

Room A (101)

Session Title 25A3 / [T01] Q-switched Lasers
Date & Time Tuesday, 25 August, 15:45 ~ 17:30
Session Chair Takashige Omatsu (Chiba University, Japan)

[25A3-1] 15:45~16:00

Different Interaction Schemes with Carbon Nanotubes in a Pulsed Planar Waveguide Laser

Jun Wan Kim¹, Sun Young Choi¹, Mi Hye Kim¹, Dong-Il Yeom¹, Kwang Jun Ahn¹, Xavier Mateos², Madalena Aguiló², Francesc Díaz², Uwe Griebner³, Valentin Petrov³, and Fabian Rotermund³

¹Ajou University, Korea, ²Universitat Rovira i Virgili, Spain, ³Max Born Institute for Nonlinear Optics & Short-Pulse Spectroscopy, Germany

We studied operation characteristics of a Gd³⁺ and Lu³⁺ co-doped Yb:KYW planar waveguide laser, Q-switched by carbon nanotube-based saturable absorbers in two direct interaction and one evanescent-field interaction regimes.

[25A3-2] 16:00~16:15

1570 nm Nanosecond Pulse Generation from Er/Yb Co-Doped All-Fiber Dual-Cavity Laser Oscillator with Fiber-Based Passive Q-Switch

Dongchen Jin, Ruoyu Sun, Shouyu Wei, Jiang Liu, and Pu Wang
Beijing University of Technology, China

1570 nm nanosecond all-fiber dual-cavity laser with fiber-based passive Q-switch is demonstrated. Stable pulse trains can be obtained with the repetition rate varying from 14 kHz to 156 kHz, and the maximum average power is 2.2 W.

[25A3-3] 16:15~16:30

Ultrafast Nonlinear Absorption in SWNTs: an Ultra-Broadband Investigation

Frank Wang¹, Shuo Xu¹, Hao Hong², Richard Howe³, Kaihui Liu², Tawfique Hasan², and Yongbing Xu¹

¹Nanjing University, China, ²Peking University, China, ³University of Cambridge, UK

Z-scan spectroscopy is used to reveal ultra-broadband nonlinear absorption across different orders of resonant transitions in single-wall carbon nanotube ensembles, demonstrating the potential of nanotubes for nonlinear optics beyond the conventional NIR range.

[25A3-4] 16:30~16:45

Q-Switched Yb-Doped Fiber Laser with WS₂ Saturable Absorber

Guoqing Hu¹, Meng Zhang¹, Lingling Chen², Xuekun Zhu¹, Guohua Hu¹, Richard C. T. Howe³, Xin Zhao¹, Zheng Zheng^{1,4}, and Tawfique Hasan²

¹Beihang University, China, ²Shenzhen University, China, ³University of Cambridge, UK, ⁴Collaborative Innovation Center of Geospatial Technology, China

We demonstrate an all-normal dispersion ytterbium doped fiber laser Q-switched by using a solution processed few-layer tungsten disulfide (WS₂)-polymer composite saturable absorber at 1030 nm.

[25A3-5] 16:45~17:00

Mirrorless Graphene Q-Switched Channel Waveguide Laser

Mi Hye Kim¹, Sun Young Choi¹, Thomas Calmano², Dong-Il Yeom¹, Christian Kränkel², Günter Huber², and Fabian Rotermund²

¹Ajou University, Korea, ²Universität Hamburg, Germany

We propose a Q-switched channel waveguide laser operating near 1 μm in mirrorless resonator configuration. PMMA-assisted monolayer graphene acting as saturable absorber is grown by chemical vapor deposition and transferred onto an end facet of the waveguide.

[25A3-6] 17:00~17:15

Q-Switched Mode-Locked Alexandrite Laser for Picosecond Pulses

Joonmo Ahn, Min Ki Jung, Minah Seo, Seok Lee, and Young Min Jhon
KIST, Korea

Q-switched mode-locked (QML) alexandrite laser with 728 ps pulse width was developed. While the output energy was measured varying the charging voltage, and the profile of the laser beam was monitored confirming single mode operation.

[25A3-7] 17:15~17:30

Improving the Repetition Rate of Tm-Doped Fiber Saturable Absorber Based Passive Q-Switching

Mengmeng Tao¹, Guobin Feng¹, Yanlong Shen¹, Ting Yu², and Xisheng Ye²

¹Northwest Institute of Nuclear Technology, China, ²Chines Academy Sciences, China

Two possible methods for repetition rate improvement of Tm-doped fiber saturable absorber based passively Q-switched Er-doped fiber lasers are reviewed. Simulations show that both methods are effective.

Room B (102)

Session Title 25B3 / [T01] Solid-State & Diode Lasers
Date & Time Tuesday, 25 August, 15:45 ~ 17:30
Session Chair Christian Kränkel (Universität of Hamburg, Germany)

[25B3-1] 15:45~16:15 Invited Talk

High-Energy Nonlinear Optics in Fiber

Siddharth Ramachandran
Boston University, USA

Intermodal nonlinear interactions with higher-order modes circumvent the dispersion-vs.-nonlinearity tradeoff of single-mode waveguides. We review advances in this platform to enable nonlinear optics in fibers at energy levels potentially approaching that achievable in bulk crystals.

[25B3-2] 16:15~16:45 Invited Talk

Diode-Pumped Alexandrite Laser - a New Prospect for Remote Sensing

Michael Damzen¹, Gabrielle Thomas¹, Achaya Teppitaksak¹, Emma Arbabzadeh², William Kerridge-Johns¹, and Ara Minassian²

¹Imperial College London, UK, ²Unilase Ltd., UK

Tunable-wavelength diode-pumped Alexandrite laser operation includes highest power > 26 W (end-pumped rod); > 12 W (side-pumped slab); and first Q-switched operation with pulse energy ~ 1 mJ at kHz repetition rate, as development for space lidar application.

[25B3-3] 16:45~17:00

Dual-Wavelength Continuous-Wave Operation of Nd,La Co-Doped CaF₂ Laser

Yingnan Peng¹, Wenlong Tiar², Jiangfeng Zhu², Zhaohua Wang¹, Zhiyi Wei¹, Liangbi Su¹, and Jun Xu¹

¹Chinese Academy of Sciences, China, ²Xidian University, China

Stable continuous-wave operation of an Nd, La co-doped CaF₂ laser was realized for the first time. The maximum output power of 534 mW was obtained, corresponding to a slope efficiency of 32.2%.

[25B3-4] 17:00~17:15

A Bulk ZnO-Based Vertical External Cavity Surface-Emitting Laser

Y. P. Lan, Y. C. Wu, Y. H. Chou, Y. Y. Lai, W. F. Hsieh, and Y. C. Chang
National Chiao Tung University, Taiwan

A possible polariton lasing is observed by a vertical-external-cavity surface-emitting laser consisted of a passive Q-switched laser, a semiconductor gain medium with distributed Bragg reflection and external mirror to form a cavity.

[25B3-5] 17:15~17:30

Power Scaling and Q-Switched Operation of a Pr³⁺ Doped YLF Laser Pumped by Four High Power InGaN-Blue-LDs

Kodai Iijima, Ryosuke Kariyama, Hiroki Tanaka, Kenichi Hirotsawa, and Fumihiko Kannari
Keio University, Japan

We demonstrate a 2.9-W cw Pr³⁺:YLF laser at 640 nm by pumping with four InGaN blue LDs. This laser is further extended to passive and active Q-switching operation using Cr³⁺:YAG saturable absorber and acousto-optic modulator, respectively.