

**Room E (107)**

**Session Title** 28E1 / [T05] Plasmonics and Metamaterials VIII  
**Date & Time** Friday, 28 August, 09:00 ~ 10:15  
**Session Chair** Hong-Gyu Park (Korea University, Korea)

**[28E1-1] 09:00~09:15**

**MoS<sub>2</sub> Monolayers for Propagating Plasmon Emitter and Detector in Long Range**

*Hyun Seok Lee, Min Su Kim, Youngjo Jin, Gang Hee Han, Young Hee Lee, and Jeongyong Kim*

*Sungkyunkwan University, Korea*

We used a hybrid configuration of monolayer MoS<sub>2</sub> and silver nanowires to demonstrate the coupling, propagation and imaging of surface plasmon polaritons. The results suggest highly efficient way of plasmonic nanophotonic circuits.

**[28E1-2] 09:15~09:30**

**Graphene Plasmonics for Light Trapping and Tunable Absorption Enhancement**

*Jianfa Zhang, Zhihong Zhu, Wei Liu, Xiaodong Yuan, and Shiqiao Qin*

*National University of Defense Technology, China*

We propose the usage of graphene plasmonics for light trapping and show that the excitation of localized plasmons in doped, nanostructured graphene can enhance absorption in surrounding materials by tens of times.

**[28E1-3] 09:30~09:45**

**Photoinduced Nonlinear Mixing of Terahertz Dipole Resonances in Graphene Metadevice**

*Chihun In<sup>1</sup>, Hyeon-Don Kim<sup>2</sup>, Bumki Min<sup>2</sup>, and Hyunyoung Choi<sup>3</sup>*

*<sup>1</sup>Yonsei University, Korea, <sup>2</sup>KAIST, Korea*

The plethora of nonlinear optical phenomena can offer an innovative route for developing subwavelength-scale optical components. Here, using graphene-integrated metadevices, nonlinear interaction between two electric dipole resonances is demonstrated by ultrafast terahertz spectroscopy.

**[28E1-4] 09:45~10:00**

**Multimode Plasmonically Induced Transparency in Dual Coupled Graphene Ring Resonators**

*Xiushan Xia, Baojie Tang, Xiaosai Wang, and Jicheng Wang*

*Jiangnan University, China*

The graphene-based multi-mode PIT device has been numerically investigated. The spectral response shows active control of the device through varying the Fermi energy of the graphene, which provides guideline for a compact high-performance PIT device.

**[28E1-5] 10:00~10:15**

**Surface Plasmon Supermodes in Graphene Multilayers**

*Chengzhi Qin, Bing Wang, and Peixiang Lu*

*Huazhong University of Science and Technology, China*

We investigate the effective indices and mode profiles theoretically and reveal the forming mechanisms of the supermodes in graphene multilayers. Out-of-phase coupling supermode possess both the lowest propagation loss and shortest mode wavelength.

**Room F (108)**

**Session Title** 28F1 / [T07] Optical Metrology and Sensing IX  
**Date & Time** Friday, 28 August, 09:00 ~ 10:30  
**Session Chairs** Terubumi Saito (Tohoku Institute of Technology, Japan)  
 Seung Kwan Kim (KRISS, Korea)

**[28F1-1] 09:00~09:30 Invited Talk**

**Si Based Integrated Switchable Mode Convertor**

*Songnian Fu and Yu Yu*

*Huazhong University of Science and Technology, China*

An on-chip switchable mode convertor compatible with WDM operation is proposed and experimentally demonstrated. By selecting input horizontal or vertical linear polarization, the input signal can be converted to either LP<sub>11</sub> or LP<sub>01</sub> mode over C-band.

**[28F1-2] 09:30~09:45**

**Counting the Cycles of Light with an Optical Microresonator**

*John Jost<sup>1</sup>, Tobias Herr<sup>1,2</sup>, Caroline Lecaplain<sup>1</sup>, Erwan Lucas<sup>1</sup>, Victor Brasch<sup>1</sup>, Martin Pfeiffer<sup>1</sup>, and Tobias Kippenberg<sup>1</sup>*

*<sup>1</sup>École Polytechnique Fédérale de Lausanne, Switzerland, <sup>2</sup>Centre Suisse d'Electronique et de Microtechnique, Switzerland*

Microresonator based optical frequency combs have the potential to greatly extend optical frequency measurements. Here we demonstrate the first self referenced microresonator based optical comb suitable for optical frequency metrology applications.

**[28F1-3] 09:45~10:00**

**Improvement of Modulation speed in Si Slow Light Modulator by Optimizing Doping Profile**

*Moe Takeuchi, Yosuke Terada, and Toshihiko Baba*

*Yokohama National University, Japan*

We theoretically investigated the modulation speed of Si photonic crystal slow light modulators. Optimizing the doping profile of p/n junction reduces the RC time constant and enhances the speed to 40 Gbps.

**[28F1-4] 10:00~10:15**

**Polyimide Coated Fibre Bragg Grating Based Moisture Sensor Development**

*Adam Swanson<sup>1,2</sup>, Sebastiaimpillai Raymond<sup>1</sup>, Stefaan Janssens<sup>1</sup>, Robert Breukers<sup>1</sup>, Delower Bhuiyan<sup>1</sup>, Jeremy Lovell-Smith<sup>1</sup>, and Mark Waterland<sup>2</sup>*

*<sup>1</sup>Callaghan Innovation, New Zealand, <sup>2</sup>Massey University, New Zealand*

The humidity and temperature characteristics of a 53 μm polyimide coated fibre Bragg grating (FBG) were investigated. The humidity response was 7.09 pm / %rh resulting in a coefficient of moisture expansion of 74.3 ppm / %rh. The temperature response was 12.8 pm / °C.

**[28F1-5] 10:15~10:30**

**Temperature Compensation for Birefringent Filter-based Wavelength Measurement Systems**

*Jihong Liu, Chunhe Wang, Pengfei Ding, and Binzhang Zhang*

*Xi'an University of Posts and Telecommunications, China*

Material-based thermal compensation and temperature monitoring are combined to improve the thermal stability of wavelength measurement systems. Experimental results show that the frequency drift can be reduced more than three orders of magnitude.