



# 2014 Photonics West<sup>®</sup>

1–6 February

Technical Program  
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**BIOS**

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**MOEMS-  
MEMS**

**TRANSLATIONAL  
RESEARCH**

**GREEN  
PHOTONICS**

**INDUSTRY  
EVENTS**

**Conferences and Courses**

1–6 February 2014

**Exhibition**

BiOS Expo: 1–2 February

Photonics West: 4–6 February

**Location**

The Moscone Center  
San Francisco, California, USA



# Conference 9002 · Location: Room 250 (Mezzanine)

## Tuesday 4 February

### OPTO PLENARY SESSION

Location: Room 134 (Exhibit Level) . . . 8:30 am to 10:00 am

Session Chair: David L. Andrews,  
Univ. of East Anglia Norwich (United Kingdom);  
Alexei L. Glebov, OptiGrate Corp. (USA)

- 8:30 am: Welcome and Opening Remarks, Alexei L. Glebov, OptiGrate Corp. (USA)
- 8:35 am: Announcement of the Green Photonics Awards, Stephen J. Eglash, Energy and Environment Affiliates Program, Stanford Univ. (USA)
- 8:40 am: Pushing the boundaries of silicon photonics (Plenary), Michal F. Lipson, Cornell Univ. (USA)
- 8:45 am: The previously unbelievable performance of ultrafast thin disk lasers (Plenary), Ursula Keller, ETH Zurich (Switzerland)

Coffee Break . . . . . Tue 10:00 am to 10:30 am

### SESSION 5

Location: Room 250 (Mezzanine) . . . Tue 10:30 am to 12:20 pm

#### Mid-Infrared QCLs I

Session Chair: Alexey A. Belyanin, Texas A&M Univ. (USA)

- 10:30 am: Quantum cascade lasers comb spectrometers (Keynote Presentation), Jérôme Faist, Andreas Hugi, Gustavo F. Villares, Mattias Beck, ETH Zurich (Switzerland); Stéphane Blaser, Alpes Lasers SA (Switzerland); Hui Chun Liu, Shanghai Jiao Tong Univ. (China); Markus Roesch, ETH Zurich (Switzerland); Giacomo Scarlati, Alpes Lasers SA (Switzerland) and ETH Zurich (Switzerland) . . . . . [9002-20]

- 11:10 am: Noise properties of a mid-infrared quantum cascade laser frequency comb, Gustavo F. Villares, Andreas Hugi, ETH Zurich (Switzerland); Stéphane Blaser, Alpes Lasers SA (Switzerland); Hui Chun Liu, Shanghai Jiao Tong Univ. (China); Jérôme Faist, ETH Zurich (Switzerland) . . . . . [9002-21]

- 11:30 am: Three-mirror cavity quantum cascade lasers for single-mode operation, Romain Blanchard, Harvard School of Engineering and Applied Sciences (USA); Tobias S. Mansuripur, Harvard Univ. (USA); Pauline Melvior, Harvard School of Engineering and Applied Sciences (USA); Yongrui Wang, Aleksander K. Wojcik, Alexey A. Belyanin, Texas A&M Univ. (USA); Federico Capasso, Harvard School of Engineering and Applied Sciences (USA) . . . . . [9002-22]

- 11:50 am: Ring cascade lasers with integrated pi phase shifts (Invited Paper), Rolf Szedlak, Clemens Schwarzer, Tobias Zederbauer, Hermann Deltz, Aaron M. Andrews, Werner Schrenk, Gottfried Strasser, Technische Univ. Wien (Austria) . . . . . [9002-23]

Lunch/Exhibition Break . . . . . Tue 12:20 pm to 1:20 pm

### SESSION 6

Location: Room 250 (Mezzanine) . . . . . Tue 1:20 pm to 3:30 pm

#### Terahertz QCLs

Session Chair: Jerome Faist, ETH Zurich (Switzerland)

- 1:20 pm: Novel THz quantum cascade laser active materials and designs (Invited Paper), Christoph Deutsch, Martin Brandstetter, Michael Krall, Tobias Zederbauer, Gottfried Strasser, Karl Unterrainer, Technische Univ. Wien (Austria) . . . . . [9002-24]

- 1:50 pm: Broadly-tunable room-temperature THz quantum cascade laser sources (Invited Paper), Mikhail A. Beikin, Yifan Jiang, Karun Vijayraghavan, Seungyong Jung, The Univ. of Texas at Austin (USA); Frederic Demmerle, Gerhard Böhm, Markus-Christian Amann, Walter Schottky Institut (Germany) . . . . . [9002-25]

- 2:20 pm: Towards an octave spanning CW THz quantum cascade laser, Markus Roesch, Giacomo Scarlati, Mattias Beck, Jérôme Faist, ETH Zurich (Switzerland) . . . . . [9002-26]

- 2:40 pm: Simulations of laser seeding dynamics with few-cycle pulses, Joshua R. Freeman, Univ. of Leeds (United Kingdom) and Ecole Normale Supérieure (France); Jean Maysonnave, Ecole Normale Supérieure (France); Suraj Khanna, Edmund Linfield, Giles Davies, Univ. of Leeds (United Kingdom); Siddhdeep S. Dhillon, Jerome Tignon, Ecole Normale Supérieure (France) . . . . . [9002-27]

