iNOW 2012
Detailed Program

Tuesday, August 7, 2012 (Stanley Hall Atrium, University of California, Berkeley)

18:00-20:00  Registration and Welcome Reception (Stanley Hall, U.C. Berkeley)

Wednesday, August 8, 2012 (Stanley Hall Auditorium, Room 106)

8:30-9:00  Registration

9:00-9:15  Opening Ceremony (Chairs: Connie Chang-Hasnain, James Harris and Eli Yablonovitch)

8:45 - 9:00  Opening Welcome Remarks
- Connie Chang-Hasnain, University of California, Berkeley
- James Harris, Stanford University, Stanford
- Eli Yablonovitch, University of California, Berkeley

9:00-10:30  Session We1 Nanophotonics and Energy Efficient Electronics (Chair: Connie Chang-Hasnain)

9:00 - 9:45  Green Nanophotonics for Future Datacom and Ethernet Networks
- Dieter Bimberg, Technical University of Berlin

9:45 - 10:30  Strong Coupling Effects and Polariton Lasing in Nanowires and Other Systems
- Pallab Bhattacharya, University of Michigan

10:30-11:00  Tea & Coffee Break

11:00-12:30  Session We2 Nanowires and Quantum Dots (Chair: James Harris)

11:00 - 11:45  Solid-State Cavity-QED in Quantum Dot Coupled to High-Q Photonic Crystal Nanocavity
- Yasuhiko Arakawa, University of Tokyo

11:45 - 12:30  Quantum Dot Mode Locked Lasers for OFDM Applications
- Abderrahim Ramdane, IPN CNRS

12:30-13:30  Lunch (Stanley Hall Atrium)

13:30-15:00  Session We3 Nanostructure and Nanofabricated Devices (Chair: Eli Yablonovitch)

13:30 - 14:15  Nanofabricated Devices for Local Measurements
- Axel Scherer, Caltech

14:15 - 15:00  Semiconductor Nano-Emitters and Nano-Detectors
- Ming Wu, University of California, Berkeley

15:00  Group Photo (in front of Hearst Mining Memorial Building)

15:15-15:30  Tea & Coffee Break

15:45-17:45  Poster Session 1 (Chair: Dieter Bimberg)

15:45 - 16:45  Poster Introduction (3 min. each)

16:45 - 17:45  Poster Viewing (Stanley Hall Atrium)
18:30-21:00  Dinner (Stanley Hall Atrium)

Thursday, August 9, 2012 (Stanley Hall Auditorium, Room 106)

8:30-9:00  Registration

9:00-10:30  Session Th1 Plasmonics and Quantum Dots (Chair: Vladimir Dubrovskii)

9:00 - 9:45  Positioned Single Quantum Dots – Technology, Properties and Future Applications
             - Alfred Forchel, University of Würzburg

9:45 - 10:30  Plasmonics Meets Semiconductor Nanophotonics
             - Mark Brongersma, Stanford University

10:30-11:00  Tea & Coffee Break

11:00-12:30  Session Th2 Energy-Efficient Nano-Electronics (Chair: Alfred Forchel)

11:00 - 11:45  Energy Efficient Electronics; Searching for the Milli-Volt Switch
               - Eli Yablonovitch, University of California, Berkeley

11:45 - 12:30  Semiconductor Nanowires for Future Electronic Devices
               - Heike Riel, IBM Zurich Research Laboratory

12:30-13:30  Lunch (Stanley Hall Atrium)

13:30-15:00  Session Th3 High-resolution Beam Steering and Signal Processing (Chair: Martin Kamp)

13:30 - 14:15  High-resolution Beam Steering from Bragg-reflector Waveguide
               - Fumio Koyama, Tokyo Institute of Technology

14:15 - 15:00  Terabit/sec Free-Space Data Transmission using Orbital Angular Momentum
               - Alan Willner, University of Southern California

15:15-15:30  Tea & Coffee Break

15:45-17:45  Poster Session 2 (Chair: Yasuhiko Arakawa)

15:45 - 16:45  Poster Introduction (3 min. each)

16:45 - 17:45  Poster Viewing (Stanley Hall Atrium)

18:30-21:45  Free Evening and Committee Dinner

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Friday, August 10, 2012 (Stanley Hall Auditorium, Room 106)

8:30-9:00  Registration

9:00-10:30  Session Fr1 Nanostructures and Lasers (Chair: Abderrahim Ramdane)

9:00 - 9:45  New Functional Optoelectronic Devices with Nanostructures
             - Yidong Huang, Tsinghua University

9:45 - 10:30  Nano-beam Lasers and Resonators
             - Yong-Hee Lee, KAIST
10:30-11:00  Tea & Coffee Break

