Room G (201)

Session Title 28G1 / [T01] Novel Lasers & Techniques
Date & Time Friday, 28 August, 09:00 ~ 10:15
Session Chair Kwang Jun Ahn (Ajou University, Korea)

[28G1-1] 09:00~09:30 Invited Talk

Novel Lasers in the Visible Spectral Range

Christian Kränkel[1,2], Daniel-Timo Marzahl[1], and Philip Werner Metz[1]

[1]Universität Hamburg, Germany, [2]The Hamburg Centre for Ultrafast Imaging, Germany

We report on blue semiconductor laser pumped solid-state lasers doped with different rare earth ions with emission wavelengths in the visible spectral range. Highly efficient, tunable and pulsed lasers are presented.

[28G1-2] 09:30~09:45

RIN of Hybrid Soliton Pulse Source with Sinusoidally Chirped Grating

Nuran Dogru and Erhan Ersoy

University of Gaziantep, Turkey

Hybrid soliton pulse sourse utilizing a sinusoidally chirped fiber Bragg grating (FBG) produces shorter pulses with and without noise than linearly chirped FBG as well as giving a RIN reduction at the fundamental frequency.

[28G1-3] 09:45~10:00

Lasing from Penrose Quasicrystal Made by Holographic polymer-Dispersed Liquid Crystals

D. Luo

South University of Science and Technology of China, China

Lasing emissions are obtained in a dye-doped two-dimensional Penrose photonic quasicrystal fabricated by all organic materials of holographic polymer dispersed liquid crystals. The linear polarization property of laser has been demonstrated. The directional dependence property of laser, whereas different directions of photonic quasicrystal correspond to different lasing spectra, was also studied. Our experiment showed that the lasing actions can be generated in two-dimensional Penrose photonic quasicrystal with even very small index contrast.

[28G1-4] 10:00~10:15

Simulation of 1550nm Mode Locked DBR Semiconductor Lasers Using Travelling Wave Equations

A. Çağlar Duman[1] and B. Bülent Çakmak[1,2]

[1]Erzurum Technical University, Turkey, [2]Atatürk University, Turkey

A distributed Bragg reflector (DBR) InGaAsP semiconductor laser with an absorber region was modelled using travelling wave equations. Thus, it was shown that optical pulses with ultrashort durations were obtained from a passively mode-locked laser.

Room H (202)

Session Title 28H1 / [T11] Plasmonics in Biophotonics
Date & Time Friday, 28 August, 09:00 ~ 10:30
Session Chair Chris Xu (Cornell University, USA)

[28H1-1] 09:00~09:30 Invited Talk

Superresolution Imaging Based on Nonlinearities of Plasmonic Scattering

Shi-Wei Chu[1], Yen-Ta Huang[1], Hsuan Lee[1], Ryosuke Oketani[2], Yasuo Yonemaru[2], Masahito Yamanaka[2], Satoshi Kawata[2], and Katsumasa Fujita[2]

[1]National Taiwan University, Taiwan, [2]Osaka University, Japan

We demonstrated novel non-bleaching contrast for super-resolution imaging based on saturation and on/off switching of scattering from plasmonic particles, for the first time. Our study opens up new paradigms for both plasmonics and super-resolution microscopy.

[28H1-2] 09:30~09:45

Broadband Enhanced Hyperspectral Coherent anti-Stokes Raman Scattering by Gold Shell Particles and Gold Surface

Baoshan Guo[1,2], Kevin Tsia[2], Jinjiang Xu[2], Wei Shi[1], and Jianquan Yao[1]

[1]Tianjin University, China, [2]HongKong University, Hong Kong

The gold shell particles and gold surface having a broadband plasmonic enhancing spectrum is demonstrated to enhance the forward and backward hyperspectral coherent anti-Stokes Raman scattering by enhancing the pump and broadband Stokes beam simultaneously.

[28H1-3] 09:45~10:00

Sub-diffraction Limted Imaging Based on Plasmonic Silver Nanodot Arrays

Taehwang Son, Yongjin Oh, Wonju Lee, Heejin Yang, and Donghyun Kim

Yonsei University, Korea

Blocks of metallic nanodot arrays enable image deconvolution using localized near-fields. Under total internal reflection, J774 cells were imaged on silver nanodot arrays. Sub-diffraction limited resolution was achieved in the range of 100-150 nm.

[28H1-4] 10:00~10:15

Optofluidic Guiding Based on Plasmonic Absorption

Jiajia Chen and Zhiwen Kang

The Chinese University of Hong Kong, Hong Kong, China

We demonstrate a novel microfluidic guiding technique by using plasmonic energy absorption in gold nano-islands produced by thermal annealing. Live cells and nanoparticles in aqueous medium can be readily guided with good speed control.

[28H1-5] 10:15~10:30

Real-time Single-molecule Co-immunoprecipitation Analyses Reveal Cancer-specific Ras Signaling Dynamics

Hong-Won Lee[1], Taeyoon Kyung[1], Janghyun Yoo[1], Tackhoon Kim[1], Chaeuk Chung[1], Ji Young Ryu[1], Hanki Lee[2], Kihyun Park[3], Sangkyu Lee[1], Walton D. Jones[1], Dae-Sik Lim[1], Changbong Hyeon[3], Won Do Heo[1,4], and Tae-Young Yoon[1]

[1]KAIST, Korea, [2]BioNanotechnology Research Center, Korea, [3]Korea Institute for Advanced Study, Korea, [4]Institute for Basic Science, Korea

The conventional co-immunoprecipitation provides static and qualitative information about protein-protein interactions. We report real-time imaging of coimmunoprecipitation process with single-molecule resolution, allowing for characterization of the native Ras proteins derived from individual cancers.