

## CURRICULUM VITAE (12/15/2016)

### PHILIPPE M. FAUCHET

Dean of the School of Engineering  
Professor of Electrical Engineering  
Vanderbilt University  
PMB 351826; 2301 Vanderbilt Place  
Nashville TN 37235-1826

Tel: 615.322.0720; Fax: 615.343.8006  
e-mail: philippe.fauchet@vanderbilt.edu

<http://engineering.vanderbilt.edu/eecs/faculty-staff/philippe-fauchet.php>

### EDUCATION

Ph.D., Applied Physics, Stanford University, Stanford, California, January 1984.  
M.S., Engineering, Brown University, Providence, Rhode Island, June 1980.  
Ingénieur Civil Electricien, Faculté Polytechnique de Mons, Belgium, June 1978.

### EMPLOYMENT (ADMINISTRATIVE)

**Dean**, School of Engineering, Vanderbilt University, 2012 – present  
**Chairman**, Department of Electrical and Computer Engineering, University of Rochester, 2010 - 2012.  
**Director**, Energy Research Initiative, University of Rochester, 2008 – 2012.  
**Chairman**, Department of Electrical and Computer Engineering, University of Rochester, 1998 - 2004.  
**Director**, Center for Future Health, University of Rochester, 1998 – 2004.

### EMPLOYMENT (ACADEMIC)

**Professor**, Department of Electrical Engineering and Computer Sciences, Vanderbilt University, 2012 – present.  
**Visiting Professor**, Department of Electrical and Computer Engineering, University of Rochester, 2012 - 2015.  
**Professor** of Materials Science, University of Rochester, 2004 – 2012.  
**Distinguished Professor** (Endowed Chair), Department of Electrical and Computer Engineering, University of Rochester, 2002 - 2012.  
**Professor** of Biomedical Engineering, University of Rochester, 2001 – 2012.  
**Professor** of Optics, University of Rochester, 1994 - 2012.  
**Affiliated Faculty**, Department of Biomedical Engineering, University of Rochester, 1998 - 2001.

**Professor** of Physics & Astronomy, University of Rochester, Rochester, 1995 – 1998 and 2008 - 2012.

**Professor** of Electrical and Computer Engineering and **Senior Scientist**, Laboratory for Laser Energetics, University of Rochester, 1993 - 2002.

**Associate Professor** of Electrical Engineering and **Scientist**, Laboratory for Laser Energetics, University of Rochester, 1990 - 1993.

**Assistant Professor** of Electrical Engineering, Princeton University, Princeton, NJ, 1984 - 1990.

**Visiting Professor**, Université de Paris VI, June/July 1985.

**Acting Assistant Professor** of Electrical Engineering, Stanford University, Stanford, CA, 1983 - 1984.

**IBM Post-doctoral Fellow** in the Edward L. Ginzton Laboratory, Stanford University, Stanford, CA, 1983 - 1984.

**Research Assistant** in the Department of Applied Physics, Stanford University, Stanford, CA, 1980 - 1983.

## MANAGEMENT EXPERIENCE

- In 2012, Dr. Fauchet became the Dean of the School of Engineering at Vanderbilt University. The School includes five departments and a general engineering division. It offers eight undergraduate majors and eight Ph.D. programs. It includes over 1450 undergraduate students and nearly 500 graduate students. The faculty, which in 2012 was composed of 85 tenured/tenure-track faculty and 46 professors of the practice, research professors, and adjuncts, now includes 90 tenured/tenure track faculty and is expected to reach 100 in less than two years. The School receives well over \$70M in sponsored research and is the home for a number of prominent research institutes.

As the Dean, Dr. Fauchet is responsible for all the activities of the School, included but not limited to curriculum development, setting research priorities, hiring new faculty members, fund raising, coordination with other schools within Vanderbilt, outreach to alumni, the local industrial base, and other stakeholders, and overall strategic planning. Dean Fauchet received approval from the Board of Trust to construct a 230,000 sq. ft. Engineering and Science building, which he designed in close collaboration with the Wilson Architects firm and other key stakeholders on campus. This building had its partial opening in August 2016 and is expected to be fully operational early in 2017. It contains an innovation center, a clean room, an imaging suite, a number of laboratories for engineering research groups, three classrooms and a high percentage of “social space.” He has also expanded the footprint of the School by moving a multidisciplinary theory and modeling group into 8,000 sq. ft. of new, dedicated space, and by leasing a 20,000 sq. ft. high bay laboratory to support research on reliability of materials and large structures. In 2014, after considerable input from the faculty and using a bottom-up approach, Dean Fauchet developed a strategic plan for the School, which focuses on the creation of multidisciplinary “intellectual neighborhoods,” fosters multi-school collaborations, innovation and entrepreneurship, and sets clear goals to increase diversity in the faculty.

- In 2008, Dr. Fauchet created the University of Rochester's Energy Research Initiative, whose goal was to help the University become a major player in this critical area by coordinating and expanding its research and educational programs in renewable energy sources. The Initiative, which regrouped faculty members from multiple departments from engineering, the sciences, and social sciences, and had participants from the schools of Business and Education, was inserted in the College's strategic plans for growth. Dr. Fauchet's roles were to foster collaborations, bring block grants, and enhance visibility through symposia and seminars. The ERI won a 5-year, \$3.2M training grant from the National Science Foundation that will support 30 Ph.D. students working on distributed energy from the sun.
- Dr. Fauchet was the Chair of the Department of Electrical and Computer Engineering from April 1998 to June 2004. Under his leadership, the name of the Department was changed from Electrical Engineering to Electrical and Computer Engineering and the undergraduate curriculum was completely re-organized to reflect the revised departmental priorities. A strategic plan calling for significant growth of the department was developed and implemented. Eight new tenured or tenure-track faculty members have been hired during his tenure as Chair, including the first female faculty member and the first African-American faculty member. He became Chair of the Department again from July 2010 until February 2012.
- Dr. Fauchet created the Center for Future Health in 1998 and served as its founding director until December 2004. The Center included faculty members from many disciplines, including Engineering and Science departments and the School of Medicine and Dentistry. The Center was supported by a consortium of companies, foundations, and governmental agencies. The ~ 8,000 sq. ft. Center space, located in the School of Medicine and Dentistry, included a prototype of a smart medical home of the future. Dr. Fauchet was responsible for intellectual leadership, for fostering and implementing collaborative efforts and integrative activities, for fund raising from foundations, companies, and government, and for supervising industrial interactions with sponsors. Seed funding from the Center led to research grants supported by NSF, NIH and other agencies, many of which are active today and total well in excess of \$10M.
- In the 1980's, Professor Fauchet was one of the originators of Princeton University's Center for Photonics and Opto-Electronic Materials. He was Princeton University's representative in Trenton when the plans for funding such a center were developed and he co-wrote the funding application. In the 1990's, he secured group funding from the NSF to create a Femtosecond Laser Facility at the University of Rochester's Laboratory for Laser Energetics. This facility remained in existence until Professor Fauchet left the University of Rochester in 2012.

## **RESEARCH INTERESTS**

Professor Fauchet's research interests are in photonics, energy, and the semiconductor/biology interface, all using silicon-based nanoscience and nanotechnology. His group is involved in

multidisciplinary projects including but not limited to, silicon-based light sources and lasers; silicon photonic bandgap structures for optical modulation and switching; intra-chip optical interconnects; nonlinear optics in silicon nanostructures; materials science and fundamental physics of nanoscale silicon objects; electrical and optical silicon-based biosensors; in-vitro and in-vivo cell growth on nanostructured silicon; silicon nanomembranes for particle separation; betavoltaic and photovoltaic applications of nanostructured silicon; plasmonic-based solar cells. In the past, he has also worked on ultrafast phenomena in semiconductors, superconductors, and polymers, ultrafast optoelectronics, optical characterization of semiconductors, and laser-solid interactions. In 1998, he created the Center for Future Health, where engineers and physicians develop affordable technology that can be used at home and can assist communities in their efforts to upgrade their members' care. In 2008, he created the University of Rochester's Energy Research Initiative, a university-wide effort to coordinate and expand the university's research and educational activities in all areas of related to energy.

### **TEACHING ACTIVITIES (UNIVERSITY OF ROCHESTER)**

At the University of Rochester, Dr. Fauchet taught undergraduate and graduate Electrical and Computer Engineering courses, ranging from the first Circuits course offered in the fall semester of the sophomore year to advanced graduate courses in Optoelectronics. In particular, he has taught one undergraduate level course, ECE 111 "Introduction to signals and circuits" and three graduate level courses, ECE 590 "Energy for the 21<sup>st</sup> century," ECE 589 "Preparing for academic, industrial, and government careers in engineering and science," and ECE 580 "Nano-electro-opto-bio". The sophomore-level course provided an introduction to DC and AC circuits. The three graduate-level courses were offered to students from the various departments in the School of Engineering and Applied Sciences and from several science departments.

- ECE 590 aimed at providing graduate students and well-prepared seniors a succinct, yet complete and critical introduction to the different means of producing energy. Topics covered by this course included fossil fuels (oil, gas, coal); nuclear, hydro, wind; new sources of renewable energy (solar, biomass/biofuels); fusion; energy transport (hydrogen generation, fuel cells); economic aspects of energy production and utilization; system engineering aspects.
- ECE 589 prepared Ph.D. students and post-docs in engineering and the sciences for an academic, industrial, or government career. This objective was achieved by examining how universities and other institutions function, what young faculty members are expected to do and how they can become successful, and how Ph.D. students can identify the type of position they want and make themselves attractive in the market place. The course featured presentations by guest lecturers from the University of Rochester, other institutions (e.g., private-public; doctoral-undergraduate), and industry or government laboratories; and discussions led by the instructor and lecturers on key topics of importance to faculty candidates and untenured faculty members.

- ECE 580 was a graduate-level introduction to nanoscience (giving nanometer-size objects properties their constituent material does not have in Nature) and nanotechnology (the use of these objects to perform useful functions in devices). The purposes of this course were to provide an introduction to the scientific foundations of nanoscience and the materials science that makes it possible, and to focus on developments in three major domains of applications, electronics, photonics, and biology/medicine. The course included a review of relevant topics in quantum mechanics, rigorous derivations of the electronic and optical properties of nanometer-sized objects, a survey of the major fabrication techniques, and critical reviews of current examples of the use of nanoscience and nanotechnology.

### **PROFESSIONAL SOCIETY MEMBERSHIP**

Member of AAAS, ASEE, APS, IEEE, MRS, OSA, SPIE

### **AWARDS**

- Elected Fellow of the National Academy of Inventors, 2017.
- Elected Fellow of the American Association for the Advancement of Science, 2017.
- Recipient of the William H. Riker University Award for Excellence in Graduate Teaching, 2011.
- Elected Fellow of the Materials Research Society, 2011.
- Elected Fellow of the SPIE – The International Society for Optical Engineering, 2010.
- Recipient of an endowed chair as Distinguished Professor of Electrical and Computer Engineering, 2002.
- Elected Fellow of the Institute of Electrical and Electronics Engineers (IEEE), November 1999.
- Elected Fellow of the American Physical Society (APS), November 1998.
- Elected Fellow of the Optical Society of America (OSA), February 1998.
- Prix Guibal-Devillez, 1990–1993.
- Alfred Rheinstejn Class of 1911 Faculty Award, 1988.
- Alfred P. Sloan Research Fellowship, Sept. 1988 – Sept. 1990.
- NSF Presidential Young Investigator Award, 1987–1992.
- IBM Faculty Development Award, 1985–1987.
- Prix Macquet, 1984.
- IBM Post-doctoral Fellowship, 1983–1984.
- Materials Research Society 1983 Student Award Winner.
- Rotary International Foundation Fellowship 1979–1980.
- Belgian American Educational Fellowship, 1978–1979.
- Prix Honoré Moiny, 1979.
- Prix des Electriciens du Hainaut, 1978.

**ADVISORY ACTIVITIES**

- October 2013- October 2016: Scientific Advisory Board Member, Leibniz-Institut für Festkörper und Werkstoffforschung, Dresden, Germany.
- August 2013-July 2016: Board of Trustees Member, Adventure Science Center, Nashville, TN.
- April 2013-present: Conseil d'Administration, Membre Extérieur, Université de Technologie de Troyes, Troyes, France.
- April 2011-present: Advisory Board Member, SiLight Corporation, San Jose, CA.
- September 2010-October 2016: Chairman of the International Advisory Board, INSiAVA Inc., South Africa.
- January 2008-present: Board Member (Chairman from 2008 to 2010), SiMPore Inc., Rochester, NY.
- January 2008-present: Scientific Committee Member, Fondation "Nanosciences aux limites de la nanoélectronique," Grenoble, France.
- January 2007-2008: co-Founder and Chairman of the Advisory Board, SiMPore Inc., Rochester, NY.
- December 2006: Program Evaluator, CIMAP (Centre de Recherche sur les Ions, les Matériaux et la Photonique), Caen, France.
- September 2004-present: Member, Scientific Advisory Board, BetaBatt Inc, Houston, TX.
- May 2004-May 2005: Chair, Scientific Advisory Board, IatroQuest Corporation, Montreal, Canada.
- 2004-2005: Member, Center for Aging Services (CAST) Commission, American Association of Homes and Services for the Aging, Washington DC.
- December 2002-present: Member, Scientific Advisory Board, Center for Subsurface Sensing and Imaging Systems, Northeastern University, Boston.
- 2002-2004: Scientific Council Member, NanoQuebec (Quebec University Network in Nanosciences and Nanotechnologies), Canada.
- 2002-2004: Advisory Board Member, Rehabilitation Engineering Research Center on Technology for Successful Aging, University of Florida, Gainesville.
- November 2001: Program Evaluator, FOM (Foundation for Fundamental Research on Matter) Photon Physics in Optical Materials, Leiden, Netherlands.
- 2001-2003: Policy Board Member, DARPA CBOM (Center for Biochemical Optoelectronic Microsystems), Cornell University
- 1986: Member, Working Group on Photonics, New Jersey Commission on Science and Technology.

**PROFESSIONAL ACTIVITIES**

- January 2015: Co-Chair, Frontiers in Biological Detection: From Nanosensors to Systems, SPIE Photonics West, San Francisco.
- January 2014: Co-Chair, Frontiers in Biological Detection: From Nanosensors to Systems, SPIE Photonics West, San Francisco.

- January 2013: Co-Chair, Frontiers in Biological Detection: From Nanosensors to Systems, SPIE Photonics West, San Francisco.
- December 2012: Co-Chair, Symposium on Group IV Semiconductor nanostructures and Applications, MRS Fall meeting, Boston.
- October 2012: Chair, Laser Science XXVIII Meeting, Rochester NY.
- January 2012: Chair, Frontiers in Biological Detection: From Nanosensors to Systems, SPIE Photonics West, San Francisco.
- October 2011: Organizer of the Optics and Alternative Energy Sources Symposium at the International Laser Science Conference, San Jose.
- September 2011: International Advisory Committee Member, IEEE International Conference on Group IV Photonics, London, England.
- May 2011: Co-Chair, Symposium on Transport and Photonics in Si-based Nanomaterials and Nanodevices, European MRS Meeting, Nice, France.
- January 2011: Chair, Frontiers in Biological Detection: From Nanosensors to Systems, SPIE Photonics West, San Francisco.
- January 2011: Program Committee Member, Symposium on Silicon Photonics, SPIE Photonics West Meeting, San Francisco.
- September 2010: International Advisory Committee Member, IEEE International Conference on Group IV Photonics, Beijing, China.
- March 2010: Scientific Committee Member, Seventh International Conference on Porous Semiconductors: Science and Technology, Valencia, Spain.
- January 2010: Chair, Frontiers in Pathogen Detection: From Nanosensors to Systems, SPIE Photonics West Meeting, San Francisco.
- January 2010: Program Committee Member, Symposium on Silicon Photonics, SPIE Photonics West Meeting, San Francisco.
- September 2009: International Advisory Committee Member and Program Committee Member, IEEE International Conference on Group IV Photonics, San Francisco.
- August 2009: Program Committee Member, Symposium on Biosensing, SPIE Optics + Photonics, San Diego.
- January 2009: Chair, Frontiers in Pathogen Detection: From Nanosensors to Systems, SPIE Photonics West Meeting, San Jose.
- January 2009: Program Committee Member, Symposium on Silicon Photonics, SPIE Photonics West Meeting, San Jose.
- January 2009: Program Committee Member, Symposium on Nanoscale Imaging, Sensing and Actuation for Biomedical Applications VI, SPIE Photonics West Meeting, San Jose.
- September 2008: International Advisory Committee Member, IEEE International Conference on Group IV Photonics, Italy.
- August 2008: Program Committee Member, Symposium on Biosensing, SPIE Optics + Photonics, San Diego
- May 2008: Co-Chair, Symposium on Frontiers of Silicon Photonics, European MRS Meeting, Strasbourg, France.
- March 2008: International Advisory Board Member, Sixth International Conference on Porous Semiconductors: Science and Technology, Mallorca, Spain.

- January 2008: Program Committee Member, Symposium on Nanoscale Imaging, Sensing and Actuation for Biomedical Applications, SPIE Photonics West Meeting, San Jose.
- January 2008: Program Committee Member, Symposium on Silicon Photonics, SPIE Photonics West Meeting, San Jose.
- September 2007: International Advisory Committee Member, IEEE International Conference on Group IV Photonics, Tokyo, Japan.
- February 2007: Director, 4<sup>th</sup> Optoelectronic and Photonic Winter School on Biophotonics, Sardinia (Trento), Italy.
- January 2007: Program Committee Member, Symposium on Nanoscale Imaging, Spectroscopy, Sensing and Actuation for Biomedical Applications, SPIE Photonics West Meeting, San Jose.
- January 2007: Program Committee Member, Symposium on Silicon Photonics, SPIE Photonics West Meeting, San Jose.
- Nov-Dec 2006: Guest Editor, special issue of the IEEE Journal of Selected Topics in Quantum Electronics devoted to Silicon Photonics.
- September 2006: International Advisory Committee Member, IEEE International Conference on Group IV Photonics, Ottawa, Canada.
- May 2006: Chair, Symposium on Silicon Nanocrystals for Electronic and Sensing Applications, European MRS Meeting, Nice, France.
- March 2006: International Advisory Board Member, Fifth International Conference on Porous Semiconductors: Science and Technology, Sitges-Barcelona, Spain.
- January 2006: Program Committee Member, Symposium on Nano/Biophotonics and Biomedical Applications, SPIE Photonics West Meeting, San Jose.
- January 2006: Program Committee Member, Symposium on Silicon Photonics, SPIE Photonics West Meeting, San Jose.
- October 2005; Program Committee Member, Symposium on Photonic Crystals and Photonic Crystal Fibers for Sensing Applications, SPIE Optics East, Boston.
- October 2005: Program Committee Member, Symposium on Nanophotonics for Communication: Materials and Devices II, SPIE Optics East, Boston.
- September 2005: Chair, Second IEEE International Conference on Group IV Photonics, Antwerp, Belgium.
- August 2005: Chair, Symposium on Tuning the Optical Response of Photonic Bandgap Structures, SPIE Optical Science and Technology Annual Meeting, San Diego.
- January 2005: Program Committee Member, Symposium on Silicon-Based and Hybrid Optoelectronics, SPIE Photonics West Meeting, San Jose.
- October 2004: Program Committee Member, Symposium on Lab-on-a-chip: Platforms, devices, and Applications, SPIE Optics East Meeting, Philadelphia.
- October 2004: Program Committee Member, Symposium on Nanophotonics for Communication: Materials and Devices, SPIE Optics East Meeting, Philadelphia.
- September 2004: International Advisory Committee, First IEEE International Conference on Group IV Photonics, Hong Kong.
- August 2004: Chair, Symposium on Tuning the Optical Response of Photonic Bandgap Structures, SPIE Optical Science and Technology Annual Meeting, Denver.



- May 2004: Co-Chair, Symposium on Si-Based Nanophotonics: Toward True Monolithic Integration, European MRS Meeting, Strasbourg, France.
- March 2004: International Scientific Committee Member, Fourth International Conference on Porous Semiconductors: Science and Technology, Cullera-Valencia, Spain.
- January 2004: Program Committee Member, Silicon-Based and Hybrid Optoelectronics, SPIE International Symposium on Optoelectronics, San Jose.
- May 2003: Emerging Photonics Subcommittee Chair, Photonics North Meeting, Montreal, Canada
- April 2003: co-Chair, MRS Symposium on Optoelectronics of Group IV-Based Materials, San Francisco
- January 2003: Program Committee Member, Silicon-Based and Hybrid Optoelectronics, SPIE International Symposium on Optoelectronics, San Jose.
- October 2002: Conference Advisor, The Knowledge Foundation's Second Annual International Conference on Photonic Nanostructure 2002, San Diego.
- June 2002, International Scientific Committee Member, Symposium on Si-Based Optoelectronics: Advances and Future Perspectives, E-MRS Meeting, Strasbourg, France.
- March 2002: International Scientific Committee Member, Third International Conference on Porous Semiconductors: Science and Technology, Tenerife, Spain.
- January 2002: Program Committee Member, Silicon-Based and Hybrid Optoelectronics, SPIE International Symposium on Optoelectronics, San Jose.
- January 2001: Program Committee Member, Ultrafast Phenomena in Semiconductors V, SPIE International Symposium on Optoelectronics, San Jose.
- December 2000: Chairman, MRS Symposium on "Nano- and Micro-Crystalline Semiconductor Materials and Structures," Boston.
- June 2000: Technical Committee Member, International Conference on Applications of Photonic Technology, Quebec City, Canada
- March 2000: Organizer and Instructor, Short Course on "Silicon Quantum Dots: Fundamentals And Application To Advanced And Future Nanoelectronic Devices," American Physical Society March Meeting, Minneapolis.
- March 2000: International Advisory Board Member, Second International Conference on Porous Semiconductors: Science and Technology, Madrid, Spain
- January 2000: Program Committee Member, Ultrafast Phenomena in Semiconductors IV, SPIE International Symposium on Optoelectronics, San Jose.
- May 1999: International Advisory Board Member, Nanomeeting-99, Minsk, Belarus.
- May 1999: Chairman, European MRS Symposium on "Micro- and Nano-Crystalline Semiconductors," Strasbourg, France.
- April 1999: General Co-Chair, Quantum Optoelectronics Conference, Snowmass.
- July 1998: Technical Committee Member, International Conference on Applications of Photonic Technology, Montreal, Canada.
- May 1998: Program Committee Member, International Quantum Electronics Conference, San Francisco.
- March 1998: International Scientific Committee Member, International Conference on Porous Semiconductors: Science and Technology, Mallorca, Spain.
- Materials Research Society Bulletin 1998 Volume Organizer.