11:00-12:30  Session Fr2 Photovoltaics and Energy Storage (Chair: Nasser Peyghambarian)
11:00 - 11:45  Nanostructured Solar Cells with Efficient Photon Management and Nanowire Network Transparent Electrodes
   - Yi Cui, Stanford University
11:45 - 12:30  Photonic Structures for Photovoltaics
   - Eicke Weber, Fraunhofer Institut fur Solare Energie Systeme ISE

12:30-13:30  Lunch (Stanley Hall Atrium)

13:30-14:15  Session Fr3 3D Telepresence and MOCVD (Chair: Yong-Hee Lee)
13:30 - 14:15  Holographic 3D Telepresence as an Application of Future High Speed Optical Networks
   - Nasser Peyghambarian, University of Arizona
14:15 - 15:00  MOCVD as a Production Tool for Nanostructures
   - Michael Heuken, AIXTRON SE

15:00-15:30  Tea & Coffee Break

15:30-17:30  Rump Session 1:

**Energy Efficient Photonics for Optical Interconnects in Supercomputers and Data Centers**
*(Co-Chairs: Tingye Li, and TP Lee)*

*Panelists: Ashok Krishnamoorthy, Oracle; Peter DeDobbelaere, Luxtera; Julie Eng, Finisar*

Power consumption is a critical issue in super-computers and data centers which require communications links among the racks, boards and chips. These links can extend from less than a few centimeters to many tens of meters operating at speeds exceeding tens of Gb/s in a densely-packed and thermally-unfriendly environment. Present solutions involve optical interconnects such as active optical cables using VCSELS as sources and multimode-fibers as the transmission medium for relatively low-speed and short-distance applications, and lasers on silicon-photonic platform and single-mode fibers for higher-speed and longer-distance deployments. Presently, the VCSEL approach dominates the market, as cost is predominant rather than performance demands. However, as technical requirements become more demanding, and performance and costs of each technology improve, so the demarcation of application areas will shift. This rump session will explore the limitations of performance and costs of the two technologies, in light of future requirements for speed, distance, size, cost, and power consumption. Panelists will present their cases and the audience is invited to participate in the discussion.

18:30-21:45  Banquet (Moore Lobby, Hearst Mining Building)

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Saturday, August 11, 2012 (Excursion)

8:30-18:30  Excursion Bus Trip to Sausalito, Tour of San Francisco, SF Dinner Bay Cruise
8:30 - 10:00  Bus from UC Berkeley to Sausalito
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<tr>
<th>Time</th>
<th>Activity</th>
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<tr>
<td>10:00 - 13:00</td>
<td>Shop and Lunch on your own in Sausalito</td>
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<td>13:00 - 15:30</td>
<td>Bus tour of San Francisco</td>
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<td>16:00 - 20:30</td>
<td>Dinner Bay Cruise on Pacific Hornblower Yacht</td>
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<td>21:00-22:00</td>
<td>Bus to Stanford University Campus</td>
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**Sunday, August 12, 2012 (Paul G. Allen Building, Stanford University)**

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<tr>
<td>8:30-8:45</td>
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<td>8:45-9:00</td>
<td>Opening Ceremony (Chair: James Harris and Connie Chang-Hasnain)</td>
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<td>9:00-10:30</td>
<td>Session Su1 Solar Cells and GaN Nanowires (Chair: Connie Chang-Hasnain)</td>
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<td>9:00 - 9:45</td>
<td>Materials Challenges for High Efficiency Solar Cells</td>
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<td>James Harris, Stanford University</td>
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<td>9:45 - 10:30</td>
<td>Self-induced Formation of GaN Nanowires on Silicon</td>
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<td>Vladimir Dubrovskii, Academic University St. Petersburg, RAS</td>
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<td>10:30-11:00</td>
<td>Tea &amp; Coffee Break</td>
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<td>11:00-12:30</td>
<td>Session Su2 Optical Interconnects (Chair: James Harris)</td>
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<tr>
<td>11:00 - 11:45</td>
<td>Optical Interconnects to Chips – Reasons and Novel Devices</td>
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<td>David Miller, Stanford University</td>
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<td>11:45 - 12:30</td>
<td>Long Wavelength Membrane Lasers for Optical Interconnects</td>
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<td>Shigehisa Arai, University of Tokyo</td>
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<td>12:30-13:30</td>
<td>Lunch</td>
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<td>13:30-15:00</td>
<td>Session Su3 Optical Switching and Nanorod LED (Chair: Yong-Hee Lee)</td>
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<td>13:30 - 14:15</td>
<td>Aggregation and Switching on Optical OFDM Superchannel for Elastic Optical Networks</td>
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<td>Zhangyuan Chen, Peking University</td>
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<td>14:15 - 15:00</td>
<td>Regularly Patterned Nanorod Light-Emitting Diode Array</td>
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<td>Chih-Chung Yang, National Taiwan University</td>
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<td>15:00</td>
<td>Group Photo (in front of TBD)</td>
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<td>15:15-15:30</td>
<td>Tea &amp; Coffee Break</td>
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<td>15:45-17:45</td>
<td>Poster Session 3 (Chair: Fumio Koyama)</td>
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<td>15:45 - 16:45</td>
<td>Poster Introduction (3 min. each)</td>
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<td>16:45 - 17:45</td>
<td>Poster Viewing (TBD)</td>
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<td>18:30-21:15</td>
<td>Dinner (Lagunita Court)</td>
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**Monday, August 13, 2012 (Paul G. Allen Building, Stanford University)**

