

Room E (107)

Session Title 25E1 / [T05] Plasmonics and Metamaterials I
Date & Time Tuesday, 25 August, 11:00 ~ 12:30
Session Chair Takuo Tanaka (RIKEN, Japan)

[25E1-1] 11:00~11:30 Invited Talk

Recent Advances on Metasurfaces

*Lei Zhou, Shulin Sun, Qiong He, Ziqi Miao, Weijie Luo, and Wujiang Sun
Fudan University, China*

We briefly summarize our recent efforts in employing meta-surfaces to control electromagnetic waves, including realizing high-efficiency photonic spin-hall effect and surface-plasmon couplers, and controlling phases with graphene-based meta-surfaces.

[25E1-2] 11:30~11:45

Point-source Optical Coupling to Electromagnetic Guided Modes of Metasurfaces

Per Lunnemann and A. Femius Koenderink

¹Technical University of Denmark, Denmark, ²FOM Institute AMOLF, Netherlands

We present a semi-analytical method for calculating the dispersion-relation and local density of states of a two-dimensional lattice with arbitrary electro-magnetic dipole scatterers. The method is demonstrated on lattices with electric and magnetic plasmonic spheres.

[25E1-3] 11:45~12:00

Vividly-colored Silicon Metasurface Based on Collective Electric and Magnetic Resonances

Wuzhou Song, Shiqiang Li, and Kenneth B. Crozier

University of Melbourne, Australia

We fabricate a silicon nanorod-based metasurface that shows vivid colors. Each nanorod supports electric and magnetic dipole modes whose coupling leads to collective resonances. The reflected field is described by a classical coupled dipole model.

[25E1-4] 12:00~12:15

Metasurface Polarized Beam Splitter and Hologram Based on One-dimensional Metallic Grating

Jun Zheng, Zhi-Cheng Ye, Zheng-Ming Sheng, and Jie Zhang

Shanghai Jiao Tong University, China

Based on the one-dimensional bi-layered metallic nanowire grating with engineered nanoslits, a novel form of metasurface polarized beam splitter and holography are proposed and demonstrated. The photon manipulation mechanism is fundamentally different from those in 2-D or 3-D metastructures.

[25E1-5] 12:15~12:30

Superradiant Mode Competition in Silver Slit Array on InGaAsP Structure

Kwang Jun Ahn¹, Seung-Hyun Kim², and Ki-Ju Yee²

¹Ajou University, Korea, ²Chungnam National University, Korea

We studied superradiance at surface plasmon and waveguide mode in a silver slit array / InGaAsP, and showed that although the former has a larger loss, it overwhelmed the latter as the pump energy increases.

Room F (108)

Session Title 25F1 / [T07] Optical Metrology and Sensing I
Date & Time Tuesday, 25 August, 11:00 ~ 12:30
Session Chair Dong-Hoon Lee (KRISS, Korea)

[25F1-1] 11:00~11:30 Invited Talk

A Flat Spectral Photon Flux Source for Single Photon Detector Quantum Efficiency Calibration

Haiyong Gan, Ruoduan Sun, Nan Xu, Jianwei Li, Yanfei Wang, Guojin Feng, Chundi Zheng, Chong Ma, and Yandong Lin

National Institute of Metrology, China

A flat spectral photon flux source is proposed to facilitate the single photon detector quantum efficiency calibration in an extended wavelength range (400-800 nm). The absolute quantum efficiency at certain wavelengths (e.g. 633 nm and 807 nm) of the photon counter under test can be measured via correlated photons method and used to evaluate the photon statistics of the flat spectral photon flux source. A correction factor derived from the photon statistics can then be applied throughout the wavelength range for improved detector quantum efficiency measurement.

[25F1-2] 11:30~11:45

Solar Cell Conversion Efficiency Measurements Based on Electrical Substitution Method

Terubumi Saito, Yamato Abe, Koki Sato, and Minato Takesawa

Tohoku Institute of Technology, Japan

Internal conversion efficiencies of solar cells are measured based on electrical substitution method. The external energy conversion efficiencies and the internal & the external quantum efficiencies are also derived. Agreements validate this technique.

[25F1-3] 11:45~12:00

Test System of 100 GHz Photodetector Time Response at NIM

Jianwei Li, Haiyong Gan, and Nan Xu

National Institute of Metrology, China

Electrooptic sampling has been shown to be a very powerful technique for making time-domain measurements of fast electronic devices and circuits. In this paper, we review the principles of electrooptic sampling technique for electronic waveform probing with applications to characterizing 100 GHz photodetector pulse response.

[25F1-4] 12:00~12:15

Measurement of Relative Spectral Responsivity of Photovoltaic Detectors by Using Single Tunable Pulsed Laser

Kee Suk Hong, Seongchong Park, Dong-Hoon Lee, and Jisoo Hwang

KRISS, Korea

We describe a novel method to measure the relative spectral responsivity of Si and Ge photovoltaic detectors from 250 nm to 1700 nm based on a tunable nano-second pulsed optical parametric oscillator (OPO).

[25F1-5] 12:15~12:30

Detection of Thermal Protrusion at Laser Heating Spot

Chengwu An, Hongzhi Yang, Siang Huei Leong, and Kaidong Ye

Agency for Science, Technology and Research, Singapore

A method based on the detection of the variation of the reflected laser beam's optical divergence was used to detect the temporary thermal protrusion at the laser heating spot.