- June 1997: Chairman, 2nd International Workshop on Light Emitting Low Dimensional Silicon Structures, Lagonissi, Greece
- Spring 1997: Program Committee Member, Quantum Electronics and Laser Science Conference, Baltimore.
- March 1997: Program Chairperson, Quantum Optoelectronics Conference, Lake Tahoe.
- February 1997: Program Committee Member, OSA Chemistry and Physics of Small-Scale Structures Topical Meeting, Santa Fe.
- December 1996: Chairman, MRS Symposium on “Advances in Nanocrystalline and Microcrystalline Semiconductors-1996,” Boston.
- October 1995: Organizer, International Symposium on Advanced Luminescent Materials, 188th Meeting of the Electrochemical Society, Chicago.
- May 1995: Scientific Committee Member, Symposium I, European Materials Research Society Meeting, Strasbourg, France.
- March 1995: Program Committee Member, Quantum Optoelectronics Conference, Dana Point.
- 1995-1998: Regional Editor, *Physica Status Solidi*.
- November 1994: Program Committee Member, IEEE Conference on “Applied Optical Diagnostics of Semiconductor Materials and Devices,” Boston.
- March 1994: Organizer, Focused Session on “Light Emission from Nanoscale Silicon Structures,” March Meeting of the American Physical Society, Pittsburgh.
- February 1994: Scientific Committee Member, Ecole des Houches on “Luminescence of Porous Silicon and Silicon Nanostructures,” Les Houches, France.
- Fall 1993: General Meeting Chairman, Materials Research Society Fall Meeting, Boston.
- Spring 1993: Program Committee Member, Quantum Electronics and Laser Science Conference, Baltimore.
- Fall 1992: Chairman, MRS Symposium on “Microcrystalline Semiconductors: Materials Science and Devices,” Boston.
- Fall 1992: Chairman, IEEE Conference on “Applied Optical Diagnostics of Semiconductor Materials and Devices,” Boston.
- Fall 1992: Program Committee Member, Annual Meeting of the Lasers and Electro-Optics Society of IEEE, Boston.
- February 1992-present: Evaluation Panel Member for the National Science Foundation Minority Graduate Fellowship Program.
- 1991–1993: Associate Editor, *IEEE Circuits and Devices Magazine*.
- Fall 1990: Chairman, IEEE Conference on “Applied Optical Diagnostics of Semiconductor Materials and Devices,” Boston.
- Fall 1990: Program Committee Member, Annual Meeting of the Lasers and Electro-Optics Society of IEEE, Boston.
- Spring 1990: Program Committee Member, Conference on Lasers and Electro-Optics, Anaheim.
- Spring 1990: Program Committee Member, Sarnoff Symposium, Princeton.
- Spring 1990: Co-chairman, SPIE Conference on “Applications of Ultrashort Laser Pulses in Science and Technology,” The Hague (Netherlands).

- Fall 1989: Chairman, MRS Symposium on “Materials Issues in Microcrystalline Semiconductors,” Boston.
- Fall 1989: Program Committee Member, Electrochemical Society Symposium on “Photonics,” Hollywood.
- Spring 1989–1990: Vice-president, LEOS Princeton Section of IEEE.
- May 1989: Guest Editor (with J. Tsang) of IEEE Journal of Quantum Electronics, Vol. 25: special issue on Laser Diagnostics of Semiconductors.
- January 1988: Chairman, SPIE Conference on “Laser Optics for Intracavity and Extracavity Applications,” Los Angeles.
- March 1987: Program Committee Member, SPIE Conference on “Modern Optical Characterization Techniques for Semiconductors and Semiconductor Devices,” Bay Point.
- 1986-present: Member, various NSF Panel Reviews.
- 1984 - present: Reviewer for NSF, ARO, DOE, USDA, several foreign governments and funding agencies, the MICRO Program, the Keck Foundation, the Soros Foundation, the Petroleum Research Fund, Harper and Row, Gordon and Breach, Aksen Assoc. Inc., IEEE Journal of Quantum Electronics, IEEE Photonics Letters, Applied Physics Letters, Journal of Applied Physics, Optics Letters, Optics Express, Applied Optics, Journal of the Optical Society of America, Optics Communications, Journal of the Society for Information Display, Journal of Non-Crystalline Solids, Thin Solid Films, Solid State Communications, Journal of the Electrochemical Society, Scripta Materialia, Physica Status Solidi, Journal of Vacuum Science and Technology, Europhysics Letters, Physical Review, Physical Review Letters, Advanced Materials, Journal of Physical Chemistry, Science, Nature, Nature Photonics, and Nature Materials.
- February 1984: Organizer of the First Bay Area Student Meeting on Optics, Quantum Electronics and Applications, Stanford University.

#### **Ph.D. THESIS**

“Picosecond Laser Induced Surface Transformations in Semiconductors,” Advisor: Prof. A. E. Siegman

#### **Ph.D. THESES SUPERVISED**

- University of Rochester: 37 as primary advisor (15 in ECE, 7 in Physics, 7 in Materials Science, 6 in Optics, 2 in Biomedical Engineering) + 1 as secondary advisor (in Chemistry)
- Princeton University: 3 as primary advisor (in EE)
- Technical University of Munich: 1 as research advisor (in Technical Physics)

#### **FUNDING HISTORY**

- Continuous funding from 1985 to 2013, from sources that include NSF, ARO, ONR, AFOSR, NIH, NREL, SRC, the states of New York and New Jersey, companies including Alcoa, Rochester Gas & Electric, Solarex, Xerox, Kodak, Corning, Diagnostic Products Corporation, Johnson & Johnson, Battelle, BetaBatt, Brothers, IBM, Motorola, Agere, Semitool, and Intel, and foundations such as the W.M. Keck Foundation.

**PATENTS**

- 20140027808 “Lateral carrier injection infrared light emitting diode structure, method and applications.” (patent application)
- 8,619,358 “Electrically pumped extrinsic semiconductor optical amplifier with slot waveguide.”
- 8,518,276 “Ultrathin porous nanoscale membranes, methods of making, and uses thereof.”
- 8,182,590 “Ultrathin porous nanoscale membranes, methods of making, and uses thereof.”
- 8,119,394 “Cell culture devices having ultrathin porous membrane and uses thereof.”
- 7,922,795 “Ultrathin nanoscale membranes, methods of making, and uses thereof.”
- 7,266,284 “Method for controlling one or more temperature dependent optical properties of a structure and a system and product thereof.”
- 7,250,323 “Methods of making energy conversion devices with substantially contiguous depletion regions.”
- 7,226,733 “Microcavity biosensor, methods of making, and uses thereof.”
- 6,017,773 “Stabilizing process for porous silicon and resulting light emitting device.”

**BOOKS**

18. *Frontiers in Biological Detection: From Nanosensors to Systems VII*, edited by B. L. Miller, P. M. Fauchet, and B. T. Cunningham (SPIE- The International Society for Optical Engineering, Bellingham, WA, 2015).
17. *Frontiers in Biological Detection: From Nanosensors to Systems VI*, edited by B. L. Miller, P. M. Fauchet, and B. T. Cunningham (SPIE- The International Society for Optical Engineering, Bellingham, WA, 2014).
16. *Frontiers in Biological Detection: From Nanosensors to Systems V*, edited by B. L. Miller and P. M. Fauchet, (SPIE- The International Society for Optical Engineering, Bellingham, WA, 2013).
15. *Frontiers in Biological Detection: From Nanosensors to Systems IV*, edited by B. L. Miller and P. M. Fauchet, (SPIE- The International Society for Optical Engineering, Bellingham, WA, 2012).
14. *Frontiers in Biological Detection: From Nanosensors to Systems III*, edited by B. L. Miller and P. M. Fauchet, (SPIE- The International Society for Optical Engineering, Bellingham, WA, 2011).
13. *Frontiers in Pathogen Detection: From Nanosensors to Systems II*, edited by P. M. Fauchet and B. L. Miller, (SPIE- The International Society for Optical Engineering, Bellingham, WA, 2010).
12. *Frontiers in Silicon-Based Photonics*, edited by L. Dal Negro, P. M. Fauchet, and F. Iacona (European Materials Research Society – Physica E, volume 41, Issue 6, Elsevier, 2009)
11. *Frontiers in Pathogen Detection: From Nanosensors to Systems*, edited by P. M. Fauchet (SPIE- The International Society for Optical Engineering, Bellingham, WA, 2009).
10. *Biophotonics*, edited by L. Pavesi and P. M. Fauchet (Springer, Berlin, 2008).
9. *Tuning the Optical Response of Photonic Bandgap Structures II*, edited by P. M. Fauchet and P. V. Braun (SPIE- The International Society for Optical Engineering, Bellingham, WA, 2005).

8. *Tuning the Optical Response of Photonic Bandgap Structures*, edited by P. M. Fauchet and P. V. Braun (SPIE- The International Society for Optical Engineering, Bellingham, WA, 2004).
7. *Optoelectronics of Group-IV Based Materials*, edited by T. Gregorkiewicz, R. G. Elliman, P. M. Fauchet, and J. A. Hutchby (Materials Research Society, Warrendale, PA, 2003).
6. *Microcrystalline and Nanocrystalline Semiconductors – 2000*, edited by P. M. Fauchet, J. M. Buriak, L. T. Canham, N. Koshida, and B. E. White, Jr. (Materials Research Society, Warrendale, PA, 2001).
5. *Advances in Microcrystalline and Nanocrystalline Semiconductors - 1996*, edited by R. W. Collins, P. M. Fauchet, I. Shimizu, J.- C. Vial, and T. Shimada (Materials Research Society, Pittsburgh, PA, 1997).
4. *Advanced Luminescent Materials*, edited by D. J. Lockwood, P. M. Fauchet, N. Koshida, and S. R. J. Brueck (The Electrochemical Society, Pennington, NJ, 1996).
3. *Microcrystalline Semiconductors: Materials Science and Devices*, edited by P. M. Fauchet, C. C. Tsai, L. T. Canham, I. Shimizu, and Y. Aoyagi (Materials Research Society, Pittsburgh, PA, 1993).
2. *Materials Issues in Microcrystalline Semiconductors*, edited by P. M. Fauchet, K. Tanaka, and C. C. Tsai (Materials Research Society, Pittsburgh, PA, 1990).
1. *Laser Optics for Intracavity and Extracavity Applications*, edited by P. M. Fauchet and K. H. Guenther (SPIE- The International Society for Optical Engineering, Bellingham, WA, 1988).

#### INVITED AND PLENARY CONFERENCE PRESENTATIONS (since 2002)

##### 2016

- “*Silicon Photonic Crystals For Sensing*,” Invited Presentation at the European Materials Research Society Meeting, May 2016, Lille, France.
- “*Nanopores In Ultra Thin Silicon Films: From Materials Science To Applications*,” Invited Presentation at the European Materials Research Society Meeting, May 2016, Lille, France.
- “*Vanderbilt’s New Trans-Institutional Science And Engineering Powerhouse*,” Keynote Presentation at the 28<sup>th</sup> Annual Conference on College and University Science and Engineering Facilities Conference, April 2016, Scottsdale.

##### 2015

- “*Best Practices For High Impact, “Watershed” Science Facility Initiatives And Capital Projects*,” Invited Presentation at the 27<sup>th</sup> Annual Conference on College and University Science Facilities, October 2015, Boston (with Bill Wilson and Michael Maloof).
- “*Silicon Photonic Crystal Devices*,” Invited Presentation at the European Materials Research Society Meeting, May 2015, Lille, France.

##### 2014

- “*Long-Term Strategic Science & Engineering Planning: Beyond Immediate Program Needs and Square Feet*,” Invited Presentation at the 26<sup>th</sup> Annual Conference on College and University Science Facilities, November 2014, Scottsdale (with Bill Wilson and Samir Sjourri).

*"Nanoscale Silicon As An Optical Material,"* Plenary Presentation at the SPIE Optics+Photonics Meeting, August 2014, San Diego.

**2012**

*"Slow Light And Microcavities For Optical Signal Processing In The SOI Platform,"* Invited Presentation at the Frontiers in Optics Meeting, October 2012, Rochester NY.

*"Photonic Crystals In Biosensing,"* Invited Presentation given at the Laser Science XXVIII Meeting, October 2012, Rochester NY.

*"Plasmonics And Photovoltaics On The Cheap,"* Invited Presentation given at the IEEE Photonics Conference, September 2012, San Francisco Airport.

*"A Healthy Future In Renewable Energy,"* Seminar at the Smithsonian, June 2012, Washington DC.

**2011**

*"Optical Signal Processing In SOI Chips Using Photonic Crystals,"* Invited Presentation given at IEEE South African EDS/Photonics/CAS Mini-Conference, September 2011, Pretoria, South Africa.

*"Biosensing Systems With Photonic Crystal Microcavities Using The SOI Platform,"* Invited Presentation given at the 2011 Sensors, MEMS, and Electro-Optic System (SMEOS) Conference, September 2011, Kruger National Park, South Africa

*"Nanoplasmonics For Cheap Solar Cells,"* Invited Presentation given at the Metamaterials and Plasmonics: Novel Materials, Designs, and Application, May 2011, Buffalo

*"Optical Signal Processing With Photonic Crystals In The SOI Platform,"* Invited Presentation given at Information Photonics 2011, May 2011, Ottawa, Canada

*"The Silicon-Biology Interface: Biosensing With Photonic Crystal Microcavities And Filtration Using Nanocrystalline Porous Membranes,"* Invited Presentation given at the 15<sup>th</sup> Brazilian Workshop on Semiconductor Physics, April 2011, Juiz de Fora, Brazil

**2010**

*"Photonic Crystal Microcavities For Label-Free Multiplexed Biosensing,"* Invited Presentation given at the Fall Meeting of the Materials Research Society, December 2010, Boston

*"Nanometer-Thick Porous Nanocrystalline Silicon Membranes: Materials Science And Applications,"* Invited Presentation given at the Fall Meeting of the Materials Research Society, December 2010, Boston

*"Information Processing And Sensing With Photonic Crystal Microcavities In SOI,"* Invited Presentation given at the 2010 International Conference on Solid State Devices and Materials, September 2010, Tokyo, Japan

*"Chemical and Biological Sensing with Photonic Crystal Devices Made of Silicon,"* Invited Presentation given at the Workshop on Frontiers in Silicon Photonics, August 2010, Beijing, China

*"Photonic Crystals For Information Processing And Sensing With The SOI Platform,"* Invited Presentation given at the IEEE Photonics Society 2010 Summer Topical Meetings, July 2010, Cancun, Mexico

*“Ultracompact Silicon Photonic Crystal Devices For Sensing And Information Processing,”* Invited Presentation given at the European Materials Research Society Meeting, May 2010, Strasbourg, France

*“Silicon Photonic Crystal Microcavities For Biosensing,”* Invited Presentation given at EUROPT(R)ODE X – Tenth Conference on Optical Chemical Sensors and Biosensors, March 2010, Prague, Czech Republic

## 2009

*“Biosensing With Silicon-Based Photonic Structures,”* Plenary Presentation at the Annual Meeting of the IEEE Photonics Society, September 2009, Antalya, Turkey

*“Slow Light For Fast Computing,”* Plenary Presentation at the SPIE Photonics North Meeting, May 2009, Quebec City

*“Silicon Based Photonic Crystal Biosensors,”* Invited Presentation at the New York State Section of the American Physical Society, April 2009, Rochester

*“On-Chip Optical Interconnects: From Architecture And Network On Chip To Devices,”* Invited Presentation at the SPIE Photonics West Meeting, January 2009, San Jose

## 2008

*“Nanometer-Thin Silicon Layers: Preparation, Properties, And Applications,”* Invited Presentation at the Fall Meeting of the Materials Research Society, November 2008, Boston

*“Nonlinear Optical Effects In Silicon Waveguides,”* Invited Presentation at the European Materials Research Society, May 2008, Strasbourg, France (given by G.P. Agrawal)

*“Nanometer-Thin Porous Membranes Made Of Silicon: Fabrication, Properties, and Applications,”* Invited Presentation at the SPIE Photonics West Meeting, January 2008, San Jose

## 2007

*“Charge- And Size-Based Separation Of Macromolecules Using Novel Ultrathin Silicon Membranes,”* Invited Presentation at the IEEE LEOS Annual Meeting, October 2007, Lake Buena Vista, FL

*“On-Chip Optical Interconnects: Challenges And Critical Directions,”* Invited Presentation at the European Optical Society Topical Meeting on Optical Microsystems, September-October 2007, Capri, Italy (given by E.G. Friedman)

*“Charge- And Size-Based Separation Of Macromolecules Using Novel Ultrathin Silicon Membranes,”* Invited Presentation at NanoBio’07, June 2007, San Francisco

*“The Present And Future Of Nanostructured Silicon For Photonic Applications,”* Invited Presentation at the 3<sup>rd</sup> International Workshop on Semiconductor Nanostructures SEMINANO’07, June 2007, Bad Honnef, Germany



- “Tunable Two-Dimensional Photonic Crystal Microcavities In SOI,”* Invited Presentation at the Spring Meeting of the Materials Research Society, April 2007, San Francisco
- “Surface Induced Localized Charge Of Single Imperfect CdSe Quantum Rods,”* Invited Presentation at the SPIE Photonics West Meeting, January 2007, San Jose (given by T. D. Krauss)
- “Towards An Electrically-Pumped Silicon Laser,”* Invited Presentation at the SPIE Photonics West Meeting, January 2007, San Jose (given in lieu of T. L. Koch)
- “Silicon Photonic Crystal Structures For Sensing,”* Invited Presentation at the SPIE Photonics West Meeting, January 2007, San Jose

**2006**

- “Silicon-Based Photonic Bandgap Structures For Biosensing,”* Invited Presentation at the Fall Meeting of the Materials Research Society, November 2006, Boston
- “Silicon LEDs and Lasers,”* Invited Presentation at the IEEE LEOS Annual Meeting, October 2006, Montreal, Canada
- “Silicon-Based Optical Biosensors,”* Invited Presentation at the Third IEEE International Conference on Group IV Photonics, September 2006, Ottawa, Canada
- “Silicon-Based Photonic Crystal Biosensors,”* Invited Presentation at the IEEE Optofluidics: Emerging Technologies and Applications Summer Topical Meeting, July 2006, Quebec City, Canada
- “On-Chip Silicon-Based Optical Interconnects: Needs, Challenges And A Roadmap,”* Invited Presentation at the European Materials Research Society Meeting, May-June 2006, Nice, France
- “A Roadmap For Silicon-Based On-Chip Optical Interconnects,”* Invited Presentation at the Spring Meeting of the Materials Research Society, April 2006, San Francisco
- “Tunable Photonic Crystals From Porous Silicon: Applications In Optical Interconnects And Biosensors,”* Invited Presentation at the 5<sup>th</sup> International Conference on Porous Semiconductors- Science and Technology, March 2006, Barcelona, Spain
- “Resonant Structures For Biodetection Using Silicon Photonic Structures,”* Invited Presentation at the SPIE Photonics West Meeting, January 2006, San Jose
- “Silicon-Based Photonic Bandgap Microsensors: From The Laboratory To Smart Bandages,”* Invited Presentation at the SPIE Photonics West Meeting, January 2006, San Jose

**2005**

- “Light Emitting Devices and Lasers with Silicon Nanostructures,”* Invited Presentation at the Fall Meeting of the Materials Research Society, December 2005, Boston
- “Photonic Bandgap Structures: A new Silicon-based Platform for Biological and Chemical Sensing,”* Invited Presentation at the Knowledge Foundation’s Photonic Nanosystems 2005, November 2005, San Francisco
- “Active Building Blocks for Silicon Photonic Devices,”* Invited Presentation at SPIE Optics East, October 2005, Boston (given by S.M. Weiss)

