

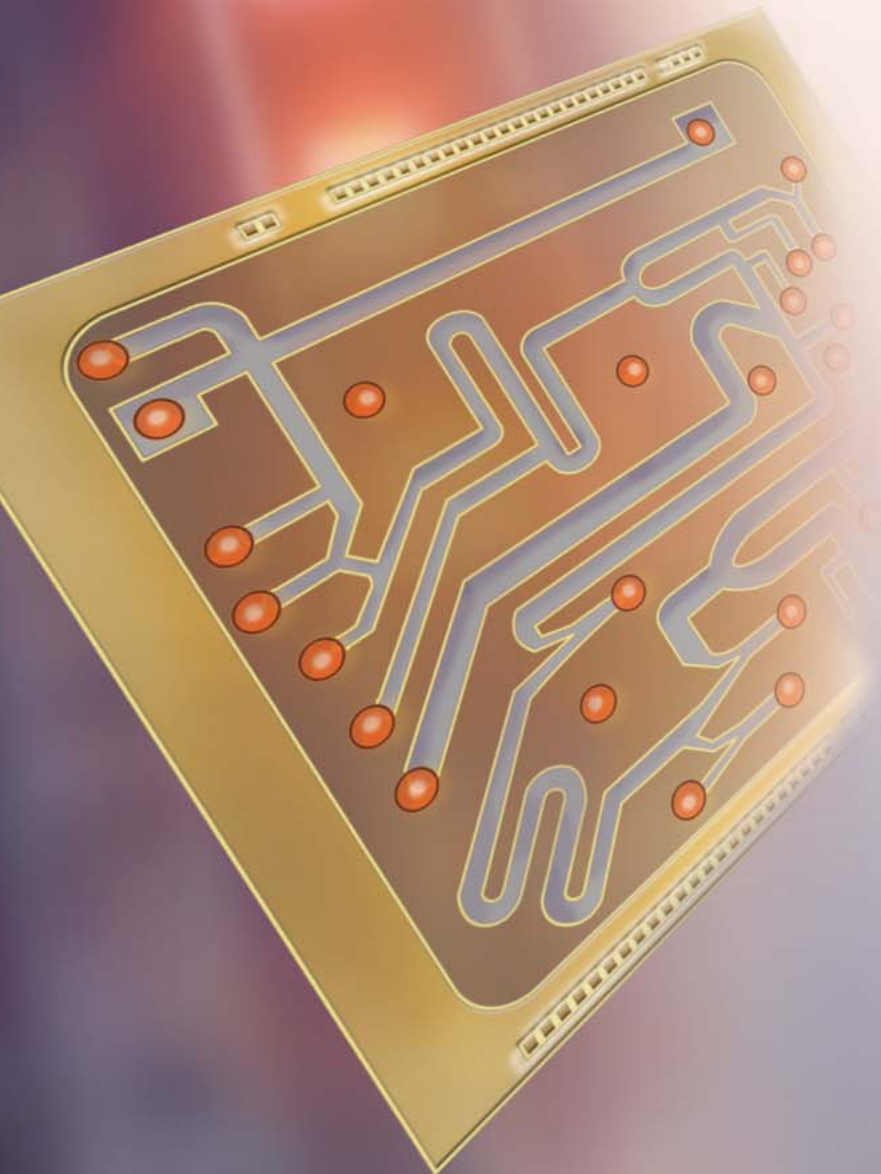
Technical Program


SPIE
OpticsEast

*Photonics for Applications in Industry,
Life Sciences, and Communications*

1–4 October 2006

Hynes Convention Center, Boston, Massachusetts USA



 The International Society
for Optical Engineering

Nanophotonics for Communication: Materials, Devices, and Systems III

Conference Chairs: **Martina Gerken**, Univ. Karlsruhe (Germany); **Nibir K. Dhar**, Army Research Lab.; **Achyut K. Dutta**, Banpil Photonics; **M. Saif Islam**, Univ. of California/Davis

Program Committee: **Alyssa B. Apsel**, Cornell Univ.; **Connie J. Chang-Hasnain**, Univ. of California/Berkeley; **Shanhui Fan**, Stanford Univ.; **Philippe M. Fauchet**, Univ. of Rochester; **Ahalapitiya H. Jayatissa**, Univ. of Toledo; **Sanjay Krishna**, The Univ. of New Mexico; **Michal F. Lipson**, Cornell Univ.; **Jony Jiang Liu**, Army Research Lab.; **Gernot S. Pomrenke**, Air Force Office of Scientific Research; **Dennis W. Prather**, Univ. of Delaware; **Hideyuki Sotobayashi**, National Institute of Information and Communications Technology (Japan); **Mehmet F. Yanik**, Stanford Univ.

