao (Peking University, China)  
Toshi Mukaihara (Furukawa Electric, Japan)

[27J2-1] 15:45~16:15 **Invited Talk**

### High Speed Modulation Characteristics for Semiconductor Microdisk Lasers

Yong-Zhen Huang, Ling-Xiu Zou, Xiu-Wen Ma, Yue-De Yang, Jin-Long Xiao, and Yun Du

Chinese Academy of Sciences, China

High speed modulation characteristics are investigated for directional emission microdisk lasers. The increase of modulation speed with the decrease of the radius is observed, and improvement of 3dB bandwidth is demonstrated at optical injection locking.

[27J2-2] 16:15~16:30

### Integrated Metal-cavity NanoLEDs in III-V Membranes on Silicon

Meint Smit, Andrea Fiore, Rene van Veldhoven, Francesco Pagliano, Bruno Romeira, Dominik Heiss, and Victor Dolores Calzadilla

Eindhoven University of Technology, Netherlands

We demonstrate the first waveguide-coupled metalcavity nanoLED in a III-V photonic membrane bonded to a silicon substrate, which operates at telecommunication wavelengths. The device works under electrical injection and was characterized through a grating coupler.

[27J2-3] 16:30~16:45

### Electro-Optic Modulator Using Meta-Surface Structure for 100 GHz-Band Wireless Signals

Nobuhiro Suenari, Hiroshi Murata, and Yasuyuki Okamura

Osaka University, Japan

We propose new 100 GHz-band electro-optic modulators using meta-surface structure for RoF systems. Using strong electric fields in the meta-surface structure, effective conversion is expected. A new technique for quasi-phaseshifting is also proposed.

[27J2-4] 16:45~17:00

### Membrane-based High Efficiency Metallic Grating Couplers for Integrated Photonics

Meint K. Smit, Dominik Heiss, Yuqing Jiao, Erik J. Geluk, Victor Dolores-Calzadilla, and Aura Higuera-Rodriguez

Eindhoven University of Technology, Netherlands

We developed a novel buried metal grating coupler for membrane platforms. We experimentally demonstrated a chip-to-fiber coupling efficiency of 56%, which makes them an attractive building block for on-wafer testing and dense optical interconnects.

[27J2-5] 17:00~17:15

### Vortex Beam Emitter Laterally Integrated with Vertical Cavity Surface Emitting Laser

Kenji Tanabe, Xiaodong Gu, Akihiro Matsutani, and Fumio Koyama

Tokyo Institute of Technology, Japan

We demonstrate a compact vortex beam emitter laterally integrated with VCSEL for OAM mode multiplexing. The device generates an azimuthally polarized vortex beam from a ring-shape waveguide laterally connected with an electrically pumped 980nm VCSEL.

[27J2-6] 17:15~17:30

### Characterization of a Two-Section Integrated Tunnel-Junction Phototransistor

Yung Lin Chou, Yuan-Fu Hsu, and Chao-Hsin Wu

National Taiwan University, Taiwan

A two-section integrated tunnel-junction heterojunction phototransistor (TJHPT) is fabricated and characterized in this report. By incorporating tunnel-junction in the basecollector region of the phototransistor, the responsivity can be greatly enhanced owing to direct tunneling effect.

[27J2-7] 17:30~17:45

### Micro-Raman Investigations of Free-standing GaAs/AlGaAs Single Quantum well (SQW) Microtubes

Yunxia Gao, Qi Wang, Zhihong Pan, Xiankun Wang, Hao Liu, and Xiaomin Ren

Beijing University of Posts and Telecommunications, China

The micro-Raman spectra of as-grown area SQW GaAs/AlGaAs shows 281, 378 cm<sup>-1</sup> for GaAs-like LO, AlAslike LO of AlGaAs barrier, demonstrating two-mode behavior. For rolled-up microtubes, all LO modes shifted to lower frequencies.