- “Porous Silicon Superlattices for Detection of Biomolecules,”* Invited Presentation at NanoSecurity 2005, October 25, 2005, Halle, Germany
- “Biosensors using Porous Silicon Photonic Bandgap Structures,”* Invited Presentation at SPIE Optics East, October 2005, Boston (given by H. Ouyang)
- “Porous Silicon Optical and Electrical Biosensors,”* Invited Presentation at the 208<sup>th</sup> Meeting of the Electrochemical Society, October 2005, Los Angeles
- “Silicon-Based Light Sources; A Review,”* Invited Presentation at SPIE Photonics West, January 2005, San Jose
- “Nanoscale Silicon Optical Biosensors,”* Invited Presentation at SPIE Photonics West, January 2005, San Jose

**2004**

- “Optical Biosensors for Rapid Biodetection,”* Invited Presentation at the Knowledge Foundation Meeting, December 2004, Washington DC.
- “Nanoscale Silicon Optical Biosensors,”* Invited Presentation at the Fall Meeting of the Materials Research Society, December 2004, Boston
- “Biophotonic Sensing of Harmful Pathogens,”* Invited Presentation at the SPIE Photonics East Meeting, October 2004, Philadelphia
- “Nanoscale and Nanostructured Silicon for Optoelectronics,”* Invited Presentation at the International Conference on Polycrystalline Semiconductors 2004, September 2004, Potsdam, Germany
- “Control and Elimination of the Effect of Ambient Temperature Fluctuations on Photonic Bandgap Device Operation,”* Invited Presentation at the SPIE International Symposium on Optical Science and Technology, August 2004, Denver (given by S.M. Weiss)
- “The Center for Future Health’s Personal Health System: General Overview and Smart Biosensor Technology,”* Invited Presentation at the XIIth Winter Course of the Centro de Alta Tecnología en Analisis de Imagen, March 2004, Tenerife, Spain
- “Biosensors for the Detection of Harmful Pathogens,”* Invited Presentation at the SPIE Photonics West Meeting, January 2004, San Jose

**2003**

- “Active and Passive Photonic Bandgap Structures with Porous Silicon,”* Invited Presentation at the Fall Meeting of the Materials Research Society, December 2003, Boston
- “Intra-Chip Optical Interconnects: The Role of Nanoscale Silicon,”* Invited Presentation at the SPIE International Symposium on Optical Science and Technology, August 2003, San Diego
- “Advanced Technology: Implications for the Ageing and Aged Care,”* Closing Plenary Presentation at the International Association of Homes and Services for the Ageing’s Fifth International Conference, June 2003, Sydney, Australia
- “Stimulated Emission in Nanocrystalline Silicon Superlattices,”* Invited Presentation at the Spring Meeting of the Materials Research Society, April 2003, San Francisco (given by J. Ruan)

- “Maintaining Independence and High Quality of Life with a Smart Medical Home,”* Invited Presentation at the American Association of Homes and Services for the Aging, April 2003, Washington DC
- “Silicon-Based Biosensors for Rapid Pathogen Detection,”* Invited Presentation at the 225<sup>th</sup> American Chemical Society National Meeting, March 2003, New Orleans
- “Localized Charge Properties of Individual CdSe Quantum Rods,”* Invited Presentation at the 225<sup>th</sup> American Chemical Society National Meeting, March 2003, New Orleans (given by T. Krauss)
- “Live Longer, Live Better in a Smart Medical Home,”* Invited Presentation at the Meeting of the American Society of Interior Designers, March 2003, Scottsdale

**2002**

- “The Role of Nanoscale Silicon in Optical Interconnects,”* Invited Presentation at the Fall Meeting of the Materials Research Society, December 2002, Boston
- “The Role of Silicon Nanostructures in the Future of the Microelectronic Industry,”* Invited Presentation at the Nanoelectronic Planet Meeting, November 2002 New York City
- “Active Photonic Bandgap Structures,”* Invited Presentation at the 2<sup>nd</sup> Annual Knowledge Foundation’s Conference on Photonic Nanostructures, October 2002, San Diego
- “Optical Amplification in Nanocrystalline Silicon Superlattices,”* Invited Presentation at the NATO Advanced Research Workshop-Toward the First Silicon Laser, September 2002, Trento, Italy
- “Silicon Nanostructures for Optical Interconnects,”* Invited Presentation at the IEEE Nano Meeting, August 2002, Washington DC
- “Porous Silicon Optical Biosensors: Control over Multiple Length Scales,”* Invited Presentation at the SPIE International Symposium on Optical Science and Technology, July 2002, Seattle
- “Nanostructured Silicon Devices: Control over Multiple Length Scales,”* Invited Presentation at the European Materials Research Society Meeting, June 2002, Strasbourg, France
- “Live Longer, Live Better in a Smart Medical Home,”* Invited Presentation at the Meeting of the American Society of Interior Designers, June 2002, Chicago
- “Silicon Optical Biosensors: Control over Multiple Length Scales,”* Invited Presentation at the Spring Meeting of the Materials Research Society, April 2002, San Francisco
- “(Porous) Silicon Based Biosensors,”* Invited Presentation at the Knowledge Foundation Biochips 2002 International Conference, March 2002, Richmond

**PUBLICATIONS**

12/15/2016: *h-index of 52 and 13,225 citations (web of science) or h-index of 61 and 18,997 citations (googlescholar)*

422. “Efficient Energy Transfer Between Si Nanostructures And Er located At A Controlled Distance,” H. Krzyzanowska, Y. Fu, K. S. Ni, and P. M. Fauchet, ACS Photonics **3**, 564-570 (2016).

421. "Numerical Study Of Sensitivity Enhancement In A Photonic Crystal Microcavity Biosensor Due To Optical Forces," A. T. Heiniger, B. L. Miller, and P. M. Fauchet, *Opt. Express* **23**, 25072-25083 (2015).
420. "Plasmonic Effects In Ultrathin Amorphous Silicon Solar Cells: Performance Improvements With Ag Nanoparticles On The Front, The Back, And Both," J. D. Winans, C. Hungerford, K. Shome, L. J. Rothberg, and P. M. Fauchet, *Opt. Express* **23**, A92-A105 (2015)
419. "Influence of Silicon Dioxide Capping Layers On Pore Characteristics In Nanocrystalline Silicon Membranes," C. Qi, C. C. Striemer, T. R. Gaborski, J. L. McGrath, and P. M. Fauchet, *Nanotechnology* **26**, 055706, (2015).
418. "Highly Porous Silicon Membranes Fabricated From Silicon Nitride/ Silicon Stacks," C. Qi, C. C. Striemer, T. R. Gaborski, J. L. McGrath, and P. M. Fauchet, *Small* **10**, 2946-2953 (2014).
417. "Chirped Photonic Crystal Mode Converters For Broad-Band Coupling With Highly Dispersive Photonic Crystal Microring Resonators," S. M. Lo, J. Y. Lee, S. M. Weiss, and P. M. Fauchet, in *Silicon Photonics IX*, J. A. Kubby and G. T. Reed, editors, Proc. SPIE (SPIE, Bellingham, WA, 2014), Vol. 8990, pp. 8990E1 1-10 (2014).
416. "Suppression Of Free Carrier Absorption In Silicon Using Multislotted SiO<sub>2</sub>/nc-Si Waveguides," Y. J. Fu, H. Krzyzanowska, K. S. Ni, and P. M. Fauchet, *Optics Lett.* **38**, 4849-4852 (2013).
415. "High-Performance, Low-Voltage Electroosmotic Pumps With Molecularly Thin Silicon Nanomembranes," J. L. Snyder, J. Getpreecharsawas, D. Z. Fang, T. R. Gaborski, C. C. Striemer, P. M. Fauchet, D. A. Borkholder, and J. L. McGrath, *Proc. Nat. Acad. Sci. of the U.S.A* **110**, 18425-18430 (2013).
414. "Selective Virus Detection In Complex Sample Matrices With Photonic Crystal Cavities," S. Pal, A. R. Yadav, M. A. Lifson, J. E. Baker, P. M. Fauchet, and B. L. Miller, *Biosens. Bioelectron.* **44**, 229-234 (2013)
413. "1-D And 2-D Photonic Crystals As Optical Methods For Amplifying Biomolecular Recognition," S. Pal, P. M. Fauchet, and B. L. Miller, *Anal. Chem.* **84**, 8900-8908 (2012) (Invited)
412. "Electroluminescence From Er-Doped SiO<sub>2</sub>/nc-Si Multilayers Under Lateral Carrier Injection," H. Krzyzanowska, K. S. Ni, Y. Fu, and P. M. Fauchet, *Mat. Sci. Eng B-Advanced Functional Solid-State Materials* **177**, 1547-1550 (2012).
411. "Ballistic And Non-Ballistic Gas Flow Through Ultrathin Nanopores," M. N. Kavalenka, C. C. Striemer, D. Z. Fang, T. R. Gaborski, J. L. McGrath, and P. M. Fauchet, *Nanotechnology* **23**, 145706 (2012).
410. "Chemical Capacitive Sensing Using Ultrathin Flexible Nanoporous Electrodes," M. N. Kavalenka, C. C. Striemer, J.-P. S DesOrmeaux, J. L. McGrath, and P. M. Fauchet, *Sensor. Actuat. B-Chemical* **162**, 22-26 (2012).
409. "Slow-Light Dispersion In Periodically Patterned Silicon Microring Resonators," J. Y. Lee and P. M. Fauchet, *Optics Lett.* **37**, 58-60 (2012).
408. "Observation Of Spectral And Temporal Polarization Oscillations Of Optical Pulses In A Silicon Waveguide," B. A. Daniel, J. Y. Lee, P. M. Fauchet, and G. P. Agrawal, *Appl. Phys. Lett.* **99**, 201104 (2011)

407. "On The Scaling Behavior Of Dipole And Quadrupole Modes In Coupled Plasmonic Nanoparticle Pairs," J. P. Clarkson, J. Winans, and P.M. Fauchet, *Opt. Mater. Express* **1**, 970-979 (2011).
406. "Experimental Demonstration Of Evanescent Coupling And Photon Confinement In Oxide-Clad Silicon Microcavities," S. P. Anderson and P. M. Fauchet, *Optics Lett.* **36**, 2698-2700 (2011).
405. "Silicon Photonic Crystal Nanocavity-Coupled Waveguides For Error-Corrected Optical Biosensing," S. Pal, E. Guillermain, R. Sriram, B. L. Miller, and P. M. Fauchet, *Biosens. Bioelectron.* **26**, 4024-4031 (2011).
404. "A Novel Technique For Localized Formation Of SOI Active Regions," B. Veeramachaneni, J. D. Winans, S. Hu, D. Kawamura, P. M. Fauchet, and K. D. Hirschman, *Phys. Stat. Sol. (c)* **8**, 1865-1868 (2011).
403. "Isolated Silicon Waveguides Via Porous Silicon Formation By Targeted Fluorine Doping," J. D. Winans, J. Y. Lee, B. Veeramachaneni, S. Hu, D. Kawamura, K. Witt, K. D. Hirschman, and P. M. Fauchet, *Phys. Stat. Sol. (a)* **208**, 1446-1448 (2011).
402. "Towards An Optical Concentrator For Nanoparticles," J. E. Baker, R. Sriram, P. M. Fauchet, and B. L. Miller, in *Frontiers in Biological Detection: From Nanosensors to Systems III*, B. L. Miller and P. M. Fauchet, editors, Proc. SPIE (SPIE, Bellingham, WA, 2011) Vol. 7888, pp. 78880M 1-6 (2011).
401. "Optical And Fluidic Design For Guaranteed Trapping And Detection Of Particles In A Silicon Microfluidic And Photonic Crystal System," A. T. Heiniger, B. L. Miller, and P. M. Fauchet, in *Frontiers in Biological Detection: From Nanosensors to Systems III*, B. L. Miller and P. M. Fauchet, editors, Proc. SPIE (SPIE, Bellingham, WA, 2011) Vol. 7888, pp. 78880L 1-8 (2011).
400. "An Experimental And Theoretical Of Molecular Separations By Diffusion Through Ultrathin Nanoporous Membranes," J. L. Snyder, A. Clark Jr., D. Z. Fang, T. R. Gaborski, C. C. Striemer, P. M. Fauchet, and J. L. McGrath, *J. Mem. Sci.* **369**, 119-129 (2011).
399. "High-Performance Separation Of Nanoparticles With Ultrathin Porous Nanocrystalline Silicon Membranes," T. R. Gaborski, J. L. Snyder, C. C. Striemer, D. Z. Fang, M. Hoffman, P. M. Fauchet, and J. L. McGrath, *ACS Nano* **4**, 6973-6981 (2010).
398. "Methods For Controlling The Pore Properties In Ultra-Thin Nanocrystalline Silicon Membranes," D. Z. Fang, C. C. Striemer, T. R. Gaborski, J. L. McGrath, and P. M. Fauchet, *J. Phys.: Condens. Matter.* **22**, 454134 (2010).
397. "Ion-Selective Permeability Of An Ultrathin Nanoporous Silicon Membrane As Probed By Scanning Electrochemical Microscopy Using Micropipet-Supported ITIES Tips," R. Ishimatsu, J. Kim, P. Jing, C. C. Striemer, D. Z. Fang, P. M. Fauchet, J. L. McGrath, and S. Amemiya, *Anal. Chem.* **82**, 7127-7134 (2010).
396. "Pore Size Control Of Ultra-Thin Silicon Membranes By Rapid Thermal Carbonization," D. Z. Fang, C. C. Striemer, T. R. Gaborski, J. L. McGrath, and P. M. Fauchet, *Nano Lett.* **10**, 3904-3908 (2010).
395. "Ultra-Low Power Modulators Using MOS Depletion Into a High-Q SiO<sub>2</sub>-Clad Silicon 2-D Photonic Crystal Resonator," S. P. Anderson and P. M. Fauchet, *Opt. Express* **18**, 19129-19140 (2010).

394. "Metallized Ultrathin Porous Silicon Membranes For Biological Sensing Using SERS," K. Shome, M. Kavalenka, D. Z. Fang, and P. M. Fauchet, in *Frontiers in Pathogen Detection: From Nanosensors to Systems II*, P. M. Fauchet and B. L. Miller, editors, Proc. SPIE (SPIE, Bellingham, WA, 2010) Vol. 7553, pp. 75530F 1-9 (2010).
393. "Microcavities In Photonic Crystal Waveguides For Biosensor Applications," S. Pal, E. Guillermain, R. Sriram, B. Miller, and P. M. Fauchet, in *Frontiers in Pathogen Detection: From Nanosensors to Systems II*, P. M. Fauchet and B. L. Miller, editors, Proc. SPIE (SPIE, Bellingham, WA, 2010) Vol. 7553, pp. 755304 1-10 (2010).
392. "Lateral Electrical Injection Into Si/SiO<sub>2</sub> Horizontal Multislot Waveguides," S. P. Anderson, H. G. Yoo, K. Ni, and P. M. Fauchet, in *Silicon Photonics V*, J. A. Kubby and G. T. Reed, editors, Proc. SPIE (SPIE, Bellingham, WA, 2010), Vol. 7606, pp. 760614 1-9 (2010).
391. "Ultra-Low Energy Switches Based On Silicon Photonic Crystals For On-Chip Optical Interconnects," S. P. Anderson and P. M. Fauchet, in *Silicon Photonics V*, J. A. Kubby and G. T. Reed, editors, Proc. SPIE (SPIE, Bellingham, WA, 2010), Vol. 7606, pp. 76060R 1-8 (2010).
390. "Ultrafast Optical Switching Based On Nonlinear Polarization Rotation In Silicon Waveguides," J. Y. Lee, L. Yin, G. P. Agrawal, and P. M. Fauchet, *Opt. Express* **18**, 11514-11523 (2010).
389. "Porous Nanocrystalline Silicon Membranes As Highly Permeable And Molecularly Thin Substrates For Cell Culture," A. A. Agrawal, B. J. Nehilla, K. V. Reisig, T. R. Gaborski, D. Z. Fang, C. C. Striemer, P. M. Fauchet, and J. L. McGrath, *Biomaterials* **31**, 5408-5417 (2010).
388. "Conformal p-n Junctions In Macroporous Silicon For Photovoltaic Energy Conversion," J. P. Clarkson, G. G. See, B. Veeramachaneni, L. L. Gadeken, K. D. Hirschman, and P. M. Fauchet, *Phys. Stat. Sol. (c)* **6**, 1754-1758 (2009).
387. "Multi-Channel Biodetection Via Resonant Microcavities Coupled To A Photonic Crystal Waveguide," E. Guillermain and P. M. Fauchet, in *Frontiers in Pathogen Detection: From Nanosensors to Systems*, P. M. Fauchet, editor, Proc. SPIE (SPIE, Bellingham, WA, 2009), Vol. 7167, pp. 71670D1-D11 (2009).
386. "Optical Switching Using Nonlinear Polarization Rotation Inside Silicon Waveguides," L. Yin, J. Zhang, P. M. Fauchet, and G. P. Agrawal, *Optics Lett.* **34**, 476-478 (2009).
385. "Porous Silicon Optical Label-Free Biosensors," P.M. Fauchet, in *Device Applications of Silicon Nanocrystals and Nanostructures*, N. Koshida editor (Springer, NY, 2009), pp. 293-323 (2009).
384. "Optical Gain In Silicon Nanocrystal Waveguides Measured By The Variable Stripe Length Technique," H. Chen, J. H. Shin, and P. M. Fauchet, in *Silicon Nanophotonics*, L. Khriachtchev editor (World Scientific, Singapore, 2008), pp 89-117 (2008).
383. "Biodetection Using Silicon Photonic Crystal Microcavities," P. M. Fauchet, B. L. Miller, L. A. DeLouise, M. R. Lee, and H. Ouyang, in *Biophotonics*, L. Pavesi and P. M. Fauchet editors (Springer, Berlin, 2008), pp 101-126 (2008).
382. "Slow Light With Photonic Crystals For On-Chip Optical Interconnects," S. P. Anderson, A. R. Shroff, and P. M. Fauchet, *Adv. Opt. Technol.* **2008**, 293531 (2008) (Invited).

381. "Reflectance Analysis Of A Multilayer One-Dimensional Porous Silicon Structure: Theory And Experiment," J. J. Saarinen, S. M. Weiss, P. M. Fauchet, and J. E. Sipe, *J. Appl. Phys.* **104**, 013103 (2008).
380. "Birefringence And Optical Power Confinement In Horizontal Multi-Slot Waveguides Made Of Si And SiO<sub>2</sub>," H. G. Yoo, Y. Fu, D. Riley, J. H. Shin, and P. M. Fauchet, *Opt. Express* **16**, 8623-8628 (2008).
379. "Dielectric Constant Reduction In Silicon Nanostructures," H. G. Yoo and P. M. Fauchet, *Phys. Rev.* **B 77**, 115355 (2008).
378. "A Structure-Permeability Relationship Of Ultrathin Nanoporous Silicon Membrane: A Comparison With The Nuclear Envelope," E. Kim, H. Xiong, C. C. Striemer, D. Z. Fang, P. M. Fauchet, J. L. McGrath, and S. Amemiya, *J. Am. Chem. Soc.* **130**, 4230-43231 (2008).
377. "Optical Soliton In Silicon-On-Insulator Waveguides," J. Zhang, Q. Lin, G. Piredda, R. W. Boyd, G. P. Agrawal, and P. M. Fauchet, in *Silicon Photonics III*, J. A. Kubby and G. T. Reed, editors, Proc. SPIE (SPIE, Bellingham, WA, 2008), Vol. 6898, pp. 0X1-0X8 (2008).
376. "Photon Confinement In Multi-Slot Waveguides," Y. Fu, H. G. Yoo, D. Riley and P. M. Fauchet, in *Silicon Photonics III*, J. A. Kubby and G. T. Reed, editors, Proc. SPIE (SPIE, Bellingham, WA, 2008), Vol. 6898, pp. 0P1-0P8 (2008).
375. "Alleviating Thermal Constraints While Maintaining Performance Via Silicon-Based On-Chip Optical Interconnects," N. Nelson, G. Briggs, M. Haurylau, G. Chen, H. Chen, E. G. Friedman, P. M. Fauchet, and D. H. Albonese, in *Unique Chips and Systems*, E. John and J. Rubio editors (CRC Press, Boca Raton), pp 339-354 (2008).
374. "Manufacturable Nanoscale Membranes- Material Development And Biological Separations," T. R. Gaborski, C. C. Striemer, J. L. Snyder, D. Z. Fang, P. M. Fauchet, and J. L. McGrath, in *Proceeding of NSTI-Nanotech*, Vol. 4, pp 582-585 (2007).
373. "Ultrafast Photoluminescence Dynamics Of Nitride-Passivated Silicon Nanocrystals Using The Variable Stripe Length Technique," H. Chen, J. H. Shin, P. M. Fauchet, J.-Y. Sung, J.-H. Shin and G. Y. Sung, *Appl. Phys. Lett.* **91**, 173121 (2007).
372. "Nanoscale Microcavity Sensor For Single Particle Detection," M. R. Lee and P. M. Fauchet, *Optics Lett.* **32**, 3284-3286 (2007).
371. "Porous Silicon Electrical And Optical Biosensors," H. Ouyang, M. Archer, and P.M. Fauchet, in *Frontiers in Surface Nanophotonics: Principles and Applications*, D. L. Andrews and Z. Gaburro, editors (Springer, New York, 2007), pp 49-72 (2007).
370. "Anisotropic Nonlinear Response Of Silicon In The Near-Infrared Region," J. Zhang, Q. Lin, G. Piredda, R. W. Boyd, G. P. Agrawal, and P. M. Fauchet, *Appl. Phys. Lett.* **91**, 071113 (2007).
369. "Dispersion Of Silicon Nonlinearities In The Near Infrared Region," Q. Lin, J. Zhang, G. Piredda, R. W. Boyd, P. M. Fauchet, and G. P. Agrawal, *Appl. Phys. Lett.* **91**, 021111 (2007).
368. "Optical Soliton In A Silicon Waveguide," J. Zhang, Q. Lin, G. Piredda, R. W. Boyd, G. P. Agrawal, and P. M. Fauchet, *Opt. Express* **15**, 7682-7688 (2007).
367. "Photochemical Etching Of Silicon By Two-Photon Absorption," H. Ouyang, Y. Deng, W. H. Knox, and P. M. Fauchet, *Phys. Stat. Sol. (a)* **204**, 1255-1259 (2007).

