

## Room E (107)

**Session Title** 25E2 / [T05] Plasmonics and Metamaterials II  
**Date & Time** Tuesday, 25 August, 13:45 ~ 15:00  
**Session Chair** Lei Zhou (Fudan University, China)

### [25E2-1] 13:45~14:15 Invited Talk

#### All-Dielectric Metasurfaces

Yuanmu Yang<sup>1</sup>, Parikshit Moitra<sup>1</sup>, Ivan Kravchenko<sup>2</sup>, Daryl Briggs<sup>2</sup>, and Jason Valentine<sup>1</sup>  
<sup>1</sup>Vanderbilt University, USA, <sup>2</sup>Oak Ridge National Laboratory, USA

In this talk, I will discuss our recent efforts to develop purely dielectric metamaterials possessing low absorption loss at optical frequencies. I will discuss implementations ranging from wavefront control to high Q-factor resonances.

### [25E2-2] 14:15~14:30

#### Weak Measurement of Optical Spin Hall Effect in Phase-discontinuity Metasurface

Yeon Ui Lee and Jeong Weon Wu  
Ewha Womans University, Korea

Recently it has been demonstrated that a rapid phase change at a phase-discontinuity metasurface (PDM) leads to an additional momentum gradient enabling a direct observation of optical spin Hall (OSH) shift. We show that the helicity-dependent OSH shift depends on incidence and refraction angles at PDM, and construct a weak value measurement to control OSH shift by a variable phase retardance in the post-selection.

### [25E2-3] 14:30~14:45

#### Far-field Measurement of Single Gold Nanorod Scattering using Total-Internal-Reflection Illumination

Donghyeong Kim<sup>1</sup>, Kwang-Yong Jeon<sup>2</sup>, Ho-Seok Ee<sup>1</sup>, Hong-Gyu Park<sup>2</sup>, and Min-Kyo Seo<sup>1</sup>  
<sup>1</sup>KAIST, Korea, <sup>2</sup>Korea University, Korea

We made a novel method for measuring far-field scattering distribution of single nanostructure with high signal-to-background ratio using total-internal-reflection illumination. We achieved wide measurement range by direct scanning over limit of numerical-aperture in conventional back-focal-imaging.

### [25E2-4] 14:45~15:00

#### An Efficient Method for Analyzing Cylindrical Metallic Nanoparticles

Xun Lu, Hualiang Shi, and Ya Yan Lu  
City University of Hong Kong, Hong Kong, China

For the scattering of light by cylindrical metallic nanoparticles on a substrate, we present an efficient numerical method that relies on expanding the field in one-dimensional vertical modes. The method is used to analyze a single cylindrical particle of arbitrary cross section and a pair of circular cylindrical particles.

## Room F (108)

**Session Title** 25F2 / [T07] Optical Metrology and Sensing II  
**Date & Time** Tuesday, 25 August, 13:45 ~ 15:15  
**Session Chair** Atsushi Sato (Tohoku Institute of Technology, Japan)

### [25F2-1] 13:45~14:15 Invited Talk

#### Length Metrology with Ultra-high Precision Using Fiber-based Optical Frequency Combs

Kaoru Minoshima<sup>1,2</sup>, Yoshiaki Nakajima<sup>1,2</sup>, and Guanhao Wu<sup>3</sup>

<sup>1</sup>University of Electro-Communications, Japan, <sup>2</sup>Japan Science and Technology Agency, Japan, <sup>3</sup>Tsinghua University, China

Ultrahigh-precision length metrology using fiber-based optical frequency combs is presented. By precisely controlling the frequency and phase of the combs, self correction of air refractive index and noise cancellation in fiber path in interferometer are demonstrated.

### [25F2-2] 14:15~14:45 Invited Talk

#### Dimensional Metrology for Smart Devices Using the Optical Comb of Femtosecond Pulse Lasers

Jonghan Jin<sup>1,2</sup>, Jungjae Park<sup>1</sup>, Jong-Ahn Kim<sup>1</sup>, and Jaewan Kim<sup>1,2</sup>  
<sup>1</sup>KRISS, Korea, <sup>2</sup>Korea University of Science and Technology, Korea

We have proposed the dimensional metrological methods for smart devices using the optical comb of a femtosecond pulse laser. For precision and high speed measurements, these methods were realized based on spectral-domain interferometry.

### [25F2-3] 14:45~15:00

#### Photonic Chip Based Optical Frequency Comb Using Soliton Induced Cherenkov Radiation

Victor Brasch<sup>1</sup>, Michael Geiselmann<sup>1</sup>, Tobias Herr<sup>2</sup>, Gregory Lihachev<sup>2</sup>, Martin H. P. Pfeiffer<sup>1</sup>, Michael L. Gorodetsky<sup>3</sup>, and Tobias J. Kippenberg<sup>1</sup>

<sup>1</sup>École Polytechnique Fédérale de Lausanne, Switzerland, <sup>2</sup>Centre Suisse d'Electronique et Microtechnique SA, Switzerland, <sup>3</sup>M.V. Lomonosov Moscow State University, Russia

We show for the first time a fully coherent frequency comb generated in a SiN photonic chip which spans 2/3 of an octave using solitons and soliton induced Cherenkov radiation. Additionally we stabilize the spectrum.

### [25F2-4] 15:00~15:15

#### An Yb-fiber Laser Comb with Mode Spacing of Higher than 20 GHz by Two Fabry-Pérot Cavities

Lei Hou, Hainian Han, Long Zhang, Lihui Pang, and Zhiyi Wei  
Chinese Academy of Sciences, China

We realized an Yb-fiber laser comb with spaced mode-line of larger than 20 GHz, the side-mode was suppressed to 40 dB by two low-finesse Fabry-Pérot cavities. Long term stabilization was demonstrated by locking cavity lengths.