Monday 2 October

Plenary Session

Hynes Conv. Ctr. Room 100 Mon. 9:30 am to 12:00 pm

Chairs: **Achyut K. Dutta**, Banpil Photonics, Inc.; **Werner Weiershausen**, T-Systems Enterprise Services GmbH (Germany)

9:30 am: **The NSF/SBIR Innovation Model** (*Invited Paper, Presentation Only*), **M. S. Nair**, National Science Foundation

Coffee Break 10:10 to 10:40 am

10:40 am: **Prospects of silicon photonics for future VLSI interconnects** (*Invited Paper, Presentation Only*), **M. J. Paniccia**, Intel Corp.

11:20 am: **Flexible optical transport networks: demands and trends on new Layer 2 techniques** (*Invited Paper, Presentation Only*), **G. J. Eilenberger**, Alcatel SEL AG (Germany)

Lunch Break 12:00 to 1:30 pm

SESSION 1

Hynes Conv. Ctr. Room 102 Mon. 1:30 to 3:10 pm

Nanophotonics for Interconnection

Chairs: **Martina Gerken**, Univ. Karlsruhe (Germany); **Hilmi V. Demir**, Bilkent Univ. (Turkey)

Keynote

1:30 pm: **Applications of nanophotonics to classical and quantum information technology** (*Invited Paper*), **R. G. Beausoleil**, Hewlett-Packard Labs. [6393-01]

2:05 pm: **Rapid micro-optical prototyping technology for fabricating optical interconnection modules at the MCM and PCB level** (*Invited Paper*), **C. Debaes**, **M. Vervaeke**, **J. Van Erps**, **L. Desmet**, **H. Ottevaere**, **V. Gomez**, **P. Vynck**, **S. Van Overmeire**, **Y. Ishii**, **A. Herrmann**, **H. Thienpont**, Vrije Univ. Brussel (Belgium) [6393-02]

2:30 pm: **Nanopillar coupled periodic waveguides: from basic properties to applications** (*Invited Paper*), **D. N. Chigrin**, Univ. Bonn (Germany) ... [6393-03]

2:55 pm: **Coupled-mode theory for stimulated Raman scattering in high-Q/Vm silicon photonic band gap nanocavity lasers**, **X. Yang**, **C. W. Wong**, Columbia Univ. [6393-04]

Coffee Break 3:10 to 3:30 pm

SESSION 2

Hynes Conv. Ctr. Room 102 Mon. 3:30 to 4:15 pm

Negative Refractive Index Materials

Chairs: **Nibir K. Dhar**, Army Research Lab.; **Achyut K. Dutta**, Banpil Photonics, Inc.

3:30 pm: **Realization of 3D isotropic negative index materials using self-assembled microfabrication technology**, **V. J. Logeeswaran**, **M. S. Islam**, **M. Chan**, **D. A. Horsley**, Univ. of California/Davis; **W. Wu**, **S. Wang**, **R. S. Williams**, Hewlett-Packard Labs. [6393-05]

3:45 pm: **Fabrication of optical negative index meta-structure at sub-10 micron using nanoimprint lithography** (*Presentation Only*), **W. Wu**, **Z. Yu**, Hewlett-Packard Labs.; **Y. Liu**, Univ. of California/Berkeley; **P. Chaturvedi**, Univ. of Illinois at Urbana-Champaign; **E. Kim**, Univ. of California/Berkeley; **A. Bratkovski**, **E. Ponizovskaya**, Hewlett-Packard Labs.; **N. X. Fang**, Univ. of Illinois at Urbana-Champaign; **X. Zhang**, Univ. of California/Berkeley; **S. Wang**, **R. S. Williams**, Hewlett-Packard Labs. [6393-06]

4:00 pm: **Transmission and reflection of highly anisotropic layered semiconductor structures with plasmonic resonances** (*Presentation Only*), **A. J. Hoffman**, Princeton Univ. and Lucent Technologies; **L. V. Alekseyev**, **E. E. Narimanov**, **C. F. Gmachl**, Princeton Univ.; **D. L. Sivco**, Lucent Technologies/Bell Labs. [6393-07]

SESSION 3

Hynes Conv. Ctr. Room 102 Mon. 4:15 to 5:40 pm

Nanodevices: Quantum-dots, Nanowires, and Nanocrystals I

Chairs: **Hideyuki Sotobayashi**, National Institute of Information and Communications Technology (Japan); **Martina Gerken**, Univ. Karlsruhe (Germany)

Keynote

4:15 pm: **Prospect of quantum dot lasers and single photon sources for advanced optical communication systems** (*Invited Paper, Presentation Only*), **Y. Arakawa**, The Univ. of Tokyo (Japan) [6393-08]

4:50 pm: **Nonlinear absorption of highly stacked InAs quantum dot layers on an InP(311) substrate** (*Invited Paper*), **T. Isu**, National Institute of Information and Communications Technology (Japan) and CREST JST (Japan); **J. Inoue**, **K. Akahane**, **M. Tsuchiya**, National Institute of Information and Communications Technology (Japan) [6393-09]

