Th1E-1 **Invited** **08:30-09:00**

Scalable Optical Metasurface for On-Edge Machine Vision

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We present a metasurface-based ultra-wide optical learning machine with 41 million parameters, where a fixed untrained metasurface approximates trained performance and a compact digital backend enables adaptable, fabrication-tolerant, large-scale machine vision competitive with leading models.

Th1E-2 **09:00-09:15**

Wavelength-Controlled Lateral Focus Scanning using a Laterally Translated Quadratic Phase Metasurface

Jong-Guk Jeong[1], Yoon-Ho Sunwoo[1], Yun-Jae Kwon[1], Xipeng Lu[1], Duk-Yong Choi[2], Sang-Shin Lee[1]
[1]Kwangwoon University, [2]Australian National University

A laterally translated quadratic phase metasurface (MS) is demonstrated for wavelength-controlled lateral focus scanning under oblique incidence, achieving a 321 μm scan range and approximately 55% focusing efficiency across 1530–1600 nm.

Th1E-3 **09:15-09:30**

THz-Optical Signal Conversion Demonstration using Metasurface-based Transparent EO Modulator

Rizadi Sasmita Darwis[1,2], Yui Otagaki[1], Hiroshi Murata[1]
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We proposed a novel transparent electro-optic (EO) modulator based on a metasurface for THz-optical signal conversion, which operated with a wideband frequency response and can pass through THz signals, enabling integration with wireless communication and sensor systems.

Th1E-4 **09:30-09:45**

Three-Mode Waveguide Lens Based on Mosaic Structure

Mizuki Koyama[1], Yasuhide Tsuji[2], Takuya Mitarai[3], Yusuke Sawada[3], Takuya Okimoto[3], Takuo Hiratani[3], Kento Komatsu[3], Hideki Yagi[3], Naoki Fujiwara[3], Takeshi Fujisawa[1]
[1]Hosei University, [2]Muroran Institute of Technology, [3]Sumitomo Electric Industries, Ltd.

We propose and experimentally demonstrate a three-mode waveguide lens based on a mosaic structure. The device is designed by recently developed gradient direct-binary-search method, and low-loss three-mode transmission is demonstrated.

Th1E-5 **09:45-10:00**

Ultrasmall Mode Mixers Based on Mosaic Structure Designed by Gradient Direct Binary Search Method

Shizunari Aomori[1], Yasuhide Tsuji[2], Takuya Mitarai[3], Yusuke Sawada[3], Takuya Okimoto[3], Takuo Hiratani[3], Kento Komatsu[3], Hideki Yagi[3], Naoki Fujiwara[3], Takeshi Fujisawa[1]
[1]Hosei University, [2]Muroran Institute of Technology, [3]Sumitomo Electric Industries, Ltd.

An ultrasmall mosaic-based mode mixer was proposed and experimentally demonstrated for the first time. The devices are designed by using a gradient direct binary search method, enabling efficient optimization of large-scale mosaic devices.