366. "Predictions Of CMOS Compatible On-Chip Optical Interconnect," G. Chen, H. Chen, M. Haurylau, N. A. Nelson, D. H. Albonese, P. M. Fauchet, and E. G. Friedman, *Integration-The VLSI Journal* **40**, 434-446 (2007).
365. "Solvent Detection And Water Monitoring With A Macroporous Silicon Field-Effect Sensor," J. P. Clarkson, P. M. Fauchet, V. Rajalingam, and K. D. Hirschman, *IEEE Sensors Journ.* **7**, 329-335 (2007).
364. "Betavoltaic And Photovoltaic Energy Conversion In Three-Dimensional Macroporous Silicon Diodes," J. P. Clarkson, W. Sun, K. D. Hirschman, L. L. Gadeken and P. M. Fauchet, *Phys. Stat. Sol. (a)* **204**, 1536-1540 (2007).
363. "Porous Silicon As A Cell Interface For Bone Tissue Engineering," W. Sun, J. E. Puzas, T.-J. Sheu, and P. M. Fauchet, *Phys. Stat. Sol. (a)* **204**, 1429-1433 (2007).
362. "Nano-To Microscale Porous Silicon As A Cell Interface For Bone-Tissue Engineering," W. Sun, J. E. Puzas, T.-J. Sheu, X. Liu, and P. M. Fauchet, *Adv. Mater.* **19**, 921-924 (2007).
361. "Hybrid Photonic Crystal Microcavity Switches On SOI," S. P. Anderson, M. Haurylau, J. Zhang, and P. M. Fauchet, in *Silicon Photonics II*, J. A. Kubby and G. T. Reed, editors, Proc. SPIE (SPIE, Bellingham, WA, 2007), Vol. 6477, pp 647712 1-8 (2007).
360. "Two-Dimensional Silicon Photonic Crystal Based Biosensing Platform For Protein Detection," M. Lee and P. M. Fauchet, *Opt. Express* **15**, 4530-4535 (2007).
359. "Label-Free Quantitative Detection Of Protein Using Macroporous Silicon Photonic Bandgap Biosensors," H. Ouyang, L. A. DeLouise, B. L. Miller, and P. M. Fauchet, *Anal. Chem.* **79**, 1502-1506 (2007).
358. "Charge- And Size-Based Separation Of Macromolecules Using Ultrathin Silicon Membranes," C. C. Striemer, T. R. Gaborksi, J. L. McGrath, and P. M. Fauchet, *Nature* **445**, 749-753 (2007).
357. "Tunable Silicon-Based Light Sources Using Erbium Doped Liquid Crystals," S. M. Weiss, J. Zhang, P. M. Fauchet, V. V. Seregin, and J. L. Coffey, *Appl. Phys. Lett.* **90**, 031112 (2007).
356. "On-Chip Optical Interconnect Roadmap: Challenges And Critical Directions," M. Haurylau, G. Chen, H. Chen, J. Zhang, N. A. Nelson, D. H. Albonese, E. G. Friedman, and P. M. Fauchet, *IEEE Journ. Selected Topics in Quantum Electron.* **12**, 1699-1705 (2006).
355. "Electrically Tunable Silicon 2-D Photonic Bandgap Structures," M. Haurylau, S. P. Anderson, K. L. Marshall, and P. M. Fauchet, *IEEE Journ. Selected Topics in Quantum Electron.* **12**, 1527-1533 (2006).
354. "Porous Silicon One-Dimensional Photonic Crystals For Optical Signal Modulation," S. M. Weiss and P. M. Fauchet, *IEEE Journ. Selected Topics in Quantum Electron.* **12**, 1514-1519 (2006).
353. "Active Building Blocks For Silicon Photonic Devices," S. M. Weiss and P. M. Fauchet, in *Nanophotonics for Communication: Materials and Devices II*, N. K. Dhar, A. K. Dutta, and K. Asakawa, editors, Proc. SPIE (SPIE, Bellingham, WA, 2005), Vol. 6017, pp 85-94 (2005) (Invited).
352. "Nonlinear Optical Response Of Photonic Bandgap Structures Containing PbSe Quantum Dots," M. Haurylau, J. Zhang, S. M. Weiss, P. M. Fauchet, D. V. Martyshkin, V. I.



- Rupasov, and S. G. Krivoslykov, *Journ. Photochemistry and Photobiology A: Chemistry* **183**, 329-333 (2006).
351. "Ultrabroadband Parametric Generation And Wavelength Conversion In Silicon Waveguides," Q. Lin, J. Zhang, P. M. Fauchet, and G. P. Agrawal, *Opt. Express* **14**, 4786-4799 (2006).
350. "Quantitative Analysis Of The Sensitivity Of Porous Silicon Optical Biosensors," H. Ouyang, C. C. Striemer, and P. M. Fauchet, *Appl. Phys. Lett.* **88**, 163108 (2006).
349. "Electrical Modulation Of Silicon-Based Two-Dimensional Photonic Bandgap Structures," M. Haurylau, S. P. Anderson, K. L. Marshall, and P. M. Fauchet, *Appl. Phys. Lett.* **88**, 061103 (2006).
348. "Biosensing Using Porous Silicon Photonic Bandgap Structures," H. Ouyang and P. M. Fauchet, in *Photonic Crystals and Photonic Crystal Fibers for Sensing Applications*, H. H. Du editor (SPIE, Bellingham, WA, 2005) pp 600508 1-15 (Invited).
347. "Macroporous Silicon Sensor Arrays For Chemical And Biological Detection," J. P. Clarkson, V. Rajalingam, K. D. Hirschman, H. Ouyang, W. Sun, and P. M. Fauchet, *Mat. Res. Soc. Symp. Proc.* **869**, D321-D326 (2005).
346. "Macroporous Silicon Microcavities For Macromolecule Detection," H. Ouyang, M. Christophersen, R. Viard, B. L. Miller, and P. M. Fauchet, *Adv. Funct. Mater.* **15**, 1851-1859 (2005).
345. "Silicon Photonic Bandgap Biosensors," H. Ouyang, M. Lee, B. L. Miller, and P. M. Fauchet, in *Tuning the Optical Response of Photonic Bandgap Structures II*, P. M. Fauchet and P. V. Braun editors (SPIE, Bellingham, WA, 2005) pp 59260J 1-11.
344. "Electrical Tuning Of Silicon-Based 2-D Photonic Bandgap Structures," M. Haurylau, S. P. Anderson, K. L. Marshall, and P. M. Fauchet, in *Tuning the Optical Response of Photonic Bandgap Structures II*, P. M. Fauchet and P. V. Braun editors (SPIE, Bellingham, WA, 2005) pp 592603 1-12.
343. "Harvesting Betavoltaic And Photovoltaic Energy With Three Dimensional Porous Silicon Diodes," W. Sun, N. P. Kherani, K. D. Hirschman, L. L. Gadeken, and P. M. Fauchet, *Mat. Res. Soc. Symp. Proc.* **836**, 285-290 (2005).
342. "Hydrogel-Supported Optical-Microcavity Sensors," L. A. Delouise, P. M. Fauchet, B. L. Miller, and A. A. Pentland, *Adv. Mater.* **17**, 2203-2206 (2005).
341. "Thermal Tuning Of Silicon-Based One-Dimensional Photonic Bandgap Structures," S. M. Weiss and P. M. Fauchet, *Phys. Stat. Sol. (c)* **2**, 3278 (2005).
340. "Optical Properties And Tunability Of Macroporous Silicon 2-D Photonic Bandgap Structures," M. Haurylau, A. R. Shroff, and P. M. Fauchet, *Phys. Stat. Sol. (a)* **202**, 1477-1481 (2005).
339. "Enhanced Control Of Porous Silicon Morphology From Macropore To Mesopore Formation," H. Ouyang, M. Christophersen, and P. M. Fauchet, *Phys. Stat. Sol. (a)* **202**, 1396-1401 (2005).
338. "Charge Transport In Silicon Nanocrystal Arrays," R. Krishnan, Q. Xie, J. Kulik, X. D. Wang, T. D. Krauss, and P. M. Fauchet, *Mat. Res. Soc. Symp. Proc.* **832**, 201-206 (2005).
337. "Optical Sensor Based On Resonant Porous Silicon Structures," J. J. Saarinen, S. M. Weiss, P. M. Fauchet, and J. E. Sipe, *Opt. Express* **13**, 3754-3764 (2005).

336. "A Three Dimensional Porous Silicon p-n Diode For Betavoltaics And Photovoltaics," W. Sun, N. P. Kherani, K. D. Hirschman, L. L. Gadeken, and P. M. Fauchet, *Adv. Mater.* **17**, 1230-1233 (2005).
335. "Electrical Porous Silicon Chemical Sensor For Detection Of Organic Solvents," M. Archer, M. Christophersen, and P. M. Fauchet, *Sensor. Actuat. B-Chem* **106**, 347-357 (2005).
334. "Predictions Of CMOS Compatible On-Chip Optical Interconnect," G. Chen, H. Chen, M. Haurylau, N. Nelson, P. M. Fauchet, E. G. Friedman, and D. Albonesi, *Proceedings of the 2005 International Workshop on System Level Interconnect Prediction* (ACM Press, 2005), pp 13-20.
333. "Electrical And Thermal Modulation Of Silicon Photonic Bandgap Microcavities Containing Liquid Crystals," S. M. Weiss, H. Ouyang, J. Zhang, and P. M. Fauchet, *Opt. Express* **13**, 1090-1097 (2005).
332. "Optical Gain In Different Silicon Nanocrystal Systems," P. M. Fauchet, J. Ruan, H. Chen, L. Pavesi, L. Dal Negro, M. Cazzanelli, R. G. Elliman, N. Smith, M. Samoc, and B. Luther-Davies, *Optical Materials* **27**, 745-749 (2005).
331. "Tunable Photonic Bandgap Structures For Optical Interconnects," S. M. Weiss, M. Haurylau, and P. M. Fauchet, *Optical Materials* **27**, 740-744 (2005).
330. "Light Emission From Si Quantum Dots," P. M. Fauchet, *Materials Today*, January 2005, pp 26-33 (Invited).
329. "Integrated Sensor Array With A Configurable Network Interface For Chemical And Biological Detection," K. D. Hirschman, M. Archer, D. Presaud, V. Rajalingam, J. Clarkson, J. Mann, D. Phillips, W. Sun, and P. M. Fauchet, in *Lab-on-a-Chip: Platforms, Devices, and Applications*, L. A. Smith and D. Sobek editors (SPIE, Bellingham, WA, 2004), pp 205-212.
328. "Control And Elimination Of The Effect Of Ambient Temperature Fluctuations On Photonic Bandgap Device Operation," S. M. Weiss, M. Lee, M. Molinari, H. Ouyang, and P. M. Fauchet, in *Tuning the Optical Response of Photonic Bandgap Structures*, P. M. Fauchet and P. V. Braun editors (SPIE, Bellingham, WA, 2004) pp 144-155 (Invited).
327. "Biosensing With One Dimensional Photonic Bandgap Structure," H. Ouyang, L. A. DeLouise, M. Christophersen, B. L. Miller, and P. M. Fauchet, in *Tuning the Optical Response of Photonic Bandgap Structures*, P. M. Fauchet and P. V. Braun editors (SPIE, Bellingham, WA, 2004) pp 71-80.
326. "Dynamically Tunable 1D And 2D Photonic Bandgap Structures For Optical Interconnect Applications," M. Haurylau, S. M. Weiss, and P. M. Fauchet, in *Tuning the Optical Response of Photonic Bandgap Structures*, P. M. Fauchet and P. V. Braun editors (SPIE, Bellingham, WA, 2004) pp 38-49.
325. "The Development Of Nanocrystalline Silicon For Emerging Microelectronic And Nanoelectronic Applications," C. C. Striemer, R. Krishnan, and P. M. Fauchet, *Journal of Materials* **56** (10), pp 20-25 (2004).
324. "Macroporous Silicon Electrical Sensor For DNA Hybridization Detection," M. Archer, M. Christophersen, and P. M. Fauchet, *Biomedical Microdevices* **6**, 203-211 (2004).
323. "Polarization Surface-Charge Density of Single Semiconductor Quantum Rods," R. Krishnan, M. A. Hahn, Z. Yu, J. Silcox, P. M. Fauchet, and T. D. Krauss, *Phys. Rev. Lett.* **92**, art. 216803 (2004).

322. "Electrical Porous Silicon Microarray For DNA Hybridization Detection," M. Archer, M. Christophersen, P. M. Fauchet, D. Persaud, and K. D. Hirschman, *Mat. Res. Soc. Symp. Proc.* **782**, 385-391 (2004).
321. "Monolithic Silicon Light Sources," P. M. Fauchet, in *Silicon Photonics*, L. Pavesi and D. J. Lockwood editors (Topics in Applied Physics 94, Springer, 2004) pp 177-198 (Invited)
320. "Effect Of Oxidation On Charge Localization And Transport In A Single Layer Of Silicon Nanocrystals," R. Krishnan, Q. Xie, J. Kulik, X. D. Wang, S. Lu, M. Molinari, Y. Gao, T. D. Krauss, and P. M. Fauchet, *J. Appl. Phys.* **96**, 654-660 (2004).
319. "Biosensor Applications: Porous Silicon Microcavities," B. L. Miller, P. M. Fauchet, S. R. Horner, and S. Chan, in the *Encyclopedia of Nanoscience and Nanotechnology* J. A. Schwarz, C. I. Contescu, and K. Putyera editors (Marcel Dekker, New York, 2004) pp 343-350 (Invited).
318. "Stimulated Emission In Nanocrystalline Silicon Superlattices," J. Ruan, P. M. Fauchet, L. Dal Negro, M. Cazzanelli, and L. Pavesi, *Appl. Phys. Lett.* **83**, 5479-5481 (2003).
317. "Temperature Stability For Silicon-Based Photonic Bandgap Structures," S. M. Weiss, M. Molinari, and P. M. Fauchet, *Appl. Phys. Lett.* **83**, 1980-1982 (2003).
316. "Electrical Sensing Of DNA Hybridization In Porous Silicon Layers," M. Archer and P. M. Fauchet, *Phys. Stat. Sol. (a)* **198**, 503-507 (2003).
315. "Electrically Tunable Porous Silicon Active Mirrors," S. M. Weiss and P. M. Fauchet, *Phys. Stat. Sol. (a)* **197**, 556-560 (2003).
314. "Dynamic Etching Of Silicon For Solar Cell Applications," C. C. Striemer and P. M. Fauchet, *Phys. Stat. Sol. (a)* **197**, 502-506 (2003).
313. "The Role Of Nanoscale Silicon In Optical Interconnects," P. M. Fauchet, *Mat. Res. Soc. Symp. Proc.* **737**, 789-799 (2003) (Invited).
312. "Exploiting Silicon Porosity Gradients For Superior Antireflective Films," C. C. Striemer and P. M. Fauchet, *Mat. Res. Soc. Symp. Proc.* **737**, 661-666 (2003).
311. "Porous Silicon Electrical Biosensors," M. Archer, M. Christophersen, and P. M. Fauchet, *Mat. Res. Soc. Symp. Proc.* **737**, 549-554 (2003).
310. "Tunable Porous Silicon Mirrors For Optoelectronic Applications," S. M. Weiss, M. Haurylau, and P. M. Fauchet, *Mat. Res. Soc. Symp. Proc.* **737**, 529-534 (2003).
309. "Periodic Two-Dimensional Arrays Of Silicon Quantum Dots For Nanoscale Device Applications," C. C. Striemer, R. Krishnan, Q. Xie, L. Tsybeskov, and P. M. Fauchet, *Mat. Res. Soc. Symp. Proc.* **737**, 431-436 (2003).
308. "Optical Amplification In Nanocrystalline Silicon Superlattices," J. Ruan, H. Chen, and P. M. Fauchet, *Mat. Res. Soc. Symp. Proc.* **737**, 407-412 (2003).
307. "Charge Retention In Single Silicon Nanocrystals Layers," R. Krishnan, T. D. Krauss, and P. M. Fauchet, *Mat. Res. Soc. Symp. Proc.* **737**, 253-258 (2003).
306. "Optical Amplification In Nanocrystalline Silicon Superlattices," P. M. Fauchet and J. Ruan, in *Towards the First Silicon Laser*, edited by L. Pavesi, S. Gaponenko, and L. Dal Negro (Kluwer Academic Publishers, Dordrecht, 2003), pp 197-208.
305. "Photocarrier Drift-Mobility Measurements And Electron Localization In Nanoporous Silicon," P. N. Rao, E. A. Schiff, L. Tsybeskov, and P. Fauchet, *Chem. Phys.* **284**, 129-138 (2002).
304. "Dynamic Etching Of Silicon For Broadband Antireflection Applications," C. C. Striemer and P. M. Fauchet, *Appl. Phys. Lett.* **81**, 2980-2982 (2002).

303. "Ordering And Self-Organized Growth Of Si In The Si/SiO<sub>2</sub> Superlattice System," D. J. Lockwood, G. F. Grom, P. M. Fauchet, and L. Tsybeskov, *J. Cryst. Growth* **237-239**, 1898-1903 (2002).
302. "Porous Silicon Multilayer Structures: A Photonic Bandgap Approach," J. E. Lugo, H. A. Lopez, S. Chan, and P. M. Fauchet, *J. Appl. Phys.* **91**, 4966-4972 (2002).
301. "Electrically Tunable Silicon-Based Mirrors," S. M. Weiss and P. M. Fauchet, in *Silicon-Based and Hybrid Optoelectronics IV*, edited by D. J. Robbins and G. E. Jabbour (SPIE, Bellingham, WA, 2002), Vol. 4654, pp 36-44.
300. "Identification Of Gram Negative Bacteria Using Nanoscale Silicon Microcavities," S. Chan, S. R. Horner, P. M. Fauchet, and B. L. Miller, *J. Am. Chem. Soc.* **123**, 11797-11798 (2001).
299. "Controlled Nucleation Of Silicon Nanocrystals On A Periodic Template," C. C. Striemer, R. Krishnan, P. M. Fauchet, L. Tsybeskov, and Q. Xie, *Nano Letters* **1**, 643-646 (2001).
298. "Self-Organization And Ordering In Nanocrystalline Si/SiO<sub>2</sub> Superlattices," D. J. Lockwood, G. F. Grom, L. Tsybeskov, P. M. Fauchet, H. J. Labbe, J. P. McCaffrey, and B. White, Jr., *Physica E* **11**, 99-103 (2001).
297. "Tunable Porous Silicon Photonic Band Gap Structures," J. E. Lugo, H. A. Lopez, S. Chan, and P. M. Fauchet, *Mat. Res. Soc. Symp. Proc.* **677**, E4.6.1-4.6.6 (2001).
296. "Modeling Carrier Transport In Oxide-Passivated Nanocrystalline Silicon LEDs," K. D. Hirschman and P. M. Fauchet, *Mat. Res. Soc. Symp. Proc.* **638**, F18.4.1-18.4.6 (2001).
295. "Erbium Emission From Silicon Based Photonic Bandgap Materials," H. A. Lopez, J. E. Lugo, S. Chan, S. M. Weiss, C. C. Striemer, and P. M. Fauchet, *Mat. Res. Soc. Symp. Proc.* **638**, F17.2.1-17.2.6 (2001).
294. "Nanoscale Silicon Microcavity Optical Sensors For Biological Applications," S. Chan, S. R. Horner, B. L. Miller, and P. M. Fauchet, *Mat. Res. Soc. Symp. Proc.* **638**, F10.4.1-10.4.6 (2001).
293. "Raman Spectroscopy Of Si Nanocrystals In Nanocrystalline Si Superlattices: Size, Shape, and Crystallographic Orientation," G. F. Grom, P. M. Fauchet, L. Tsybeskov, J. P. McCaffrey, H. J. Labbe, D. J. Lockwood, and B. E. White, *Mat. Res. Soc. Symp. Proc.* **638**, F6.1.1-6.1.6 (2001).
292. "Lateral Superlattices Fabricated With Interferometric Lithography For Nanoscale Device Applications," C. C. Striemer, P. M. Fauchet, and L. Tsybeskov, *Mat. Res. Soc. Symp. Proc.* **638**, F5.13.1-5.13.6 (2001).
291. "Carrier Transport And Lateral Conductivity In Nanocrystalline Silicon Layers," H. B. Kim, L. Montes, Krishnan, P. M. Fauchet, and L. Tsybeskov, *Mat. Res. Soc. Symp. Proc.* **638**, F5.12.1-5.12.5 (2001).
290. "Atomic Force Microscopy And Raman Spectroscopy Of Nanoscale Si/SiO<sub>2</sub> Superlattices," R. Krishnan, G. F. Grom, P. M. Fauchet, L. Tsybeskov, S. Papernov, G. I. Sproule, and D. J. Lockwood, *Mat. Res. Soc. Symp. Proc.* **638**, F5.4.1-5.4.6 (2001).
289. "Optical And Structural Characterization Of Nanocrystalline Silicon Superlattices: Toward Nanoscale Silicon Metrology," S. Zollner, A. Konkar, H. Yapa, P. F. Dryer, V. A. Neeley, Q. Xie, G. F. Grom, Q. Zhu, R. Krishnan, P. M. Fauchet, and L. Tsybeskov, *Mat. Res. Soc. Symp. Proc.* **638**, F5.1.1-5.1.6 (2001).