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<tr>
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<td>Registration</td>
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<tr>
<td>9:00-10:30</td>
<td>Session Mo1 Semiconductor Lasers (Chair: Zhangyuan Chen)</td>
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<td>9:00 - 9:45</td>
<td>Advanced concepts for Single-Mode and Tunable Semiconductor Lasers for the Near to Far Infrared</td>
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10:30-11:00  Tea & Coffee Break
11:00-12:30  Session Mo2 Silicon Photonic Circuits
            (Chair: Shigehisa Arai)
11:00 - 11:45  High Contrast Metastructures for Silicon Photonics
               - Connie Chang-Hasnain, University of California, Berkeley
11:45 - 12:30  Recent Advances of Silicon Photonic for Optical Data Links
               - Young-Kai Chen, Alcatel-Lucent

12:30-13:30  Lunch

13:30-15:00  Session Mo3 Dynamic Modulation and Slow Light Waveguide
            (Chair: Markus Amann)
13:30 - 14:15  Non-reciprocity and Effective Gauge Field for Photons from Dynamic Modulation
               - Shanhui Fan, Stanford University
14:15 - 15:00  Slow Light Waveguide Using High Contrast Gratings
               - Weimin Zhou, Army Research Labs

15:00-15:30  Tea & Coffee Break

15:30-17:30  Poster Session 4 (Chair: Martin Kamp)
15:30 - 16:30  Poster Introduction (3 min. each)
16:30 - 17:30  Poster Viewing

18:30-21:30  Free Evening

Tuesday, August 14, 2012 (Paul G. Allen Building, Stanford University)

8:30-9:00  Registration

9:00-10:30  Session Tu1 InGaN Quantum Dots and Manipulation of Optical Signals
            (Chair: Weimin Zhou)
9:00 - 9:45  InGaN Quantum Dots for White Lighting Applications
            - Yi Luo, Tsinghua University
9:45 - 10:30  Dynamics of Optically Injected Mode-Locked Lasers
            - Guillaume Huyet, Tyndall University

10:30-11:00  Tea & Coffee Break

11:00-12:30  Session Tu2 Photonics and Metadevices (Chair: Guillaume Huyet)
11:00 - 11:45  Photonics Below Diffraction Limit: Waveguide, Lasers, Cavities and Integrated Laser Circuits
               - Xiang Zhang, University of California, Berkeley
Silicon Photonics: Whither Goest Thou? (Co-Chairs: Tingye Li and TP Lee)
Panelists: Hong Liu, Google; David Miller, Stanford; Mehdi Asghari, Kotura

Silicon photonics has emerged from a state of "Crouching Tiger, Hidden Dragon" to become the "Technology of Choice" for datacom applications. It is now being commercialized for optical interconnects in super-computers and data centers. As its performance and cost-effectiveness improve, its applications will extend to telecom as well as on-chip communications. Furthermore, innovative opportunities exist in sensing and bio-medical arenas. Technology-wise, development in the nano regime could lead to unforeseen potential applications. This rump session will include presentations by panelists and discussions with audience participation of the present state-of-the-art of silicon photonics, developments in datacom and telecom areas, and forward-looking research toward future potential applications.

15:30-16:00 Tea & Coffee Break

Identifying New Technologies and Applications for Fun and Profit
(Chair: James Harris)
Panelists: Cliff Higgerson, Walden International; Winston Fu, USVP; Marianne Wu, Mohr Davidow

When the laser was first demonstrated in 1960, many thought it was "an invention looking for an application". Now, applications of lasers are ubiquitous. Although small markets for gas and solid-state lasers existed for R&D applications, the first significant application of the laser was that of the semiconductor laser for lightwave communications in the mid 1970s followed by the mass market created by CD players and CDs in the 1980's with general recognition by the public that lasers were every day useful devices upon which they depended. Identifying a new technology and application for fun is easy, but difficult for profit. To successfully identify a new technology and application involves understandings of the performance and cost limits of the technology and its competitors, the economics of the application, the timing of the market, and business acumen. This rump session will consist of presentations and discussions by panelists from the industrial and investment sectors, as well as from the academe, with participation from the audience.

18:30-21:30 Award Banquet (Stanford Faculty Club)