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# 제28회 한국광학회 정기총회 및 2017 동계학술발표회

PROGRAM

일 시 2017년 2월 15일(수)~17일(금)
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OSK OPTICAL SOCIETY OF KOREA 사단법인 한국광학회 Optical Society of Korea

# 2017. 2. 15(수) 구두발표

## 함백 II (E)

**포토닉스 II** 13:30-15:00
좌장: 김선경(경희대)

**W2E-V-1** | 13:30

**Electrically Tunable Metasurfaces Ensuring High Power Efficiency**

이기영, *윤재웅, *송석호(한양대학교)

*Keywords:`nanophotonics, optical modulation, tunable metasurface, spatial light modulator, Electro-optic modulator*

We theoretically propose a high-performance electro-optic(EO) modulators based on multiple p-n junction semiconductor metasurfaces. The proposed devices operate with a high-Q guided-mode resonance undergoing EO resonance shift by the assigned voltage signal. These functionalities are advantageous over plasmonic tunable metasurfaces in many aspects.

**W2E-V-2** | 13:45

**Frequency Conversion in Abruptly Time-varying Conductive Surfaces**

손재현, 이강희, 강병수, 박자강, *민범기(한국과학기술원)

*Keywords: Frequency conversion, Time-varying media*

When the light propagates through a conductive surface where the conductivity changes suddenly at a certain time, the frequency of light is converted linearly. This frequency conversion phenomenon was theoretically analysed

**W2E-V-3** | 14:00

**Control of Randomly Scattered Surface Plasmon Polaritons for Multiple-input and Multiple-output Plasmonic Switching Devices**

YongHyeon Jo, Wonjun Choi, Joonmo Ahn, Eunsung Seo, *Wonshik Choi(Institute for Basic Science)

*Keywords: SPPs, optoelectronics*

We controlled the surface plasmon polaritons (SPPs) generated at a 2D disordered array of nanoholes to increase the number of transmission channels. In doing so, more than 40 far-field incident channels could be delivered to the SPP channels.

**W2E-V-4** | 14:15

**Optimization of Geometry of Rainbow Trapping Waveguides**

이중원, *장민석(KAIST)

*Keywords: Rainbow Trapping, Trapped Rainbows*

"Rainbow Trapping" has been proposed as a method to achieve slow light and localized storage of electromagnetic radiation. Here, we perform a randomized algorithm work to find the optimal geometry of rainbow trapping metal-insulator-metal waveguide.

## 함백 III (F)

**New Frontiers in Optical Sensing & Imaging I** 13:30-15:00
좌장: 김규정(부산대)

**W2F-VI-S-1** | 13:30 (초청강연)

**Biomedical Imaging as a Promising Tool for Evaluation of Tissue Regeneration**

신용철, 송수진, 전승원, 김창석, *한동욱(부산대학교)

*Keywords: Biomedical imaging, Tissue regeneration, Tissue engineering*

Nowadays, biomedical imaging is becoming more important for not only observation of living cells, but also understanding of intracellular signaling mechanism. Herein, the several biomedical imaging techniques as a promising tool for evaluation of tissue regeneration are introduced.

**W2F-VI-S-2** | 14:00 (초청강연)

**Role of Carbon Nanotubes in Optopyrotechnics**

*김수형, 김지훈, 김호성, 김경주(부산대학교)

*Keywords: CNT, Optopyrotechnic*

We demonstrate the effective optical ignition of nanoenergetic materials (nEMs) by adding carbon nanotubes (CNTs) as an optical ignition agent into an nEM matrix composed of Al/CuO nanoparticles (NPs). The remote optical ignition and controlled-explosion reactivity of nEMs can be performed by incorporating CNTs as a potential optical ignition agent with nEMs. On the basis of CNT-added nEMs fabricated in this study, several civil and military applications are introduced as potential optopyrotechnics.

**W2F-VI-S-3** | 14:30 (초청강연)

**Virus: The Next Generation Material**

*오진우, 김춘태, 김원근, 한지예(부산대학교)

*Keywords: M13 bacteriophage, Self-assemlby, Biomimicry, Color sensor, Color pixel*

We developed a facile, biomimetic, colourimetric sensing system to detect explosive molecules in a selective manner by exploiting the advantageous features of phage: their abilities to replicate, self-assemble and evolve. Our sensing matrices possess multiple advantages over conventional biosensors: first, we can easily fabricate multiple colourimetric matrices with tunable colours through a one-step self-assembly process. Importantly, these selfassembled matrices exhibit viewing-angle independent colours. Second, we can tailor the function of the phage matrices through directed evolution for specific target molecules and directly incorporate the target recognition motifs by genetic engineering.