288. "A Memory Device Utilizing Resonant Tunneling In Nanocrystalline Silicon Superlattices," L. Montes, G. F. Grom, R. Krishnan, P. M. Fauchet, L. Tsybeskov, and B. E. White, Jr., *Mat. Res. Soc. Symp. Proc.* **638**, F2.3.1-2.3.6 (2001).
287. "Nanoscale Silicon Microcavities For Biosensing," S. Chan, Y. Li, L. J. Rothberg, B. L. Miller, and P. M. Fauchet, *Mat. Sci. & Eng.* **C15**, 277-282 (2001) (Invited).
286. "Electrochemical Etching Of Silicon Substrates For Photovoltaic Applications," C. C. Striemer, F. Shi, and P. M. Fauchet, in *Photovoltaics for the 21<sup>st</sup> Century II*, edited by R. D. McConnell and V. K. Kapur (The Electrochemical Society, Pennington, NJ, 2001), pp 370-378.
285. "Resonant Tunneling In Partially Disordered Silicon Nanostructures," L. Tsybeskov, G. F. Grom, R. Krishnan, L. Montes, P. M. Fauchet, D. Kovalev, J. Diener, V. Timoshenko, F. Koch, J. P. McCaffrey, J. -M. Baribeau, G. I. Sproule, D. J. Lockwood, Y. M. Niquet, C. Delerue, and G. Allan, *Europhys. Lett.* **55**, 552-558 (2001).
284. "Silicon Microcavity Light Emitting Devices," S. Chan and P. M. Fauchet, *Optical Materials* **17**, 31-34 (2001).
283. "Electron And Hole Dynamics In GaN," H. Ye, G. W. Wicks, and P. M. Fauchet, *Mat. Sci. & Eng.* **B82**, 131-133 (2001).
282. "Nanoscale Light Modulators From Silicon-Liquid Crystal Hybrids," M. V. Wolkin, S. Chan, and P. M. Fauchet, in *Silicon-Based and Hybrid Optoelectronics III*, edited by D. J. Robbins, J. A. Trezza, and G. E. Jabbour (SPIE, Bellingham, WA, 2001), Vol. 4293, pp 23-31.
281. "Infrared LEDs And Microcavities Based On Erbium-Doped Silicon Nanocomposites," H. A. Lopez and P. M. Fauchet, *Mat. Sci. & Eng.* **B81**, 91-96 (2001) (Invited).
280. "Femtosecond Spectroscopy In ZnO With Tunable UV Pulses," H. Ye, P. M. Fauchet, S. Mathukumar, and Y. Lu, in *Ultrafast Phenomena in Semiconductors V*, edited by H. Jiang, K.T. Tsen and J. J. Song (SPIE, Bellingham, WA, 2001), Vol. 4280, pp 114-122.
279. "Silicon Light Emitters: Preparation, Properties, Limitations, And Integration With Microelectronic Circuitry," P. M. Fauchet, S. Chan, H. A. Lopez, and K. D. Hirschman, in *Frontiers of Nano-Optoelectronic Systems*, edited by L. Pavesi and E. Buzaneva (Kluwer, Dordrecht, 2000), pp 99-119 (Invited).
278. "Deposition Of Erbium Containing Film In Porous Silicon From Ethanol Solution Of Erbium Salt," V. Petrovich, S. Volchek, L. Dolgyi, L. Kazuchits, V. Yakovtseva, V. Bondarenko, L. Tsybeskov, and P. Fauchet, *J. Porous Mater.* **7**, 37-40 (2000).
277. "Erbium Emission From Porous Silicon One-Dimensional Photonic Band Gap Structures," H. A. Lopez and P. M. Fauchet, *Appl. Phys. Lett.* **77**, 3704-3706 (2000).
276. "Porous Silicon Encapsulated Nematic Liquid Crystals For Electro-Optic Applications," M. V. Wolkin, S. Chan, and P. M. Fauchet, *Phys. Stat. Sol. (a)* **182**, 573-578 (2000).
275. "Porous Silicon Microcavities For Biosensing Applications," S. Chan, P. M. Fauchet, Y. Li, L. J. Rothberg, and B. L. Miller, *Phys. Stat. Sol. (a)* **182**, 541-546 (2000).
274. "1.54  $\mu\text{m}$  Electroluminescence From Erbium-Doped Porous Silicon Composites For Photonic Applications," H. A. Lopez and P. M. Fauchet, *Phys. Stat. Sol. (a)* **182**, 413-418 (2000).
273. "Anisotropic Polarization Memory In Thermally Oxidized Porous Silicon," H. Koyama and P. M. Fauchet, *Appl. Phys. Lett.* **77**, 2316-2318 (2000).

272. "Ordering And Self-Organization In Nanocrystalline Silicon," G. F. Grom, D. J. Lockwood, J. P. McCaffrey, H. J. Labbe, P. M. Fauchet, B. White, Jr., J. Diener, D. Kovalev, F. Koch, and L. Tsybeskov, *Nature* **407**, 358-361 (2000).
271. "Anomalous Behavior Of Polarization Memory In Oxidized Porous Silicon," H. Koyama and P. M. Fauchet, in *Proc. First International Symposium on Advanced Luminescent Materials and Quantum Confinement*, edited by M. Cahay, S. Bandyopadhyay, D. J. Lockwood, J. P. Leburton, N. Koshida, M. Meyyappan, and T. Sakamoto (The Electrochemical Society, Pennington, NJ, 1999), pp 21-26.
270. "Hot Hole Relaxation Dynamics In p-GaN," H. Ye, G. W. Wicks, and P. M. Fauchet, *Appl. Phys. Lett.* **77**, 1185-1187 (2000).
269. "Effects Of Size Restriction On Donor-Acceptor Recombination In AgBr," P. J. Rodney, A. P. Marchetti, and P. M. Fauchet, *Phys. Rev. B* **62**, 4215-4217 (2000).
268. "Extraordinary Crystallization Of Amorphous Si/SiO<sub>2</sub> Superlattices," M. Zacharias, M. Blasing, K. Hirschman, L. Tsybeskov, and P. M. Fauchet, *J. Non-Cryst. Solids (Part A)* **266**, 640-644 (2000).
267. "Optical And Microstructural Characterization Of Nanocrystalline Silicon Superlattices," L. Tsybeskov, G. F. Grom, R. Krishnan, P. M. Fauchet, J. P. McCaffrey, J. -M. Baribeau, G. I. Sproule, D. J. Lockwood, V. Timoshenko, J. Diener, H. Heckler, D. Kovalev, F. Koch, and T. N. Blanton, *Mat. Res. Soc. Symp. Proc.* **588**, 173-185 (2000) (Invited).
266. "Room-Temperature Electroluminescence From Erbium-Doped Porous Silicon Composites For Infrared LED Applications," H. A. Lopez and P. M. Fauchet, in *Rare-Earth-Doped Materials and Devices IV*, edited by S. Jiang (SPIE, Bellingham, WA, 2000), Vol. 3942, pp 87-96.
265. "Nanoscale Microcavities For Biomedical Sensor Applications," S. Chan, P. M. Fauchet, Y. Li, and L. J. Rothberg, in *Micro- and Nanotechnology for Biomedical and Environmental Applications*, edited by R. P. Mariella, Jr. (SPIE, Bellingham, WA, 2000), Vol. 3912, pp 23-34.
264. "Femtosecond Spectroscopy In Doped GaN," H. Ye, G. W. Wicks, and P. M. Fauchet, in *Ultrafast Phenomena in Semiconductors IV*, edited by K.T. Tsien and J. J. Song (SPIE, Bellingham, WA, 2000), Vol. 3940, pp 235-245.
263. "Nanocrystalline Silicon Superlattices: Building Blocks For Quantum Devices," L. Tsybeskov, G. F. Grom, M. Jungo, L. Montes, P. M. Fauchet, J. P. McCaffrey, J. -M. Baribeau, G. I. Sproule and D. J. Lockwood, *Mat. Sci. & Eng.* **B69-70**, 303-308 (2000) (Invited).
262. "Laser-Induced Thermal Effects On The Optical Properties Of Free-Standing Porous Silicon Films," H. Koyama and P. M. Fauchet, *J. Appl. Phys.* **87**, 1788-1794 (2000).
261. "Erbium Doped Oxidized Porous Silicon For Integrated Optical Waveguides," V. Bondarenko, V. Yakovtseva, L. Dolgyi, N. Vorozov, N. Kazuchits, L. Tsybeskov, and P. Fauchet, *Technical Physics Lett. (St.-Petersburg)* **25**, 69-73 (1999).
260. "Silicon: Porous," P. M. Fauchet, in *Encyclopedia of Applied Physics*, Update 2, Wiley-VCH Verlag, pp 249-272 (1999).
259. "Correlation Of Photoluminescence And Bandgap Energies With Nanocrystal Sizes In Porous Silicon," J. von Behren, M. Wolkin-Vakrat, J. Jorné, and P. M. Fauchet, *Journ. Porous Materials* **7**, 81-84 (2000).

258. "Room-Temperature Electroluminescence From Erbium-Doped Porous Silicon," H. A. Lopez and P. M. Fauchet, *Appl. Phys. Lett.* **75**, 3989-3991 (1999).
257. "Low Temperature Photophysics Of AgI Micro And Nanocrystals," P. J. Rodney, A. P. Marchetti, and P. M. Fauchet, *Radiation Effects & Defects in Solids* **150**, 327-332 (1999).
256. "Phonon-Assisted Tunneling And Interface Quality In Nanocrystalline Si/ Amorphous SiO<sub>2</sub> Superlattices," L. Tsybeskov, G. F. Grom, P. M. Fauchet, J. P. McCaffrey, J. -M. Baribeau, G. I. Sproule, and D. J. Lockwood, *Appl. Phys. Lett.* **75**, 2265-2267 (1999).
255. "Porous Silicon: Fundamental Properties, Carrier Transport, Light-Emitting Devices, And Optoelectronic Applications," P. M. Fauchet, in *the Proceedings of the International School of Physics "Enrico Fermi," Course CXLI Silicon-Based Microphotonics: from Basics to Applications*, edited by O. Bisi, S. U. Campisano, L. Pavesi, and F. Priolo (Italian Physical Society, IOS Press, Amsterdam, Oxford, Tokyo, Washington DC, 1999), pp 163-190 (Invited).
254. "Tunable, Narrow, And Directional Luminescence From Porous Silicon Light Emitting Devices," S. Chan and P. M. Fauchet, *Appl. Phys. Lett.* **75**, 274-276 (1999).
253. "Femtosecond Spectroscopy In GaN With Tunable UV Pulses," H. Ye, G. W. Wicks, and P. M. Fauchet, in *Ultrafast Phenomena in Semiconductors III*, edited by K.T. Tsen (SPIE, Bellingham, WA, 1999), Vol. 3624, pp 188-197.
252. "Thermal Crystallization Of Amorphous Si/SiO<sub>2</sub> Superlattices," M. Zacharias, J. Blasing, P. Veit, L. Tsybeskov, K. D. Hirschman, and P. M. Fauchet, *Appl. Phys. Lett.* **74**, 2614-2616 (1999).
251. "LEDs Based On Oxidized Porous Polysilicon On A Transparent Substrate," C. C. Striemer, S. Chan, H. A. Lopez, K. D. Hirschman, H. Koyama, Q. Zhu, L. Tsybeskov, P. M. Fauchet, N. M. Kalkhoran, and L. Depaulis, *Mat. Res. Soc. Symp. Proc.* **536**, 511-515 (1999).
250. "Optical Analysis Of Plasma Enhanced Crystallization Of Amorphous Silicon Films," L. Montes, L. Tsybeskov, P. M. Fauchet, K. Pangal, J. C. Sturm, and S. Wagner, *Mat. Res. Soc. Symp. Proc.* **536**, 505-510 (1999).
249. "Modification Of Visible Light Emission From Silicon Nanocrystals As A Function Of Size, Electronic Structure, And Surface Passivation," M. V. Wolkin, J. Jorne, P. M. Fauchet, G. Allan, and C. Delerue, *Mat. Res. Soc. Symp. Proc.* **436**, 185-190 (1999).
248. "Structural Characterization Of nc-Si/a-SiO<sub>2</sub> Superlattices Subjected To Thermal Treatment," G. F. Grom, L. Tsybeskov, K. D. Hirschman, P. M. Fauchet, J. P. McCaffrey, H. J. Labbé, and D. J. Lockwood, *Mat. Res. Soc. Symp. Proc.* **536**, 141-146 (1999).
247. "Integration Of Multilayers In Er-Doped Porous Silicon Structures And Advances In 1.5  $\mu\text{m}$  Optoelectronic Devices," H. A. Lopez, S. Chan, L. Tsybeskov, H. Koyama, V. P. Bondarenko, and P. M. Fauchet, *Mat. Res. Soc. Symp. Proc.* **536**, 135-140 (1999).
246. "Porous Silicon Multilayer Mirrors And Microcavity Resonators For Optoelectronic Applications," S. Chan, L. Tsybeskov, and P. M. Fauchet, *Mat. Res. Soc. Symp. Proc.* **536**, 117-122 (1999).
245. "Formation And Luminescent Properties Of Oxidized Porous Silicon Doped With Erbium By Electrochemical Procedure," V. Bondarenko, N. Vorozov, L. Dolgyi, V. Yakovtseva, V. Petrovich, S. Volchek, N. Kazuchits, G. Grom, H. A. Lopez, L. Tsybeskov, and P. M. Fauchet, *Mat. Res. Soc. Symp. Proc.* **536**, 69-74 (1999).

244. "Integration Of Electrically Isolated Porous Silicon LEDs For Applications In CMOS Technology," K. D. Hirschman, L. Tsybeskov, C. C. Striemer, S. Chan, and P. M. Fauchet, *Mat. Res. Soc. Symp. Proc.* **536**, 21-26 (1999).
243. "Strongly Superlinear Light Emission And Large Induced Absorption In Oxidized Porous Silicon Films," H. Koyama and P. M. Fauchet, *Mat. Res. Soc. Symp. Proc.* **536**, 9-14 (1999).
242. "Silicon Interference Filters And Bragg Reflectors For Active And Passive Integrated Optoelectronic Components," S. Chan and P. M. Fauchet, in *Silicon-Based Optoelectronics*, edited by D. C. Houghton and E. A. Fitzgerald (SPIE, Bellingham, WA, 1999), Vol. 3630, pp 144-154.
241. "Tunability Of The Photoluminescence In Porous Silicon Due To Different Polymer Dielectric Environments," H. A. Lopez, X. L. Chen, S. A. Jenekhe, and P. M. Fauchet, *Journ. Luminesc.* **80**, 115-118 (1998).
240. "Strongly Nonlinear Luminescence In Oxidized Porous Silicon Films," H. Koyama, L. Tsybeskov, and P. M. Fauchet, *Journ. Luminesc.* **80**, 99-102 (1998).
239. "The Integration Of Nanoscale Porous Silicon Light Emitters: Materials Science, Properties, And Integration With Electronic Circuitry," P. M. Fauchet, *Journ. Luminesc.* **80**, 53-64 (1998) (Invited).
238. "Optical And Structural Characterization Of nc-Si/a-SiO<sub>2</sub> Superlattices," G. Grom, L. Tsybeskov, K. D. Hirschman, P. M. Fauchet, M. Zacharias, T. N. Blanton, J. P. McCaffrey, J. -M. Baribeau, G. I. Sproule, H. J. Labbe, and D. J. Lockwood, in *Applications of Photonic Technology 3: Closing the Gap between Theory, Development, and Applications*, edited by G.A. Lampropoulos and R.A. Lessard (SPIE, Bellingham, WA, 1998), Vol. 3491, pp 671-676.
237. "Intrinsic Picosecond Response Times Of Y-Ba-Cu-O Superconducting Photodetectors," M. Lindgren, M. Currie, C. Williams, T. Y. Hsiang, P. M. Fauchet, R. Sobolewski, S. H. Moffat, R. A. Hughes, J. S. Preston, and F. A. Hegmann, *Appl. Phys. Lett.* **74**, 853-855 (1999).
236. "Hot Carrier Relaxation Time In GaN," H. Ye, G. W. Wicks, and P. M. Fauchet, *Appl. Phys. Lett.* **74**, 711-713 (1999).
235. "Electronic States And Luminescence In Porous Silicon Quantum Dots: The Role Of Oxygen," M. V. Wolkin, J. Jorné, P. M. Fauchet, G. Allan, and C. Delerue, *Phys. Rev. Lett.* **82**, 197-200 (1999).
234. "Progress Toward Nanoscale Silicon Light Emitters," P. M. Fauchet, *IEEE Jour. Selected Topics in Quantum Electron.* **4**, 1020-1028 (1998) (Invited).
233. "Very Large Continuous-Wave-Laser-Induced Optical Absorption In Porous Silicon Films: Evidence For Thermal Effects," H. Koyama and P. M. Fauchet, *Appl. Phys. Lett.* **73**, 3259-3261 (1998).
232. "Nanocrystalline Silicon Superlattices: Fabrication And Characterization," M. Zacharias, L. Tsybeskov, K. D. Hirschman, P. M. Fauchet, J. Blasing, P. Kohlert, and P. Veit, *J. Non-Cryst. Solids* **227**, 1132-1136 (1998).
231. "Light Emission From Ge And GeO<sub>2</sub> Nanocrystals," M. Zacharias and P. M. Fauchet, *J. Non-Cryst. Solids* **227**, 1058-1062 (1998).



230. "Nanoscale Silicon For Electroluminescent Devices," P. M. Fauchet and L. Tsybeskov, in *Physics and Simulation of Optoelectronic Devices VI*, edited by M. Osinski, P. Blood, and A. Ishibashi (SPIE, Bellingham, WA, 1998), Vol. 3283, pp 793-807 (Invited).
229. "Er-Doped Porous Silicon LED For Integrated Optoelectronics," L. Tsybeskov, G. Grom, K. D. Hirschman, H. A. Lopez, S. Chan, P. M. Fauchet, and V. Bondarenko, *Mat. Res. Soc. Symp. Proc.* **486**, 145-150 (1998).
228. "Practical Nanoscale Silicon Light Emitters," P. M. Fauchet, *Mat. Res. Soc. Symp. Proc.* **486**, 21-32 (1998) (Invited).
227. "Nanocrystalline Silicon/Amorphous Silicon Dioxide Superlattices," P. M. Fauchet, L. Tsybeskov, M. Zacharias, and K. Hirschman, *Mat. Res. Soc. Symp. Proc.* **485**, 49-59 (1998) (Invited).
226. "Photovoltaic Device Applications Of Porous Microcrystalline Silicon," S. P. Duttgupta, P. M. Fauchet, A. C. Ribes, H. F. Tiedje, S. Damaskinos, T. E. Dixon, D. E. Brodie, and S. K. Kurinec, *Solar Energy Materials & Solar Cells* **52**, 271-283 (1998).
225. "Spatiotemporal Shaping Of Half-Cycle Terahertz Pulses By Diffraction Through Conductive Apertures Of Finite Thickness," J. Bromage, S. Radic, G. P. Agrawal, C. R. Stroud, Jr., P. M. Fauchet, and R. Sobolewski, *J. Opt. Soc. Am. B* **15**, 1399-1405 (1998).
224. "Quantum Confinement In Nanoscale Silicon: The Correlation Of Size With Bandgap And Luminescence," J. von Behren, T. van Buuren, M. Zacharias, E. H. Chimowitz, and P. M. Fauchet, *Solid State Commun.* **105**, 317-322 (1998).
223. "Fabrication Of Nanocrystalline Silicon Superlattices By Controlled Thermal Recrystallization," L. Tsybeskov, K. D. Hirschman, S. P. Duttgupta, P. M. Fauchet, M. Zacharias, J. P. McCaffrey, and D. J. Lockwood, *Phys. Stat. Sol. (a)* **165**, 69-77 (1998) (Invited).
222. "Porous Silicon Physics And Device Applications: A Status Report," P. M. Fauchet, J. von Behren, K. D. Hirschman, L. Tsybeskov, and S. P. Duttgupta, *Phys. Stat. Sol. (a)* **165**, 3-13 (1998) (Invited Plenary).
221. "Absorption Coefficient Of Porous Silicon," J. von Behren and P. M. Fauchet, in *Properties of Porous Silicon*, L. T. Canham, editor, Electronic Materials Information Service Datareviews Series No 18 (INSPEC, The Institution of Electrical Engineers, London, UK, 1997), pp. 229-233.
220. "Microhardness Of Porous Silicon," S. P. Duttgupta and P. M. Fauchet, in *Properties of Porous Silicon*, L. T. Canham, editor, Electronic Materials Information Service Datareviews Series No 18 (INSPEC, The Institution of Electrical Engineers, London, UK, 1997), pp. 132-137.
219. "Defect Luminescence In Films Containing Ge And GeO<sub>2</sub> Nanocrystals," M. Zacharias, S. J. Atherton, and P.M. Fauchet, *Mat. Res. Soc. Symp. Proc.* **467**, 379-384 (1997).
218. "Nanocrystalline-Silicon Superlattice Produced By Controlled Recrystallization," L. Tsybeskov, K. D. Hirschman, S. P. Duttgupta, M. Zacharias, P. M. Fauchet, J. McCaffrey, and D. J. Lockwood, *Appl. Phys. Lett.* **72**, 43-45 (1998).
217. "Optical And Structural Characterization Of Free-Standing Ultrahigh Porosity Silicon Thin Films," J. von Behren, M. Zacharias, P. M. Fauchet, and E. H. Chimowitz, in *Pits and Pores: Formation, Properties, and Significance for Advanced Luminescent Materials*, edited by P. Schmuki, D. J. Lockwood, H. Isaacs, and A. Bsiesy (The Electrochemical Society, Pennington, NJ, 1997), pp 524-532.

