conference program

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OSA
SF21 • Ultrafast Amplifiers—Continued

AF2J • A&T Topical Review on Lasers in Additive Manufacturing II—Continued

JF2K • Symposium Mid-IR Lasers: Advancing from Research Topic to Application II—Continued

SF2L • Reduced Dimensionality Lasers—Continued

SF21.5 • 11:30
Sub-ps Pulses with multi-keV Energy at kHz Repetition Rate from a Yb:YAG Thin-disk Amplifier, Jonathan Fischer1, Patrick Storz1, Alexander-Kornelius Heinrich2, Simon Mair3, Julian Jungwirth1, Danielle Briks1, Alfred Leitenstorfer1,1 Universitäts Konstanz, Germany; 2Combined Optics, Germany; 3Yb:YAG thin-disk technology produces 615 fs pulses at 1030 nm with an energy of 17 mJ at 3 kHz repetition rate. The sub-ps duration allows efficient white-light generation and optical parametric amplification.

AF2J.3 • 11:30
Beam steering in highly coherent implant-defined vertical cavity surface emitting laser array, Meng Xun1, Chen Xu1, Yuyang Xie1, Guangliang Jiang1, Guanghong Pan1, Yibo Dong1, Hongtao Chen2, Beijing Univ. of Technology, China; 1Inst. of Semiconductors Chinese Academy of Sciences, China. Electronically controlled beam steering was achieved with a highly coherent 70×70 mm2 implant-defined vertical cavity surface emitting laser array. The total power in the central lobe is above 36% in 1-2° array when steering.

JF2K.2 • 11:30
Highly Integrated Gas Sensors based on Bi-functional Quantum Cascade Structures, Roll Sædel1, Andreas Herzig1, Benedikt Schunk2, Martin Hofbauer2, Harald Moser2, Donald Macfarlane1, Tobias Zederniker2, Hermann Dress1, Aaron Maxwell Andrews1, Werner Schrenk1, Bernhard Leendert2, Conrard Sander2,1 Inst. of Solid State Electronics, TU Wien, Austria; 2Center for Micro- and Nanostuctures, TU Wien, Austria; 1Institute of Chemical Technologies and Analytics, TU Wien, Austria; 2Austrian Academy of Sciences, Austria. We present gas sensors based on two concentric vertically emitting and detecting quantum cascade ring structures on the same chip. Both rings can be used as laser and detector at the same wavelength.

SF2L.4 • 11:45
High Power Femtosecond Yb:Lu2O3 Amplifier and Sub-100 fs Yb:Lu2O3 Oscillator, Ettore Caracola1,2, Samuele D. Di Dito3, Calitso2, Federico Pinzo1, Matthias Kemnitzer1, Marin Goren3, Anaïs Guadagnin3, Florian Gerner1, Antonio Agnesi1,1 Politecnico di Torino, Italy; 2Spectra-Physics Ramelli, Austria. We obtained up to 42 W with 380 fs pulses at 500 kHz repetition rate with M2=1.2 in a Yb:Lu2O3 based regenerative amplifiers. Also, sub-100 fs pulse generation in a low-power SESAM mode-locked oscillator are presented.

JF2K.4 • 11:45
Multi-species sensing using multi-mode absorption spectroscopy with mid-infrared interband cascade lasers, Paul Ewart1,2, Steven O’Hagan1,2, Henry Northern1,2, Benjimen Graf1, Chul Soo Kim1, Maja King1, Jerry J. Meyer1, William Brewey1, Charles Merri1, Chadwick Canedy2, Jorg Vyshgarm1,2,3, University of Oxford, UK; 1Ecole Natale Supérieure de Ingeenieurs de Grenoble, France; 2Naval Research Lab, USA; 3Sotera Defense Solutions, Inc., USA. Multi-mode absorption spectroscopy, MAMAS, with a mid-IR interband cascade laser, is used to measure concentrations of methane, acetylene, and formaldehyde with uncertainties of 1% in pure samples and <10% in mixtures of three gases.