5:15 pm: **Sb-based quantum dot for creating novel light-emitting devices for optical communications** (*Invited Paper*), **N. Yamamoto**, **K. Akahane**, **S. Gozu**, **A. Ueta**, **N. Ohtani**, **M. Tsuchiya**, National Institute of Information and Communications Technology (Japan) [6393-10]

Tuesday 3 October

SESSION 4

Hynes Conv. Ctr. Room 102 Tues. 8:30 to 10:15 am

Nanodevices: Quantum-dots, Nanowires, and Nanocrystals II

Chairs: **Hideyuki Sotobayashi**, National Institute of Information and Communications Technology (Japan);
Martina Gerken, Univ. Karlsruhe (Germany)

8:30 am: **Electrodeposition of semiconductor nanowires and detailed characterization of their growth quality** (*Invited Paper*), K. Yu-Zhang, D. Z. Guo, J. Mallet, Univ. de Reims Champagne-Ardenne (France); M. Molinari, Univ. of Rochester; A. Loualiche, M. Troyon, Univ. de Reims Champagne-Ardenne (France) [6393-11]

8:55 am: **Superconducting nanowire single-photon detectors for applications** (*Invited Paper, Presentation Only*), K. K. Berggren, V. Anant, E. Dauler, Massachusetts Institute of Technology; A. Kerman, MIT Lincoln Lab.; K. M. Rosfjord, J. Yang, Massachusetts Institute of Technology; G. N. Gol'tsman, B. M. Voronov, Moscow State Pedagogical Univ. (Russia) [6393-12]

9:20 am: **Photonic devices and systems embedded with nanocrystals for new functionality** (*Invited Paper*), H. V. Demir, Bilkent Univ. (Turkey) . [6393-13]

9:45 am: **Observations of optical nonlinearities in strongly quantum confined PbSe nanocrystals for all-optical tunable nanophotonics**, C. J. Chen, J. I. Dadap, Columbia Univ.; J. Urban, C. B. Murray, IBM Thomas J. Watson Research Ctr.; R. M. Osgood, Jr., C. W. Wong, Columbia Univ. [6393-14]

10:00 am: **Heteroepitaxial growth of InP nanowires on silicon surfaces with large diameters** (*Presentation Only*), M. S. Islam, I. Kimukin, C. D. Johns, Univ. of California/Davis; S. Yi, Lumileds Lighting [6393-15]

Coffee Break 10:15 to 10:45 am

SESSION 5

Hynes Conv. Ctr. Room 102 Tues. 10:45 am to 12:20 pm

Nanophotonic Switching Devices

Chairs: **M. Saif Islam**, Univ. of California/Davis;
Nibir K. Dhar, Army Research Lab.

10:45 am: **Photonically engineered nanostructures: device concepts and material characterization for all-optical switching** (*Invited Paper, Presentation Only*), S. Jochim, N. Moll, IBM Zürich Research Lab. (Switzerland); S. Gulde, ETH Zürich (Switzerland); B. J. Offrein, R. F. Mahrt, IBM Zürich Research Lab. (Switzerland) [6393-16]

11:10 am: **Coherent phonons in nanostructures** (*Invited Paper*), T. Dekorsy, Univ. Konstanz (Germany) [6393-17]

11:35 am: **Active manipulation of surface plasmons in metal-molecule-metal devices** (*Presentation Only*), R. Pala, K. Shimizu, N. A. Melosh, M. L. Brongersma, Stanford Univ. [6393-18]

11:50 am: **Ultrafast all-optical bistability in AlGaAs photonic crystals**, C. Husko, C. W. Wong, Columbia Univ. [6393-19]

12:05 pm: **Design of a 1:N switch using nonlinear optical materials in one-dimensional photonic nanostructures**, F. Gloeckler, S. Peters, M. Gerken, U. Lemmer, Univ. Karlsruhe (Germany) [6393-20]

✓ Posters-Tuesday

A poster reception, with authors present at their posters, will be held Tuesday evening from 6:00 to 7:30 pm in the Hynes Convention Center Exhibit Hall A. Light refreshments will be served. Poster authors may begin displaying their posters after Noon on Monday and will be asked to leave their posters up until 7:30 pm on Tuesday. All posters must be posted by 5:00 pm on Tuesday. Poster authors, see p. 76 for setup instructions.

✓ All-optical wavelength conversion configuration with increased extinction ratio, Z. Zalevsky, Bar-Ilan Univ. (Israel); D. Goldring, D. Mendlovic, Tel-Aviv Univ. (Israel) [6393-22]

Course of Related Interest

Register for courses and get full course descriptions at the SPIE Registration desk.

SC801 Optoelectronic Devices: Introduction to Physics and Simulation (Pipek) Tuesday, 8:30 am to 12:30 pm