216. "Porous Silicon: Formation Mechanisms, Properties, And Device Applications," P. M. Fauchet, in *Pits and Pores: Formation, Properties, and Significance for Advanced Luminescent Materials*, edited by P. Schmuki, D. J. Lockwood, H. Isaacs, and A. Biesy (The Electrochemical Society, Pennington, NJ, 1997), pp 27-60 (Plenary).
215. "The Strong Visible Luminescence In Porous Silicon: Quantum Confinement, Not Oxide-Related Defects," P. M. Fauchet and J. von Behren, *Phys. Stat. Sol. (b)* **204**, R7-R8 (1997).
214. "Blue Luminescence From Ge And GeO<sub>2</sub> Nanocrystallites Prepared By DC Magnetron Sputtering," M. Zacharias, M. Schmidt, and P. M. Fauchet, in *Quantum Confinement: Nanoscale Materials, Devices, and Systems*, edited by M. Cahay, J. P. Leburton, D. J. Lockwood, and S. Bandyopadhyay (The Electrochemical Society, Pennington, NJ, 1997), pp 287-297.
213. "Fabrication And Characterization Of Nanocrystalline Silicon Superlattices Produced By Controlled Recrystallization," L. Tsybeskov, K. D. Hirschman, S. P. Duttagupta, P. M. Fauchet, M. Zacharias, P. Kohlert, J. P. McCaffrey, and D. J. Lockwood, in *Quantum Confinement: Nanoscale Materials, Devices, and Systems*, edited by M. Cahay, J. P. Leburton, D. J. Lockwood, and S. Bandyopadhyay (The Electrochemical Society, Pennington, NJ, 1997), pp 134-145.
212. "Porous Silicon: Photoluminescence And Electroluminescent Devices," P. M. Fauchet, in *Light Emission in Silicon: From Physics to Devices*, D.J. Lockwood editor, Semiconductors and Semimetals, Volume 49 (Academic Press, San Diego, 1998), pp 206-252 (Invited).
211. "Critical Behavior And The Processing Of Nanoscale Porous Materials," J. von Behren, E. H. Chimowitz, and P. M. Fauchet, *Adv. Mater.* **9**, 921-926 (1997).
210. "Femtosecond Infrared Spectroscopy Of Hot Electrons In An In<sub>0.53</sub>Ga<sub>0.47</sub>As/In<sub>0.52</sub>Al<sub>0.48</sub>As Multiple Quantum Well Structure," T. A. Gardiner, Ju. V. Vandyshev, G. W. Wicks, and P. M. Fauchet, in *Ultrafast Electronics and Optoelectronics*, edited by M. Nuss and J. Bowers, OSA Trends in Optics and Photonics Series Vol. 13 (Optical Society of America, Washington, DC, 1997), pp 280-283.
209. "An Ultrafast High-T<sub>c</sub> Superconducting Y-Ba-Cu-O Photodetector," M. Lindgren, W.-S. Zeng, M. Currie, C. Williams, T. Y. Hsiang, P. M. Fauchet, and R. Sobolewski, in *Ultrafast Electronics and Optoelectronics*, edited by M. Nuss and J. Bowers, OSA Trends in Optics and Photonics Series Vol. 13 (Optical Society of America, Washington, DC, 1997), pp 102-105.
208. "YBa<sub>2</sub>Cu<sub>3</sub>O<sub>7-x</sub> Thin-Film Picosecond Photoresponse In The Resistive State," M. Lindgren, M. Currie, C. Williams, T. Y. Hsiang, P. M. Fauchet, R. Sobolewski, S. H. Moffat, R. A. Hughes, J. S. Preston, and F. A. Hegmann, *IEEE Trans. Applied Superconductivity* **7**, 3422-3425 (1997).
207. "Blue Luminescence In Films Containing Ge And GeO<sub>2</sub> Nanocrystals: The Role Of Defects," M. Zacharias and P. M. Fauchet, *Appl. Phys. Lett.* **71**, 380-382 (1997).
206. "Stable Photoluminescence And Electroluminescence From Porous Silicon," P. M. Fauchet, L. Tsybeskov, S. P. Duttagupta, and K. D. Hirschman, *Thin Solid Films* **297**, 254-260 (1997) (Invited).
205. "Spatiotemporal Shaping Of Terahertz Pulses," J. Bromage, S. Radic, G. P. Agrawal, C. R. Stroud, Jr., P. M. Fauchet, and R. Sobolewski, *Optics Lett.* **22**, 627-629 (1997).

204. "Ultrafast Photoresponse In Microbridges And Pulse Propagation In Transmission Lines Made Of High- $T_C$  Superconducting Y-Ba-Cu-O Thin-Film," M. Lindgren, M. Currie, C. A. Williams, T. Y. Hsiang, P. M. Fauchet, R. Sobolewski, S. H. Moffat, R. A. Hughes, J. S. Preston, and F. A. Hegmann, *IEEE Journ. Select. Topics Quantum Electron* **2**, 668-678 (1996).
203. "Room-Temperature Photoluminescence And Electroluminescence From Er-Doped Silicon-Rich Silicon Oxide," L. Tsybeskov, S. P. Dutttagupta, K. D. Hirschman, P. M. Fauchet, K. L. Moore, and D. G. Hall, *Appl. Phys. Lett.* **70**, 1790-1792 (1997).
202. "Integrating Bipolar junction Transistors With Silicon-Based Light-Emitting Devices," K. D. Hirschman, L. Tsybeskov, S. P. Dutttagupta, and P. M. Fauchet, *Mat. Res. Soc. Symp. Proc.* **452**, 705-710 (1997).
201. "Preparation And Characterization Of The Active Layer For An LED Based On Oxidized Porous Silicon," L. Tsybeskov, K. D. Hirschman, L. F. Moore, P. M. Fauchet, and P. D. J. Calcott, *Mat. Res. Soc. Symp. Proc.* **452**, 687-692 (1997).
200. "Electroluminescence And Carrier Transport In LEDs Based On Silicon-Rich Silicon Oxide," L. Tsybeskov, K. D. Hirschman, S. P. Dutttagupta, and P. M. Fauchet, *Mat. Res. Soc. Symp. Proc.* **452**, 681-686 (1997).
199. "Porous Microcrystalline Silicon Solar Cells," S. P. Dutttagupta, S. K. Kurinec, and P. M. Fauchet, *Mat. Res. Soc. Symp. Proc.* **452**, 625-630 (1997).
198. "Electron Time-Of-Flight Measurements In Porous Silicon," P. Rao, E. A. Schiff, L. Tsybeskov, and P. M. Fauchet, *Mat. Res. Soc. Symp. Proc.* **452**, 613-618 (1997).
197. "Optical Properties Of Free-Standing Ultrahigh Porosity Silicon Films Prepared By Supercritical Drying," J. von Behren, P. M. Fauchet, E. H. Chimowitz, and C. T. Lira, *Mat. Res. Soc. Symp. Proc.* **452**, 565-570 (1997).
196. "Light Emission From Intrinsic And Doped Silicon-Rich Silicon Oxide: From The Visible To 1.6  $\mu\text{m}$ ," L. Tsybeskov, K. L. Moore, P. M. Fauchet, and D. G. Hall, *Mat. Res. Soc. Symp. Proc.* **452**, 523-528 (1997).
195. "Room Temperature Band-Edge Luminescence From Silicon Grains Prepared By The Recrystallization Of Mesoporous Silicon," K. L. Moore, L. Tsybeskov, P. M. Fauchet, and D. G. Hall, *Mat. Res. Soc. Symp. Proc.* **452**, 517-522 (1997).
194. "Fabrication And Characterization Of Light Emitting Porous Silicon And Polymer Nanocomposites," S. P. Dutttagupta, P. M. Fauchet, X. L. Chen, and S. A. Jenekhe, *Mat. Res. Soc. Symp. Proc.* **452**, 473-478 (1997).
193. "Optical Properties Of Cuprous Oxide Nanocrystals," P. J. Rodney, M. I. Freedhoff, A. P. Marchetti, G. L. McLendon, and P. M. Fauchet, *Mat. Res. Soc. Symp. Proc.* **452**, 383-388 (1997).
192. "Porous Silicon: From Luminescence To LEDs," R. T. Collins, P. M. Fauchet, and M. A. Tischler, *Physics Today* **50**, 24-31 (1997) (Invited).
191. "Microhardness Of Porous Silicon Films And Composites," S. P. Dutttagupta, X. L. Chen, S. A. Jenekhe, and P. M. Fauchet, *Solid State Commun.* **101**, 33-37 (1997).
190. "Drift Mobility Measurements In Porous Silicon," L. Tsybeskov, C. Peng, P. M. Fauchet, Q. Gu and E. A. Schiff, *Mat. Res. Soc. Symp. Proc.* **420**, 825-829 (1996).
189. "A New Confocal Scanning Laser MACROscope/Microscope Applied To The Characterization Of Solar Cells," A. C. Ribes, S. Damaskinos, H. F. Tiedje, A. E. Dixon,

- D. E. Brodie, S. P. Duttagupta, and P. M. Fauchet, *Mat. Res. Soc. Symp. Proc.* **426**, 581-586 (1996).
188. "Silicon-Based Visible Light-Emitting Devices Integrated Into Microelectronic Circuits," K. D. Hirschman, L. Tsybeskov, S. P. Duttagupta, and P. M. Fauchet, *Nature* **384**, 338-340 (1996).
187. "A Si-Based Light-Emitting Diode With Room-Temperature Electroluminescence At 1.1 eV," L. Tsybeskov, K. L. Moore, S. P. Duttagupta, K. D. Hirschman, D. G. Hall, and P. M. Fauchet, *Appl. Phys. Lett.* **69**, 3411-3413 (1996).
186. "Mid-Infrared Femtosecond Spectroscopy Of Intersubband Hot Hole Relaxation In Quantum Wells," P. M. Fauchet, G. W. Wicks, Ju. V. Vandyshev, Z. Xu, C. W. Rella, and H. A. Schwettman, in *Ultrafast Phenomena X*, edited by P.F. Barbara, J.G. Fujimoto, W.H. Knox, and W. Zinth (Springer-Verlag, Berlin, 1996), pp. 398-399.
185. "Ultrafast Excitation And Deexcitation Of Local Vibrational Modes In A Solid Matrix: The Si-H Bond In Amorphous Silicon," Z. Xu, J. V. Vandyshev, P. M. Fauchet, C. W. Rella, H. A. Schwettman, and C. C. Tsai, in *Ultrafast Phenomena X*, edited by P.F. Barbara, J.G. Fujimoto, W.H. Knox, and W. Zinth (Springer-Verlag, Berlin, 1996), pp. 410-411.
184. "Photoluminescence And Electroluminescence From Porous Silicon," P. M. Fauchet, *Journ. Luminesc.* **70**, 294-309 (1996) (Invited).
183. "Intrinsic Band-Edge Photoluminescence From Silicon Clusters At Room Temperature," L. Tsybeskov, K. L. Moore, D. G. Hall, and P. M. Fauchet, *Phys. Rev. B* **54**, R8361-R8364 (1996).
182. "The Femtosecond Optical Response Of Porous, Amorphous And Crystalline Silicon," J. von Behren, Y. Kostoulas, K. B. Ucer and P. M. Fauchet, *J. Non-Cryst. Solids* **198-200**, 957-960 (1996).
181. "Ultrafast Excitation And De-Excitation Of The Si-H Stretching Mode In a-Si:H," Z. Xu, P. M. Fauchet, C. W. Rella, H. A. Schwettman, and C. C. Tsai, *J. Non-Cryst. Solids* **198-200**, 11-14 (1996).
180. "Temperature Dependence Of The Intersubband Hole Relaxation In p-Type Quantum Wells," Z. Xu, G. W. Wicks, C. W. Rella, H. A. Schwettman, and P. M. Fauchet, in *Hot Carriers in Semiconductors*, edited by K. Hess, J.-P. Leburton and U. Ravaioli (Plenum, New York, 1996), pp 65-68.
179. "Hot Carrier Thermalization In Low-Temperature-Grown III-V Semiconductors," A. I. Lobad, Y. Kostoulas, G. W. Wicks and P. M. Fauchet, in *Hot Carriers in Semiconductors*, edited by K. Hess, J.-P. Leburton and U. Ravaioli (Plenum, New York, 1996), pp 97-99.
178. "Carrier Transport In Porous Silicon Light-Emitting Devices," C. Peng, K. D. Hirschman and P. M. Fauchet, *J. Appl. Phys.* **80**, 295-300 (1996).
177. "Conduction And Valence Band Edges Of Porous Silicon Determined By Electron Transfer," J. M. Rehm, G. L. McLendon and P. M. Fauchet, *J. Am. Chem. Soc.* **118**, 4490-4491 (1996).
176. "Efficient Electroluminescence From Oxidized Porous Silicon," L. Tsybeskov, S. P. Duttagupta, K. D. Hirschman and P. M. Fauchet, in *Advanced Luminescent Materials*, edited by D.J. Lockwood, P.M. Fauchet, N. Koshida, and S.R.J. Brueck (The Electrochemical Society, Pennington, NJ, 1996), pp 34-47 (Invited).

175. "Determining The Conduction Band And Valence Band Shift Of Porous Silicon Using Electron Transfer," J. M. Rehm, G. L. McLendon, and P. M. Fauchet, in *Advanced Luminescent Materials*, edited by D.J. Lockwood, P.M. Fauchet, N. Koshida, and S.R.J. Brueck (The Electrochemical Society, Pennington, NJ, 1996), pp 212-221.
174. "Stable And Efficient Electroluminescence From A Porous Silicon-Based Bipolar Device," L. Tsybeskov, S. P. Duttagupta, K. D. Hirschman and P. M. Fauchet, *Appl. Phys. Lett.* **68**, 2058-2060 (1996).
173. "Light-Emitting Porous Silicon: Materials Science, Properties, and Device Applications," P. M. Fauchet, L. Tsybeskov, C. Peng, S. P. Duttagupta, J. von Behren, Y. Kostoulas, J. V. Vandyshev, and K. D. Hirschman, *IEEE Jour. Selected Topics in Quantum Electron.* **1**, 1126-1139 (1995) (Invited).
172. "Confocal Imaging Of Porous Silicon With A Scanning Laser Macroscope/Microscope," A. C. Ribes, S. Damaskinos, A. E. Dixon, K. A. Ellis, S. P. Duttagupta, and P. M. Fauchet, *Progr. Surf. Sci.* **50**, pp 295-304 (1995).
171. "Femtosecond Carrier Dynamics In Low-Temperature Grown  $\text{Ga}_{0.51}\text{In}_{0.49}\text{P}$ ," Y. Kostoulas, K. B. Ucer, G. W. Wicks and P. M. Fauchet, *Appl. Phys. Lett.* **67**, 3756-3758 (1995).
170. "Manufacture Of Submicron Light-Emitting Porous Silicon Areas For Miniature LEDs," S. P. Duttagupta, C. Peng, L. Tsybeskov, and P. M. Fauchet, *Mat. Res. Soc. Symp. Proc.* **380**, 73-78 (1995).
169. "The Ultrafast Carrier Dynamics In Semiconductors: The Role Of Defects," P. M. Fauchet, G. W. Wicks, Y. Kostoulas, A. I. Lobad, and K. B. Ucer, *Mat. Res. Soc. Symp. Proc.* **378**, 171-176 (1995).
168. "The Frequency Response Of Porous Silicon Electroluminescent Devices," C. Peng and P. M. Fauchet, *Appl. Phys. Lett.* **67**, 2515-2517 (1995).
167. "Ultrafast Carrier Dynamics In Porous Silicon," P. M. Fauchet, *Phys. Stat. Sol. (b)* **190**, 53-62 (1995) (Invited).
166. "Time-Resolved Photoluminescence Measurements In Spark-Processed Blue And Green Emitting Silicon," R. E. Hummel, M. H. Ludwig, S.-S. Chang, P. M. Fauchet, Ju. V. Vandyshev, and L. Tsybeskov, *Solid State Commun.* **95**, 553-558 (1995).
165. "Electro-Optic Sampling Of 1.5-PS Photoresponse Signals From  $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$  Thin Films," F. A. Hegmann, D. Jacobs-Perkins, C.-C. Wang, S. H. Moffat, R. A. Hughes, J. S. Preston, M. Currie, P. M. Fauchet, T. Y. Hsiang, and R. Sobolewski, *Appl. Phys. Lett.* **67**, 285-287 (1995).
164. "How Methanol Affects The Surface Of Blue And Red Emitting Porous Silicon," J. M. Rehm, G. L. McLendon, L. Tsybeskov, and P. M. Fauchet, *Appl. Phys. Lett.* **66**, 3669-3671 (1995).
163. "Photoluminescence And Electroluminescence In Partially Oxidized Porous Silicon," L. Tsybeskov, S. P. Duttagupta, and P. M. Fauchet, *Solid State Commun.* **95**, 429-433 (1995).
162. "Enhancement And Suppression Of The Formation Of Porous Silicon," S. P. Duttagupta, C. Peng, P. M. Fauchet, S. K. Kurinec, and T. N. Blanton, *J. Vac. Sci. Technol. B* **13**, 1230-1235 (1995).
161. "Properties Of Ultrathin Films Of Porous Silicon," J. von Behren, K. B. Ucer, L. Tsybeskov, Ju. V. Vandyshev, and P. M. Fauchet, *J. Vac. Sci. Technol. B* **13**, 1225-1229 (1995).

160. "Hole Relaxation In p-Type  $\text{In}_x\text{Ga}_{1-x}\text{As}/\text{Al}_y\text{Ga}_{1-y}\text{As}$  Quantum Wells Observed By Ultrafast Midinfrared Spectroscopy," Z. Xu, P. M. Fauchet, C. W. Rella, B. A. Richman, H. A. Schwettman, and G. W. Wicks, *Phys. Rev. B* **51**, 10631-10634 (1995).
159. "Confocal Scanning Beam Laser Microscope/Macroscopic: Applications Requiring Large Data Sets," A.E. Dixon, S. Damaskinos, A. Ribes, E. Sato, M.-C. B eland, T. Uesaka, B. Dalrymple, S.P. Duttgupta, and P.M. Fauchet, in *Three-Dimensional Microscopy: Image Acquisition and Processing II* (SPIE, Bellingham, WA, 1995), Volume 2412, pp 12-20.
158. "Photoluminescence Imaging Of Porous Silicon Using A Confocal Scanning Laser Microscope/Microscope," A.C. Ribes, S. Damaskinos, A.E. Dixon, G.E. Carver, C. Peng, P.M. Fauchet, T.K. Sham, and I. Coulthard, *Appl. Phys. Lett.* **66**, 2321 (1995).
157. "Carrier Dynamics In Porous Silicon: From The Femtosecond To The Second," P. M. Fauchet, *Mat. Res. Soc. Symp. Proc.* **358**, 525-536 (1995) (Invited).
156. "Investigation Of Chemical Adsorbate Effects On Blue And Red Emitting Porous Silicon Samples," J. M. Rehm, G. L. McLendon, L. Tsybeskov, and P. M. Fauchet, *Mat. Res. Soc. Symp. Proc.* **358**, 393-398 (1995).
155. "Micron-Size And Submicron-Size Light-Emitting Porous Silicon Structures," S. P. Duttgupta, P. M. Fauchet, C. Peng, S. K. Kurinec, K. Hirschman, and T. N. Blanton, *Mat. Res. Soc. Symp. Proc.* **358**, 647-652 (1995).
154. "Post-Anodization Implantation And CVD Techniques For Passivation Of Porous Silicon," S.P. Duttgupta, L. Tsybeskov, P.M. Fauchet, E. Etedgui and Y. Gao, *Mat. Res. Soc. Symp. Proc.* **358**, 381-386 (1995).
153. "Photoluminescence And Electroluminescence In Partially Oxidized Porous Silicon," L. Tsybeskov, S. P. Duttgupta, and P. M. Fauchet, *Mat. Res. Soc. Symp. Proc.* **358**, 683-688 (1995).
152. "Carrier Transport In Porous Silicon Light-Emitting Diodes," C. Peng, P. M. Fauchet, K. D. Hirschman, and S. K. Kurinec, *Mat. Res. Soc. Symp. Proc.* **358**, 689-694 (1995).
151. "Preparation, Properties And Applications Of Free-Standing Porous Silicon Films," J. von Behren, L. Tsybeskov, and P. M. Fauchet, *Mat. Res. Soc. Symp. Proc.* **358**, 333-338 (1995).
150. "Femtosecond Carrier Dynamics In Low-Temperature-Grown Indium Phosphide," Y. Kostoulas, L. J. Waxer, I. A. Walmsley, G. W. Wicks, and P. M. Fauchet, *Appl. Phys. Lett.* **66**, 1821-1823 (1995).
149. "Femtosecond Excited-State Dynamics Of A Conjugated Ladder Polymer," X. Weng, Y. Kostoulas, P. M. Fauchet, J. A. Osaheni, and S. A. Jenekhe, *Phys. Rev. B* **51**, 6838-6841 (1995).
148. "Preparation And Characterization Of Ultrathin Porous Silicon Films," J. von Behren, L. Tsybeskov, and P. M. Fauchet, *Appl. Phys. Lett.* **66**, 1662-1664 (1995).
147. "Second Harmonic Generation Near 4  $\mu\text{m}$  In p-Type Asymmetric GaAs/AlGaAs/AlAs Quantum Wells," Z. Xu, P. M. Fauchet, C. W. Rella, B. A. Richman, H. A. Schwettman, and G. W. Wicks, *Solid State Commun.* **93**, 903-907 (1995).
146. "Femtosecond Optical Spectroscopy In Partially Deoxygenated Y-Ba-Cu-O Thin Films," L. Shi, T. Gong, W. Xiong, X. Weng, R. Sobolewski, and P. M. Fauchet, in *Ultrafast Phenomena IX*, edited by P. F. Barbara, W. H. Knox, G. A. Mourou and A. H. Zewail (Springer-Verlag, Berlin, 1994), pp. 327-328.

