Room A (101)

Session Title 27A2 / [T01] Solid-State & Mid-IR Lasers
Date & Time Thursday, 27 August, 15:45 ~ 17:45
Session Chair Fabian Rotermund (Ajou University, Korea)

[27A2-1] 15:45~16:15 Invited Talk

Solid-State Lasers Directly Pumped by InGaN Blue/Green Diode Lasers

Fumihiko Kannari

Keio University, Japan

Current progress in blue and green InGaN laser diodes (LDs) realizes direct pumping of solid-state lasers. Performances of Pr^{3+}-doped $LiYF_4$ visible lasers and Ti^{3+}-doped Al_2O_3 lasers pumped by 440-nm and 532-nm LDs respectively are reviewed.

[27A2-2] 16:15~16:30

Mid-IR Supercontinuum Generation in ZBLAN Fiber Pumped by Diode-Seeded Tm-Doped MOPA

Hongxing Shi, Kun Liu, Fangzhou Tan, Jiang Liu, and Pu Wang

Beijing University of Technology, China

We demonstrate 22 W average power mid-IR supercontinuum (1900nm-3600nm) generations in a single mode ZBLAN fiber pumped by nanosecond pulses from diode-seeded Tm-doped MOPA.

[27A2-3] 16:30~16:45

Handedness Control of Sub-Millijoule Mid-Infrared (6-12μm) Vortex Laser

A. Ogawa[1], M.-T. Horikawa[1], K. Miyamoto[1], and T. Omatsu[1,2]

[1]Chiba University, Japan, [2]CREST Japan Science and Technology Agency, Japan

We demonstrate the handedness control of a 6-12 μm optical vortex output from an optical vortex parametric laser formed of a 1-μm vortex pumped $KTiOPO_4$ optical parametric oscillator in combination with a $ZnGeP_2$ difference frequency generator.

[27A2-4] 16:45~17:00

Room Temperature High Energy High Efficient Fe^{2+}:ZnSe Laser

Changjun Ke, Ran Wang, Zhiyong Li, and Yin Hang

Chinese Academy of Sciences, China

The characteristics of a room-temperature Fe^{2+}:ZnSe laser based on a polycrystalline sample pumped by a non-chain HF laser were studied. The Fe^{2+}:ZnSe laser energy was E = 15 mJ at the efficiency with respect to the absorbed HF laser energy η_{ab}=15%.

[27A2-5] 17:00~17:15

Intracavity-Pumped Ho:KLu$(WO_4)_2$ Microchip Laser at 2.1 μm

J. M. Serres[1], X. Mateos[1], P. Loiko[2], K. Yumashev[2], N. Kuleshov[2], V. Petrov[3], U. Griebner[3], M. Aguiló[1], and F. Díaz[1]

[1]Universitat Rovira i Virgili, Spain, [2]Belarusian National Technical University, Belarus, [3]Max-Born-Institute for Nonlinear Optics and Ultrafast Spectroscopy, Germany

Maximum output power of 285 mW is achieved at 2080 nm (Ho^{3+} emission) with a slope efficiency of 8.3% in a compact intracavity-pumped microchip Ho-laser using stacked Tm:KLuW / Ho:KLuW N_g-cut crystals.

[27A2-6] 17:15~17:30

Passively Mode-Locked Mid-Infrared Solid-State Laser

Lingchen Kong[1], Jie Ma[2], Guoqiang Xie[1], Zhipeng Qin[1], Peng Yuan[1], and Liejia Qian[1]

[1]Shanghai Jiao Tong University, China, [2]Nanyang Technological University, China

Passively mode-locked lasers provide a convenient way to generate ultrafast laser pulses with high peak power. In this report, we gave introduction of progress of passively mode-locked mid-infrared solid-state lasers at 2 μm region in our laboratory.

[27A2-7] 17:30~17:45

Experimental Investigation of 2.8 μm Er^{3+}-Doped ZBLAN Fiber Lasers

Hongwei Chen, Yanlong Shen, Ke Huang, Kunpeng Luan, Li Yu, Aiping Yi, and Guobin Feng

Nothwest Institute of Nuclear Technology, China

In this presentation, we reported the recent progress on 2.8 μm Er^{3+}-doped ZBLAN fiber laser in our research group. Ten-watt-level CW, watt-level passively Q-switched and 122-nm tunable mid-infrared fiber lasers have been demonstrated.

Room B (102)

Session Title 27B2 / [T03] Terahertz Technologies and Applications II
Date & Time Thursday, 27 August, 15:45 ~ 17:45
Session Chair Tae In Jeon (Korea Maritime and Ocean University, Korea)

[27B2-1] 15:45~16:15 Invited Talk

Biomedical Science and Technology Using Terahertz Waves

Joo-Hiuk Son

University of Seoul, Korea

Various biomedical applications utilizing terahertz technology are presented. Technical challenges in such applications are discussed in terms of limited penetration depth, blurred spectral features, and deficient contrast and the feasible solutions to the problems are also suggested.

[27B2-2] 16:15~16:45 Invited Talk

A Terahertz Technology for Label-free Immune Assay

Toshihiko Kiwa, Mashiro Ogawa, Kosuke Akimune, Hiroyuki Akimune, Kenji Sakai, and Keiji Tsukada

Okayama University, Japan

This paper reviews recent works of label-free immune assay using terahertz technologies, which includes a terahertz chemical microscopy. Experimental results of label-free detection of lectin-suger chain reactions were also presented.

[27B2-3] 16:45~17:15 Invited Talk

Ultrafast Spin Spectroscopy for Rare-earth Orthoferrites and Orthochromites by THz Pulses

Makoto Nakajima

Osaka University, Japan

Impulsive excitation of terahertz magnetic field induces spin precession motions and the spin dynamics are probed. The results of temperature dependence in $ErCr_{03}$ and enhancement of spin precession amplitudes using metamaterial in $ErFe_{03}$ is reported.

[27B2-4] 17:15~17:30

In Vivo Analysis of Immune Cell Motility After THz Wave Irradiation

Yoonha Hwang[1], Jungho Mun[2], Jinhyo Ahn[1], Sangyoon Bae[2], Young Uk Jeong[2], Nikolay A. Vinokurov[2], and Pilhan Kim[1]

[1]KAIST, Korea, [2]KAERI, Korea

Cellular-level effects by THz wave irradiation on live animal were visualized by intravital laser-scanning confocal microscopy. Time-lapse imaging analysis revealed an acute inflammatory response induced by THz wave irradiation in vivo.

[27B2-5] 17:30~17:45

Simultaneously Detection Two Types of Ions Using THz Chemical Microscopy

Kosuke Akimune, Yuki Okawa, Kenji Sakai, Toshihiko Kiwa, and Keiji Tsukada

Okayama University, Japan

THz chemical microscopy has been proposed and developed to detect ions in water solutions. In this work, the change in the amplitude of THz radiation was measured when ion solutions was dropped on detection plate.