Thursday

ThR1-21 *Invited* 11:45-12:15

Wide Tunable nanosecond OPO based on new nonlinear crystals

G.Marchev[1], A.Tyazhev[1], V.Vedenyapin[2], D.Kolker[3], A.Yelisseyev[2], S.Lobanov[2], L.Isaenko[2], Je.-Ja.Zondy[4], V.Petrov[1]
Max-Born-Inst. for Nonlinear Optics and Ultrafast Spectroscopy, Germany

Abstract is not available.

ThR1-22 12:15-12:30

Efficient up-conversion blue lasers on periodically poled lithium tentalate with cascaded quasi-phase-matching structure

C.-C. Wu[1], C.-S. Wen[1], Y.-Y. Lai[1], L.-H. Peng[1], C.-M. Lai[2] and A. Boudrioua[3]
[1]Graduate Inst. of Photonics and Optoelectronics, National Taiwan Univ.; [2]Department of Electronic Engineering, Ming Chuan Univ., Taiwan; [3]Inst. Galilée, UMR 7538 – CNRS, Univ. Paris

Up-conversion 465 nm lasers activated by cascaded QPM-OPO and -SHG processes were reported on PPLT. We observed differential slope efficiency of 16% for blue generation on a 16 mm-long PPLT device when pumped by a pulsed 532 nm laser of 400 mW average power. This was attributed to a 0.78 nm wavelength acceptance bandwidth design using a mutli-period PM-SHG structure to enhance the conversion efficiency.

ThR1-23 12:30-12:45

Fiber-laser-pumped CW OPO for Red, Green, Blue Laser Generation

Shou-Tai Lin, Yen-Yin Lin, Rong-Yu Tu, Tsong-Dong Wang, and Yen-Chieh Huang
Department of Electrical Engineering, National Tsinghua Univ., Taiwan

We report a CW, watt-level, red, green, and blue laser pumped by an Yb-fiber laser at 1.064 μm. A singly resonant optical parametric oscillator at 1.56 μm has two intracavity sum-frequency generators for red and blue laser generations. An extracavity second harmonic generator converts the residual pump power into green laser radiation. At 25-W pump power, the laser generated 3.9, 0.456, and 0.49 W at 633, 532, and 450 nm, respectively.

ThR1-24 12:45-13:00

Thermal-waveguide Optical Parametric Oscillator

S. T. Lin, Y.Y. Lin, T. D. Wang, and Y.C. Huang
Department of Electrical Engineering, National Tsinghua Univ., Taiwan

We report a mid-infrared, CW singly resonant optical parametric oscillator with a thermally induced waveguide in its gain crystal. We measured a numerical aperture of 0.0062 for the waveguide at 80-W intracavity power at 3.2um. This thermal-guiding effect benefits to the stable operation of an OPO and improves the parametric conversion efficiency by more than a factor of two.

ThR1-25 13:00-13:15

Solid-State, High Energy, 2-micron Laser development for Space-based Remote Sensing

Upendra N. Singh
NASA Langley Research Center, USA

An Independent Laser Review Panel set up to examine NASA's space-based lidar missions and the technology readiness of lasers appropriate for space-based lidars indicated a critical need for an integrated research and development strategy to move laser transmitter technology from low technical readiness levels to the higher levels required for space missions. Based on the review, a multiyear Laser Risk Reduction Program (LRRP) was initiated by NASA in 2002 to develop technologies that ensure the successful development of the broad range of lidar missions envisioned by NASA. This presentation will provide an overview of the development of pulsed 2-micron solid-state laser technologies at NASA Langley Research Center for enabling space-based measurement of wind and carbon dioxide.

ThR1-26 13:15-13:30

Narrowline powerful generation at 3.39 μm in an OPO based on a periodically poled MgO:$LiNbO_3$

A.A. Novikov, O.L. Antipov, L.A. Alexandrov
Inst. of Appl. Physics of RAS, Russia

Optical parametric oscillator (OPO) based on a periodically poled MgO:$LiNbO_3$ seeded by a cw narrowline He-Ne laser at 3.39 μm was studied. The OPO was pumped by nanosecond pulses of a Q-switched diode-side-pumped Nd:YVO_4 laser at 1064 nm. The 3.39-μm narrowline generation with average power up to 1W was obtained.

ThR1-27 13:30-13:45

Effect of pulse modulation on weldability of Ti-alloys

R. Holtz, V. Manyak, J. Wilden, P. Kotalik, T. Neumann, K. Richter
LASAG AG, Switzerland

A new, innovative laser beam welding process with a free pulse shaping Nd:YAG laser will be introduced, which involves a low energy input per unit length. Therefore, the laserprocess-characteristic complex shielding gas apparatus (e.g. a long dragging nozzle) is not required any more.

ThR1-28 13:45-14:00

Laser Peening of the Ti-alloy blade.

Zou Shikun
Beijing Aeronautical Manufacturing Technology Research Inst., China

Abstract is not available.

R2. High Power Gas Lasers

Th R2-10 15:00-15:15

Impulse CO laser with RF discharge for isotope separation of uranium

Igor Ya. Baranov
Baltic State Technical Univ., Russia

An impulse CO laser with RF discharge is proposed to separate isotopes of uranium employing condensation repression. The RF-discharge in supersonic stream, vibrational kinetics of CO, supersonic stream, a free jet of uranium were calculated. On the strength of received parameters the installation was designed. This construction can be used for industrial production of nuclear fuel for power stations.

Th R2-11 15:15-15:30

The nonchain repetitively pulsed HF laser

V. D. Bulaev[1], V. S. Gusev[1], S. L. Lysenko[1], Yu. B. Morosov[1], A. N. Poznyshev[1], S. Yu. Kazantsev[2], I. G. Kononov[2], K. N. Firsov[2].
[1]Federal State Unitary Enterprise «Kosminov State Scientific Research Test Laser Center (Range) of the Russian Federation «RADUGA», Raduzhnyi, Vladimir Reg.; [2]A.M. Prokhorov General Physics Inst. of RAS, Moscow, Russia.

Ohe powerful nonchain repetitively pulsed HF laser on mixtures SF_6 with hydrocarbons is developed and investigated. Application of electrodes with high edge electric field gain has allowed to draw generation energy W_g= 67 J in a pulse at pulse-repetition frequency of 20 Hz.