145. "Ultrafast Electronic Processes In Porous Silicon," P. M. Fauchet, Y. Kostoulas, J. V. Vandyshev, and V. Petrova-Koch, in *Ultrafast Phenomena IX*, edited by P.F. Barbara, W.H. Knox, G.A. Mourou and A.H. Zewail (Springer-Verlag, Berlin, 1994), pp. 283-284.
144. "Second-Harmonic Generation In p-Type Asymmetric GaAs-Al<sub>x</sub>Ga<sub>1-x</sub>As-AlAs Superlattices Due To Excitations Between Valence Minibands," M. J. Shaw, M. Jaros, Z. Xu, P. M. Fauchet, C. W. Rella, B. A. Richman, H. A. Schwettman, and G. W. Wicks, *Phys. Rev. B* **50**, 18,395-18,419 (1994).
143. "Light-Emitting Porous Silicon: A Status Report," P. M. Fauchet, in *Porous Silicon*, edited by Z. C. Feng and R. Tsu (World Scientific, Singapore, 1994), pp. 449-465.
142. "Intense Room Temperature Light Emission In Porous Silicon: From Less Than 450 nm To Beyond 1.5  $\mu\text{m}$ ," P. M. Fauchet, C. Peng, L. Tsybeskov, J. Vandyshev, A. Dubois, A. Raisanen, T. E. Orlovski, L. J. Brillson, J. E. Fouquet, S. L. Dexheimer, J. M. Rehm, G. L. McLendon, E. Ettegui, Y. Gao, F. Seiferth, and S. K. Kurinec, in *Semiconductor Silicon/94: Proceedings of the 7th International Symposium on Silicon Materials Science and Technology.*, edited by H. R. Huff, W. Bergholz and K. Sumino (The Electrochemical Society, Pennington, 1994), pp. 499-510.
141. "Carrier-Carrier Scattering Rates Within Nonequilibrium Optically Injected Semiconductor Plasmas," J. F. Young, T. Gong, P.M. Fauchet, and P. J. Kelly, *Phys. Rev. B* **50**, 2208-2215 (1994).
140. "The Starting Mechanism In Coupled-Cavity Modelocked Laser Systems," A. I. Lobad, P. J. Rodney, S. M. Mehta, B. C. Tousley, and P. M. Fauchet, *IEEE J. Quantum Electron.* **30**, 812-817 (1994).
139. "Second Harmonic Generation In p-Type Quantum Wells," Z. Xu, P. M. Fauchet, G. W. Wicks, M. J. Shaw, M. Jaros, B. Richman, and C. Rella, in *Quantum Well Intersubband Transition Physics and Devices*, edited by H. C. Liu, B. F. Levine, and J. Y. Andersson, NATO ASI Series E: Applied Sciences, Vol. 270 (Kluwer Academic Publishers, Dordrecht, 1994), pp. 457-466.
138. "The Starting Mechanism In Coupled-Cavity, Mode-Locked Laser Systems," A. I. Lobad, P. J. Rodney, B. C. Tousley, S. M. Mehta, and P. M. Fauchet, in *Generation, Amplification, and Measurement of Ultrashort Laser Pulses*, edited by R. P. Trebino and I. A. Walmsley (SPIE, Bellingham, WA, 1994), Vol. 2116, pp. 109-117 (Invited)
137. "Femtosecond Carrier Dynamics In Low-Temperature-Grown III-V Semiconductors," Y. Kostoulas, T. Gong, B. C. Tousley, G. W. Wicks, P. Cooke, and P. M. Fauchet, in *Ultrafast Phenomena in Semiconductors*, edited by D. K. Ferry and H. M. van Driel (SPIE, Bellingham, WA, 1994), Vol. 2142, pp. 100-109 (Invited)
136. "Investigation Of Carrier-Carrier Scattering By Three-Pulse Pump-Probe Spectroscopy," Y. Kostoulas, T. Gong, and P. M. Fauchet, *Semicond. Sci. Technol.* **9**, 462-464 (1994).
135. "Hot Carrier Dynamics Near The Fermi Edge Of n-Doped GaAs," T. Gong, J. F. Young, G. W. Wicks, P. J. Kelly, and P. M. Fauchet, *Semicond. Sci. Technol.* **9**, 459-461 (1994).
134. "Carrier-Carrier Scattering Within Athermal Distributions," J. F. Young, T. Gong, P. J. Kelly, and P. M. Fauchet, *Semicond. Sci. & Technol.* **9**, 465-467 (1994).
133. "Prospects For Light-Emitting Diodes Made Of Porous Silicon From The Blue To Beyond 1.5  $\mu\text{m}$ ," P. M. Fauchet, C. Peng, L. Tsybeskov, Ju. V. Vandyshev, A. Dubois, L. McLoud, S. P. Duttgupta, J. M. Rehm, G. L. McLendon, E. Ettegui, Y. Gao, F. Seiferth, S. K. Kurinec, A. Raisanen, T. E. Orlovski, L. J. Brillson, and G. E. Carver, in

- Advanced Photonics Materials for Information Technology*, edited by S. Etemad (SPIE, Bellingham, WA, 1994), Vol. 2144, pp. 34–50 (Invited).
132. “Second Harmonic Generation In p-Type GaAs Quantum Wells,” Z. Xu, J. V. Vandyshev, G. W. Wicks, P. M. Fauchet, M. J. Shaw, M. Jaros, B. Richman, C. Rella, and H. A. Schwettman, in *Quantum Well and Superlattice Physics V*, edited by G. H. Döhler and E. S. Koteles (SPIE, Bellingham, WA, 1994), Vol. 2139, pp. 321–330.
  131. “Femtosecond Optical Response Of Y-Ba-Cu-O Films And Their Applications In Optoelectronics,” R. Sobolewski, L. Shi, T. Gong, W. Xiong, X. Weng, Y. Kostoulas, and P. M. Fauchet, in *High-Temperature Superconducting Detectors: Bolometric and Nonbolometric*, edited by M. Nahum and J. -C. Villegier (SPIE, Bellingham, WA, 1994), Vol. 2159, pp. 110–120 (Invited).
  130. “Optical Characterization Of Light-Emitting Porous Silicon,” P. M. Fauchet, L. Tsybeskov, Ju. V. Vandyshev, A. Dubois, and C. Peng, in *Spectroscopic Characterization Techniques for Semiconductor Technology V*, edited by O. J. Glembocki (SPIE, Bellingham, WA, 1994), Vol. 2141, pp. 155–166 (Invited).
  129. “Blue Emission In Porous Silicon: Oxygen-Related Photoluminescence,” L. Tsybeskov, Ju. V. Vandyshev, and P. M. Fauchet, *Phys. Rev. B* **49**, 7821-7824 (1994).
  128. “Nonlinear Optical Properties Of Ultranarrow p-Type GaAs Quantum Wells,” Z. Xu, J. V. Vandyshev, P. M. Fauchet, G. W. Wicks, M. J. Shaw, M. Jaros, B. Richman, and C. Rella, *Mat. Res. Soc. Symp. Proc.* **326**, 573-578 (1994).
  127. “Correlation Between Photoluminescence And Surface Species In Porous Silicon: Low-Temperature Annealing,” L. Tsybeskov and P. M. Fauchet, *Appl. Phys. Lett.* **64**, 1983-1985 (1994).
  126. “Ion Implantation Of Porous Silicon,” C. Peng, P. M. Fauchet, J. M. Rehm, G. L. McLendon, F. Seiferth, and S. K. Kurinec, *Appl. Phys. Lett.* **64**, 1259-1261 (1994).
  125. “Femtosecond Reflectivity Of 60 K Y-Ba-Cu-O Thin Films,” L. Shi, T. Gong, W. Xiong, X. Weng, Y. Kostoulas, R. Sobolewski, and P. M. Fauchet, *Appl. Phys. Lett.* **64**, 1150–1152 (1994).
  124. “Femtosecond Optical Response Of Low Temperature Grown  $\text{In}_{0.53}\text{Ga}_{0.47}\text{As}$ ,” B. C. Tousley, S. M. Mehta, A. I. Lobad, P. J. Rodney, P. M. Fauchet and P. Cooke, *J. Electron. Mater.* **22**, 1477 (1993).
  123. “Femtosecond Optical Response Of Low Temperature Grown  $\text{In}_{.53}\text{Ga}_{.47}\text{As}$ ,” B. C. Tousley, S. M. Mehta, A. I. Lobad, P. J. Rodney, P. M. Fauchet, and P. Cooke, in *OSA Ultrafast Electronics and Optoelectronics*, edited by J. Shah and U. Mishra (Optical Society of America, Washington, DC, 1993), Vol. 14, pp. 147–150.
  122. “Ultrafast Optical And Optoelectronic Response Of Y-Ba-Cu-O,” T. Gong, L. X. Zheng, Y. Kostoulas, W. Xiong, W. Kula, K. B. Ucer, R. Sobolewski, and P. M. Fauchet, in *OSA Proceedings on Ultrafast Electronics and Optoelectronics*, edited by J. Shah and U. Mishra (Optical Society of America, Washington, DC, 1993), Vol. 14, pp. 234–237.
  121. “Femtosecond Spectroscopy Of Y-Ba-Cu-O Thin Films,” T. Gong, L. X. Zheng, W. Xiong, W. Kula, R. Sobolewski, P. M. Fauchet, J. P. Zheng, H. S. Kwok, and J. R. Gavaler, in *AIP Conference Proceedings 273: Sixth Annual Conference on Superconductivity and Its Applications*, edited by H. S. Kwok, D. T. Shaw, and M. J. Naughton (American Institute of Physics, New York, 1993), pp. 327–335.



120. "Light-Emitting Porous Silicon After Standard Microelectronic Processing," C. Peng, L. Tsybeskov, P. M. Fauchet, F. Seiferth, S. K. Kurinec, J. M. Rehm, and G. L. McLendon, *Mat. Res. Soc. Symp. Proc.* **298**, 179-184 (1993).
119. "Can Oxidation And Other Treatments Help Us Understand The Nature Of Light-Emitting Porous Silicon?," P. M. Fauchet, E. Ettetdgui, A. Raisanen, L. J. Brillson, F. Seiferth, S. K. Kurinec, Y. Gao, C. Peng, and L. Tsybeskov, *Mat. Res. Soc. Symp. Proc.* **298**, 271-276 (1993).
118. "Comparative Study Of Light-Emitting Porous Silicon Anodized With Light Assistance And In The Dark," L. Tsybeskov, C. Peng, S. P. Dutttagupta, E. Ettetdgui, Y. Gao, P. M. Fauchet, and G. E. Carver, *Mat. Res. Soc. Symp. Proc.* **298**, 307-311 (1993).
117. "Femtosecond Optical Nonlinearities In  $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$ ," T. Gong, L. X. Zheng, W. Xiong, W. Kula, R. Sobolewski, and P. M. Fauchet, in *Ultrafast Pulse Generation and Spectroscopy*, edited by T. R. Gosnell, A. J. Taylor, K. A. Nelson, and M. C. Downer (SPIE, Bellingham, WA, 1993), Vol. 1861, pp. 355-362.
116. "Carrier-Carrier Interactions In GaAs Investigated By Femtosecond Spectroscopy," T. Gong and P. M. Fauchet, in *Ultrafast Pulse Generation and Spectroscopy*, edited by T. R. Gosnell, A. J. Taylor, K. A. Nelson, and M. C. Downer (SPIE, Bellingham, WA, 1993), Vol. 1861, pp. 227-237 (Invited).
115. "Picosecond Nonlinear Optics In Semiconductor Quantum Wells With The SCA Free Electron Laser," Z. Xu, L. X. Zheng, J. V. Vandyshev, G. W. Wicks, P. M. Fauchet, B. Richman, and C. Rella, in *Free-Electron Laser Spectroscopy in Biology, Medicine, and Materials Science*, edited by H. A. Schwettman (SPIE, Bellingham, WA, 1993), Vol. 1854, pp. 69-76.
114. "Femtosecond Carrier-Carrier Interactions In GaAs," T. Gong, K. B. Ucer, L. X. Zheng, G. W. Wicks, J. F. Young, P. J. Kelly, and P. M. Fauchet, in *Ultrafast Phenomena VIII*, edited by J.-L. Martin, A. Migus, G. A. Mourou, and A. H. Zewail (Springer-Verlag, 1993), pp. 402-404.
113. "Femtosecond Optical Response Of Y-Ba-Cu-O Thin Films: The Dependence On Optical Frequency, Excitation Intensity, And Electric Current," T. Gong, L. X. Zheng, W. Xiong, W. Kula, Y. Kostoulas, R. Sobolewski, and P. M. Fauchet, *Phys. Rev. B* **47**, 14,495-14,502 (1993).
112. "High Spatial Resolution Mapping Of Porous Silicon," E. Ettetdgui, C. Peng, L. Tsybeskov, Y. Gao, P. M. Fauchet, G. E. Carver, and H. A. Mizes, *Mat. Res. Soc. Symp. Proc.* **283**, 173-178 (1993).
111. "Luminescence Properties Of Porous Silicon," C. Peng, L. Tsybeskov, and P. M. Fauchet, *Mat. Res. Soc. Symp. Proc.* **283**, 121-126 (1993).
110. "Subpicosecond Hot-Hole Dynamics In Highly Excited GaAs," T. Gong, P. M. Fauchet, J. F. Young, and P. J. Kelly, *Appl. Phys. Lett.* **62**, 522-524 (1993).
109. "Free Carrier Lifetime In a-Si, Ge:H Alloys," D. A. Young, P. M. Fauchet, Y. M. Liu, W. L. Nighan, Jr., and C. M. Fortmann, *Mat. Res. Soc. Symp. Proc.* **258**, 807 (1992).
108. "The Extended State Mobility In Amorphous Silicon Alloys," P. M. Fauchet, R. Vanderhaghen, A. Mourchid, and D. Hulin, *Mat. Res. Soc. Symp. Proc.* **258**, 711 (1992).
107. "Ultrafast Thermal Nonlinearities In Amorphous Silicon," P. M. Fauchet, D. Hulin, A. Mourchid, and R. Vanderhaghen, in *Ultrafast Laser Probe Phenomena in Bulk and*

- Microstructure Semiconductors and High-Temperature Superconductors*, edited by R. R. Alfano (SPIE, Bellingham, WA, 1992), Vol. 1677, pp. 174–183.
106. “Femtosecond Dynamics Of Hot Carriers In GaAs,” P. M. Fauchet and T. Gong, in *Ultrafast Laser Probe Phenomena in Bulk and Microstructure Semiconductors and High-Temperature Superconductors*, edited by R. R. Alfano (SPIE, Bellingham, WA, 1992), Vol. 1677, pp. 25–34. (Invited)
  105. “Picosecond Spectroscopy In Solids With FEL’s,” P. M. Fauchet, in *Spectroscopic Characterization Techniques for Semiconductor Technology IV*, edited by O. J. Glembocki (SPIE, Bellingham, WA, 1992), Vol. 1678, p. 232. (Invited)
  104. “Ultrafast Electronic And Thermal Processes In Hydrogenated Amorphous Silicon,” D. Hulin, P. M. Fauchet, R. Vanderhaghen, A. Mouchid, W. L. Nighan, Jr., J. Paye, and A. Antonetti, in *Ultrafast Processes in Spectroscopy 1991*, edited by A. Laubereau and A. Seilmeier, Institute of Physics Conference Series No. 126 (IOP Publishing Ltd., Bristol, England, 1992), p. 293. (Invited)
  103. “Femtosecond Nonlinearities And Hot-Carrier Dynamics In GaAs,” T. Gong and P. M. Fauchet, in *Ultrafast Processes in Spectroscopy 1991*, edited by A. Laubereau and A. Seilmeier, Institute of Physics Conference Series No. 126 (IOP Publishing Ltd., Bristol, England, 1992), pp. 317–324. (Invited)
  102. “Applied Optical Diagnostics In Semiconductors,” P. M. Fauchet, Proc. IEEE **80**, 420–435 (1992). (Invited)
  101. “Hot Carrier Relaxation And Recombination In Amorphous Semiconductors,” A. Mouchid, D. Hulin, R. Vanderhaghen, and P. M. Fauchet, Semicond. Sci. & Technol. **7**, B302 (1992).
  100. “Femtosecond Gain Dynamics In Thin GaAs Films,” P. M. Fauchet, T. Gong, P. J. Kelly, and J. F. Young, Semicond. Sci. & Technol. **7**, B164–B166 (1992).
  99. “The Properties Of Free Carriers In Amorphous Silicon,” P. M. Fauchet, D. Hulin, R. Vanderhaghen, A. Mouchid, and W. L. Nighan, Jr., J. Non-Cryst. Solids **141**, 76 (1992). (Invited)
  98. “The Raman Line Shape Of Semiconductor Nanocrystals,” P. M. Fauchet, in *Light Scattering in Semiconductor Structures and Superlattices*, D. J. Lockwood and J. F. Young, editors (Plenum, New York, 1991), pp. 229–245. (Invited)
  97. “Crystallization Of a-Si:H With CW And Pulsed Lasers,” P. M. Fauchet and I. H. Campbell, J. Non-Cryst. Solids **137 & 138**, 729–732 (1991).
  96. “Femtosecond Thermalization Processes In a-Si:H,” D. Hulin, A. Mouchid, P. M. Fauchet, W. L. Nighan, Jr., and R. Vanderhaghen, J. Non-Cryst. Solids **137 & 138**, 527–530 (1991).
  95. “The Mechanism Of Subnanosecond Carrier Recombination In a-Si:H,” R. Vanderhaghen, A. Mouchid, D. Hulin, D. A. Young, W. L. Nighan, Jr., and P. M. Fauchet, J. Non-Cryst. Solids **137 & 138**, 543–546 (1991).
  94. “Picosecond Carrier Dynamics In a-Si<sub>0.5</sub>Ge<sub>0.5</sub>:H Measured With A Free Electron Laser,” P. M. Fauchet, D. A. Young, W. L. Nighan, Jr., and C. M. Fortmann, IEEE J. Quantum Electron. **27**, 2714–2717 (1991).
  93. “Femtosecond Refractive And Absorptive Nonlinearities Due To Real Carriers In GaAs,” T. Gong and P. M. Fauchet, in *OSA Proceedings on Picosecond Electronics and*