- 3:00 pm: Surface-emitting THz quantum cascade lasers based on graded photonic heterostructures: towards phased arrays for high-power operation (Invited Paper), Raffaele Colombelli, Institut d'Electronique Fondamentale (France) . . . . . [9002-28]

Coffee Break . . . . . Tue 3:30 pm to 4:00 pm

### SESSION 7

Location: Room 250 (Mezzanine) . . . . . Tue 4:00 pm to 5:50 pm

#### Lasers on Silicon

Session Chair: Haisheng Rong, Intel Corp. (USA)

- 4:00 pm: Heterogeneously-integrated lasers on silicon (Invited Paper), Brian R. Koch, Aurion, Inc. (USA) . . . . . [9002-29]

- 4:30 pm: Monolithic integration of III-V quantum-dot lasers on silicon substrate, Qi Jiang, Andrew D. Lee, Mingchu Tang, Jiang Wu, Alwyn J. Seed, Huiyun Liu, Univ. College London (United Kingdom) . . . . . [9002-30]

- 4:50 pm: Analysis of band structure characteristics of Ga(NAsP)/(BGa)(AsP)-quantum well heterostructures for monolithically-integrated lasers on (001) Si-substrate (Invited Paper), Wolfgang Stolz, Philipps-Univ. Marburg (Germany) . . . . . [9002-31]

- 5:20 pm: Hybrid III-V on silicon lasers for photonic integrated circuits on silicon (Invited Paper), Guang-Hua Duan, III-V Lab. (France) . . . . . [9002-32]

## Wednesday 5 February

### SESSION 8

Location: Room 250 (Mezzanine) . . . Wed 8:00 am to 10:10 am

#### Photonic Bandgap and Microcavity

Session Chair: Kresten Vvind, Technical Univ. of Denmark (Denmark)

- 8:00 am: Self-frequency conversion in photonic crystal microcavity quantum dot lasers (Invited Paper), Yasutomo Ota, Katsuyuki Watanabe, Satoshi Iwamoto, Yasuhiko Arakawa, The Univ. of Tokyo (Japan) . . . . . [9002-33]

- 8:30 am: Photonic crystal surface-emitting lasers as pumping light source for second harmonic generation, Aklyoshi Watanabe, Kazuyoshi Hirose, Yoshitaka Kurosaka, Takahiro Sugiyama, Hamamatsu Photonics K.K. (Japan); Yong Liang, Susumu Noda, Kyoto Univ. (Japan) . . . . . [9002-34]

- 8:50 am: Room temperature lasing from individual GaAs-AlGaAs core-shell nanowires, Benedikt Mayer, Daniel Rudolph, Joscha Schnell, Julia Winner, Stefanie Morkötter, Julian Treu, Technische Univ. München (Germany); Gerhard Abstreiter, Gregor Koblmüller, Jonathan J. Finley, Walter Schottky Institut (Germany) . . . . . [9002-35]

- 9:10 am: Directly-modulated photonic crystal lasers for computercom applications (Invited Paper), Shinji Matsuo, NTT Photonics Labs. (Japan) . . . . . [9002-36]

- 9:40 am: Electrically-driven nanobeam photonic crystal laser (Invited Paper), Hong-Gyu Park, Kwang-Yong Jeong, Korea Univ. (Korea, Republic of); Min-Kyo Seo, Yong-Hee Lee, KAIST (Korea, Republic of) . . . . . [9002-37]

Coffee Break . . . . . Wed 10:10 am to 10:40 am

### SESSION 9

Location: Room 250 (Mezzanine) . . . Wed 10:40 am to 12:40 pm

#### Mid-Infrared Lasers: Sb-based

Session Chair: Oana Malls, Purdue Univ. (USA)

- 10:40 am: Cascade pumping of GaSb-based type-I quantum well diode lasers (Invited Paper), Leon Shterengas, Rui Liang, Gela Klipshidze, Takashi Hosoda, Sergey Suchalkin, Gregory Belenky, Stony Brook Univ. (USA) . . . . . [9002-38]

- 11:10 am: Ultra-low input power long-wavelength GaSb type-I laser diodes at 2.7-3.0  $\mu\text{m}$ , Augustinas Vizbaras, Mindaugas Greibus, Edgaras Dvinelis, Augustinas Trinkunas, Deividas Kovalevskas, Ieva Šimonyte, Kristijonas Vizbaras, Brolis Semiconductors UAB (Lithuania) . . . . . [9002-39]

- 11:30 am: InGaAsSb/AlGaAsSb laterally-coupled index-grating distributed feedback lasers for HF gas sensing at 2475 nm, James A. Gupta, Andrew Bezinger, Pedro J. Barrios, Jean Lapointe, Daniel Poitras, Geoff C. Aers, National Research Council Canada (Canada) . . . . . [9002-40]

- 11:50 am: 2-micron GaSb-based metamorphic laser grown on GaAs (Invited Paper), Paveen Apiratikul, Lei He, Richard P. Leavitt, Nathan P. Siwak, Joseph Dupierre, Christopher J. K. Richardson, Univ. of Maryland, College Park (USA) . . . . . [9002-41]

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