- Optoelectronics*, edited by T. C. L. G. Sollner and J. Shah (Optical Society of America, Washington, DC, 1991), Vol. 9, pp. 253–259.
92. “Femtosecond Gain Dynamics Due To Initial Thermalization Of Hot Carriers Injected At 2 eV In GaAs,” T. Gong, P. M. Fauchet, J. F. Young, and P. J. Kelly, *Phys. Rev. B* **44**, 6542–6545 (1991).
  91. “Femtosecond Refractive-Index Spectral Hole Burning In Intrinsic And Doped GaAs,” T. Gong, P. Mertz, W. L. Nighan, Jr., and P. M. Fauchet, *Appl. Phys. Lett.* **59**, 721–723 (1991).
  90. “Temporal Reshaping Of Ultrashort Laser Pulses Reflected By GaAs,” I. H. Campbell, S. K. Kirby and P. M. Fauchet, in *Photonics: Nonlinear Optics and Ultrafast Phenomena*, edited by R. R. Alfano and L. Rothberg (Nova Science, New York, 1991), pp. 165–169.
  89. “Control Of Solitons In A Femtosecond Dye Laser,” W. L. Nighan Jr., T. Gong, and P. M. Fauchet, in *Photonics: Nonlinear Optics and Ultrafast Phenomena*, edited by R. R. Alfano and L. Rothberg (Nova Science, New York, 1991), pp. 153–157.
  88. “High-Efficiency High-Energy Optical Amplifier For Femtosecond Pulses,” W. L. Nighan, Jr. and P. M. Fauchet, in *Applications of Ultrashort Laser Pulses in Science and Technology* (SPIE, Bellingham, WA, 1990), Vol. 1268, p. 79.
  87. “Generation Of Solitons, Periodic Pulsing, And Nonlinearities In The CPM Dye Laser,” P. M. Fauchet, W. L. Nighan, Jr., and T. Gong, in *Applications of Ultrashort Laser Pulses in Science and Technology* (SPIE, Bellingham, WA, 1990), Vol. 1268, p. 88.
  86. “Ultrafast Relaxation Dynamics Of Photoexcited Carriers In GaAs,” T. Gong, W. L. Nighan, Jr., and P. M. Fauchet, in *Applications of Ultrashort Laser Pulses in Science and Technology* (SPIE, Bellingham, WA, 1990), Vol. 1268, p. 106.
  85. “Hot Carrier Coulomb Effects In GaAs Investigated By Femtosecond Spectroscopy Around The Band Edge,” T. Gong, W. L. Nighan, Jr., and P. M. Fauchet, *Appl. Phys. Lett.* **57**, 2713-2715 (1990).
  84. “Ultrafast Scattering Times In Amorphous Silicon,” D. Hulin, A. Mourchid, R. Vanderhaghen, and P. M. Fauchet, in *Ultrafast Phenomena VII*, C. B. Harris, E. P. Ippen, G. A. Mourou, and A. H. Zewail, editors (Springer-Verlag, 1990), pp. 282–284.
  83. “Femtosecond Energy Transfer In a-Si:H,” A. Mourchid, R. Vanderhaghen, D. Hulin, and P. M. Fauchet, *Phys. Rev. B* **42**, 7667-7670 (1990).
  82. “CW Laser Irradiation Of GaAs: Arsenic Formation And Photoluminescence Degradation,” I. H. Campbell and P. M. Fauchet, *Appl. Phys. Lett.* **57**, 10-12 (1990).
  81. “Mechanism Of The Growth Of Amorphous And Microcrystalline Silicon From Silicon Tetrafluoride And Hydrogen,” Y. Okada, J. Chen, I. H. Campbell, P. M. Fauchet, and S. Wagner, *J. Appl. Phys.* **67**, 1757 (1990).
  80. “The Effect Of Hydrogen On The Structure And Electro-Optical Properties Of Silicon-Germanium Alloys,” C. M. Fortmann, D. E. Albright, I. H. Campbell, and P. M. Fauchet, *Mat. Res. Soc. Symp. Proc.* **164**, 315 (1990).
  79. “Critical Review Of Raman Spectroscopy As A Diagnostic Tool For Semiconductor Nanocrystals,” P. M. Fauchet and I. H. Campbell, *Mat. Res. Soc. Symp. Proc.* **164**, 259 (1990).
  78. “Opto-Electronic Properties Of  $\mu\text{-Si}$  Grown From  $\text{SiF}_4$  And  $\text{H}_2$  By PECVD,” Y. Okada, I. H. Campbell, P. M. Fauchet, and S. Wagner, *Mat. Res. Soc. Symp. Proc.* **164**, 15 (1990).

77. "Femtosecond Spectroscopic Determination Of The Properties Of Free Carriers In a-Si:H," A. Mourchid, D. Hulin, C. Tanguy, R. Vanderhaghen, W. L. Nighan, Jr., K. Gzara, and P. M. Fauchet, *Solid State Commun.* **74**, 1197 (1990).
76. "Photoluminescence Above The Tauc Gap In a-Si:H," I. H. Campbell, P. M. Fauchet, S. A. Lyon, and R. J. Nemanich, *Phys. Rev. B* **41**, 9871 (1990).
75. "Bulk And Surface Properties Of Amorphous Hydrogenated Fluorinated Silicon Grown From SiF<sub>4</sub> And H<sub>2</sub>," A. Maruyama, D. Shen, V. Chu, J. Z. Liu, I. Campbell, P. M. Fauchet, and S. Wagner, *IEEE Trans. Electron Devices* **ED-36**, 2853 (1989).
74. "Mechanism Of Microcrystalline Silicon Growth From Silicon Tetrafluoride And Hydrogen," Y. Okada, J. Chen, I. H. Campbell, P. M. Fauchet, and S. Wagner, *J. Non-Cryst. Solids* **114**, 816 (1989).
73. "Extended State Mobility In a-Si:H Measured By Femtosecond Spectroscopy," P. M. Fauchet, A. Mourchid, D. Hulin, C. Tanguy, and R. Vanderhaghen, *J. Non-Cryst. Solids* **114**, 564 (1989).
72. "Temperature Dependence Of H Radical Etching In The Deposition Of Microcrystalline Silicon Alloy Thin Films By Hg-Sensitized Photo-CVD," N. Saxena, D. E. Albright, C. M. Fortmann, T. W. F. Russell, P. M. Fauchet, and I. H. Campbell, *J. Non-Cryst. Solids* **114**, 801 (1989).
71. "Femtosecond Optical Spectroscopy In a-Si:H And Its Alloys," A. Mourchid, D. Hulin, C. Tanguy, R. Vanderhaghen, and P. M. Fauchet, *J. Non-Cryst. Solids* **114**, 582 (1989).
70. "Luminescence Above The Tauc Gap In a-Si:H," P. M. Fauchet, I. H. Campbell, S. A. Lyon, and R. J. Nemanich, *J. Non-Cryst. Solids* **114**, 277 (1989).
69. "Solitons And Related Periodic Pulse Evolutions In A Femtosecond Dye Laser," W. L. Nighan, Jr., T. Gong, and P. M. Fauchet, *IEEE J. Quantum Electron.* **QE-25**, 2476 (1989).
68. "a-Si And  $\mu\text{c-Si}$  Grown From SiF<sub>4</sub> With High H<sub>2</sub> Dilution In A DC Glow Discharge," Y. Okada, J. Chen, I. H. Campbell, P. M. Fauchet, and S. Wagner, *Mat. Res. Soc. Symp. Proc.* **149**, 93 (1989).
67. "Ultrafast Electronic And Structural Processes In Highly Excited Crystalline And Non-Crystalline Silicon," P. M. Fauchet, *Opt. Eng.* **28**, 1096 (1989). (Invited)
66. "Optical, Electrical And Structural Properties Of Composite Films Made Of Si, Ge And C," P. M. Fauchet and I. H. Campbell, in *Raman Scattering, Luminescence and Spectroscopic Instrumentation in Technology* (SPIE, Bellingham, WA, 1989), Vol. 1055, p. 204.
65. "Surface Condition In The Plasma-CVD Of a-Si:H,F From SiF<sub>4</sub> And H<sub>2</sub>," A. Maruyama, D. S. Shen, V. Chu, J. Z. Liu, J. Jaroker, I. H. Campbell, P. M. Fauchet, and S. Wagner, *Mat. Res. Soc. Symp. Proc.* **131**, 203 (1989).
64. "Generation And Control Of Solitons And Solitonlike Pulses In A Femtosecond Ring Dye Laser," W. L. Nighan, Jr., T. Gong, and P. M. Fauchet, *Opt. Lett.* **14**, 447 (1989).
63. "Ultrafast Carrier Relaxation In Hydrogenated Amorphous Silicon," P. M. Fauchet and D. Hulin, *J. Opt. Soc. Am. B* **6**, 1024 (1989).
62. "Enhanced Sensitivity Of Time-Resolved Reflectivity Measurements Near Brewster's Angle," P. M. Fauchet, *IEEE J. Quantum Electron.* **QE-25**, 1072 (1989).
61. "Self-Diffraction: A New Method For Characterization Of Ultrashort Laser Pulses," W. L. Nighan, Jr., T. Gong, L. Liou, and P. M. Fauchet, *Opt. Commun.* **69**, 339 (1989).

60. "Properties Of p+ Microcrystalline Films Of SiC:H Deposited By Conventional RF Glow Discharge," B. Goldstein, C. R. Dickson, I. H. Campbell, and P. M. Fauchet, *Appl. Phys. Lett.* **53**, 2672 (1988).
59. "Control And Characterization Of Soliton-Like Pulses In A Femtosecond Dye Laser," W. L. Nighan, Jr., T. Gong, and P. M. Fauchet, in *Ultrafast Phenomena VI*, T. Yajima, K. Yoshihara, C. B. Harris, and S. Shionoya, editors (Springer-Verlag, 1988), pp. 109–111.
58. "Free Carrier And Temperature Effects In Amorphous Silicon Thin Films," C. Tanguy, D. Hulin, A. Mourchid, P. M. Fauchet, and S. Wagner, *Appl. Phys. Lett.* **53**, 880 (1988).
57. "The Nature Of Residual Stress, Defects, And Device Characteristics For Thick Single-Crystalline Si Films On Oxidized Si Wafers," L. E. Trimble, G. K. Celler, D. G. Schimmel, C. Y. Lu, S. Nakahara, and P. M. Fauchet, *J. Mater. Res.* **3**, 514 (1988).
56. "Electrical, Optical And Structural Properties Of p+ Microcrystalline SiC:H Layers Deposited By RF Glow Discharge," B. Goldstein, C. R. Dickson, I. H. Campbell, and P. M. Fauchet, in *Proc. 8th European Communities Photovoltaic Solar Energy Conference*, I. Solomon, B. Equer, and P. Helm, editors (Kluwer, 1988), pp. 969–975.
55. "Temporal Reshaping Of Ultrashort Laser Pulses After Reflection From GaAs At Brewster's Angle," I. H. Campbell and P. M. Fauchet, *Opt. Lett.* **13**, 634 (1988).
54. "Determination Of Carrier-Carrier And Carrier-Phonon Relaxation Times From Ultrafast Photoinduced Absorption In Amorphous Semiconductors," P. M. Fauchet and K. Gzara, *Phys. Stat. Sol. (b)* **148**, K71 (1988).
53. "Hot Carrier Dynamics In Amorphous Semiconductors," P. M. Fauchet, K. Gzara, I. H. Campbell, D. Hulin, C. Tanguy, A. Mourchid, and A. Antonetti, in *Ultrafast Laser Probe Phenomena in Bulk and Microstructure Semiconductors II*, R. R. Alfano, editor (SPIE, Bellingham, WA, 1988), Vol. 942, pp. 92–98.
52. "Optical Techniques For *In-situ*, Real Time Detection Of Laser Damage," P. M. Fauchet and I. H. Campbell, in *Laser Optics for Intracavity and Extracavity Applications*, P. M. Fauchet and K. H. Guenther, editors (SPIE, Bellingham, WA, 1988), Vol. 895, pp. 210–217.
51. "Optical And Electronic Properties Of An Amorphous Silicon-Germanium Alloy With A 1.28 eV Optical Gap," J. Kolodzey, R. Schwarz, S. Aljishi, V. Chu, D.-S. Shen, P. M. Fauchet, and S. Wagner, *Appl. Phys. Lett.* **52**, 477 (1988).
50. "Picosecond Optical Determination Of Carrier Lifetime In Polysilicon Films," N. K. Bambha, W. L. Nighan, Jr., I. H. Campbell, P. M. Fauchet, and N. M. Johnson, *Mat. Res. Soc. Symp. Proc.* **106**, 323 (1988).
49. "Picosecond Laser Induced Melting: The Dielectric Function Of Molten Silicon And Superheating In The Liquid Phase," P. M. Fauchet and K. D. Li, *Mat. Res. Soc. Symp. Proc.* **100**, 477 (1988).
48. "Trapping Time In Processed Polycrystalline Silicon Measured By Picosecond Time-Resolved Reflectivity," N. K. Bambha, W. L. Nighan, Jr., I. H. Campbell, P. M. Fauchet, and N. M. Johnson, *J. Appl. Phys.* **63**, 2316 (1988).
47. "Raman Spectroscopy In Low-Dimensional Semiconductors," P. M. Fauchet and I. H. Campbell, *CRC Critical Reviews in Solid State and Materials Sciences* **14**, S79-S101 (1988). (Invited)

46. "Detection Of Laser Damage By Raman Microscopy," P. M. Fauchet, I. H. Campbell, and F. Adar, in *NBS Special Publication 746*, H. E. Bennett *et al.*, editors (U.S. Government Printing Office, 1988), pp. 388–394.
45. "The Dielectric Function Of Laser-Produced Molten Silicon," P. M. Fauchet and K. D. Li, *J. Non-Cryst. Solids* **97 & 98**, 1267 (1987).
44. "Femtosecond Spectroscopy In Amorphous Silicon And Silicon-Germanium Alloys," P. M. Fauchet, D. Hulin, A. Migus, A. Antonetti, J. P. Conde, and S. Wagner, *J. Non-Cryst. Solids* **97 & 98**, 145 (1987).
43. "Drude Parameters Of Liquid Silicon At The Melting Temperature," K. D. Li and P. M. Fauchet, *Appl. Phys. Lett.* **51**, 1747 (1987).
42. "High Spatial Resolution Analysis Of Semiconductor Thin Films With A Raman Microprobe," P. M. Fauchet, in *Microbeam Analysis - 1987*, R. H. Geiss, editor (San Francisco Press, 1987), pp. 144–146.
41. "Structural Properties Of Heteroepitaxial Semiconductor Islands By Raman Microscopy," P. M. Fauchet, I. H. Campbell, M. A. Awal, and E.-H. Lee, *International Conference on Raman and Luminescence Spectroscopy in Technology*, J. E. Griffiths and F. Adar, editors, *SPIE Proc.* **822**, 25–30 (1987).
40. "Raman Microprobe Study Of Si And Ge On Insulator," I. H. Campbell, P. M. Fauchet, E.-H. Lee, and M. A. Awal, *Thin Solid Films* **154**, 249 (1987).
39. "Raman Microscopy Of Semiconductor Films," P. M. Fauchet and I. H. Campbell, in *Modern Optical Characterization Techniques for Semiconductors and Semiconductor Devices*, O. J. Glembocki, F. H. Pollak, and J. Song, editors (SPIE, Bellingham, WA, 1987), Vol. 794, pp. 167–169.
38. "The Structure Of a-Si:H,F/a-Si,Ge:H,F Interfaces," J. P. Conde, D.-S. Shen, I. H. Campbell, P. M. Fauchet, and S. Wagner, in *Interfaces, Superlattices and Thin Films*, J. D. Dow and I. K. Schuller, editors (Materials Research Society, 1987), pp. 629–634.
37. "Picosecond Determination Of The Dielectric Function Of Liquid Silicon At 1064 nm," K. D. Li and P. M. Fauchet, *Solid State Commun.* **61**, 207 (1987).
36. "The Raman Spectrum Of Semiconductor Nanograins," I. H. Campbell and P. M. Fauchet, *Proceedings of the 18th International Conference on the Physics of Semiconductors*, O. Engstrom, editor (World Scientific, 1987), pp. 1357–1360.
35. "Femtosecond Spectroscopy In  $\alpha$ -Si:H," P. M. Fauchet, D. Hulin, A. Migus, A. Antonetti, J. Kolodzey, and S. Wagner, *Proceedings of the 18th International Conference on the Physics of Semiconductors*, O. Engstrom, editor (World Scientific, 1987), pp. 1029–1032.
34. "Initial Stages Of Trapping In a-Si:H Observed By Femtosecond Spectroscopy," P. M. Fauchet, D. Hulin, A. Migus, A. Antonetti, J. Kolodzey, and S. Wagner, *Phys. Rev. Lett.* **57**, 2438 (1986).
33. "Carrier Scattering At Periodic a-Si:H,F Barriers In Si,Ge:H,F Alloys," J. Kolodzey, R. Schwarz, S. Aljishi, D.-S. Shen, I. Campbell, P. M. Fauchet, S. A. Lyon, and S. Wagner, *Superlattices and Microstructures* **2**, 391 (1986).
32. "Femtosecond Spectroscopy Of Hot Carriers In Germanium," P. M. Fauchet, D. Hulin, G. Hamoniaux, A. Orszag, J. Kolodzey, and S. Wagner, in *Ultrafast Phenomena V*, G. R. Fleming and A. E. Siegman, editors (Springer-Verlag, 1986), pp. 248–250.
31. "Mapping Solid Surfaces With A Raman Microprobe," P. M. Fauchet, *Scanning Electron Micros.*, 1986, **II**, 425 (1986).

30. "Microcrystallinity In  $\alpha$ -Si,Ge:H,F Alloys," D. S. Shen, J. Kolodzey, D. Slobodin, J. P. Conde, C. Lane, I. H. Campbell, P. M. Fauchet, and S. Wagner, in *Materials Issues in Amorphous Semiconductor Technology*, D. Adler, Y. Hamakawa, and A. Madan, editors (Materials Research Society, 1986), pp. 301–306.
29. "Stimulated Wood's Anomalies On Laser-Illuminated Surfaces," A. E. Siegman and P. M. Fauchet, *IEEE J. Quantum Electron* **QE-22**, 1384 (1986). (Invited)
28. "The Effects Of Microcrystal Size And Shape On The One Phonon Raman Spectra Of Crystalline Semiconductors," I. H. Campbell and P. M. Fauchet, *Solid State Commun.* **58**, 739 (1986).
27. "Recombination Mechanisms In Si And Si Thin Films Determined By Picosecond Reflectivity Measurements Near Brewster's Angle," P. M. Fauchet and W. L. Nighan, Jr., *Appl. Phys. Lett.* **48**, 721(1986).
26. "Properties Of Thin Films After Focused Beam Processing," I. H. Campbell, F. Adar, and P. M. Fauchet, in *Semiconductor-on-Insulator and Thin Film Transistor Technology*, A. Chiang, M. W. Geis, and L. Pfeiffer, editors (Materials Research Society, 1986), pp. 311–316.
25. "Raman Microprobe Analysis Of Laser-Induced Microstructures," P. M. Fauchet, in *Beam-Solid Interactions and Phase Transformations*, H. Kurz, G. L. Olson, and J. M. Poate, editors (Materials Research Society, 1986), pp. 149–154.
24. "Characterization Of Ultrashort Laser Pulses By The Method Of Self-Diffraction," P. M. Fauchet, W. L. Nighan, Jr., and R. Trebino, *American Institute of Physics Conf. Proc.* **146**, 588 (1986).
23. "Raman Microscopy Of Solid Surfaces After Laser Irradiation," P. M. Fauchet, I. H. Campbell, and F. Adar, *American Institute of Physics Conf. Proc.* **146**, 730 (1986).
22. "Properties Of Gratings Written With A Single Laser Beam," P. M. Fauchet, *American Institute of Physics Conf. Proc.* **146**, 739 (1986). (Invited)
21. "The Raman Microprobe: A Quantitative Analytical Tool To Characterize Laser-Processed Semiconductors," P. M. Fauchet, *IEEE Circuits and Devices Magazine* **2**, 37 (1986). (Invited)
20. "Surface Damage Mechanisms In Nontransparent Media," P. M. Fauchet and A. E. Siegman, in *NBS Special Publications 727*, H. E. Bennett, A. H. Guenter, D. Milam, and B. E. Newnam, editors (U.S. Government Printing Office, 1986), pp. 147–153.
19. "Transport Properties Of  $\alpha$ -Si, Ge:H Alloys Prepared From SiF<sub>4</sub> And H<sub>2</sub> In R.F. Or D.C. Glow Discharges," J. Kolodzey, D. Slobodin, S. Aljishi, S. Quinlan, R. Schwarz, D. S. Shen, P. M. Fauchet, and S. Wagner, *J. Non-Cryst. Solids* **77 & 78**, 897 (1985).
18. "Long Range Material Relaxation After Localized Laser Damage," P. M. Fauchet, I. H. Campbell, and F. Adar, *Appl. Phys. Lett.* **47**, 479 (1985).
17. "Raman Microprobe Study Of Changes Induced By A Pulsed Laser," F. Adar, I. H. Campbell, and P. M. Fauchet, in *Microbeam Analysis - 1985*, J. T. Armstrong, editor (San Francisco Press, 1985), pp. 53–56.
16. "Micro-Raman Study Of Laser-Induced Damage," P. M. Fauchet, I. H. Campbell, and F. Adar, in *NBS Special Publication 697*, A. Feldman, editor (U.S. Government Printing Office, 1985), pp. 198–201.
15. "Laser-Induced Surface Ripples: What Is Understood And What Is Not," P. M. Fauchet and A. E. Siegman, in *Energy Beam-Solid Interactions and Transient Thermal Processing*

- 1984, Biegelsen, Rozgonyi, and Shank, editors (Materials Research Society, 1985), pp. 199–204.
14. “Ultrafast Spectroscopy Of Very Dense And Hot Electron Hole Plasmas In Crystalline And Amorphized Semiconductors,” P. M. Fauchet and A. E. Siegman, in the *Proceedings of the 17th International Conference on the Physics of Semiconductors*, Chadi and Harrison, editors (Springer-Verlag, 1985), pp. 1501–1504.
  13. “Picosecond Dynamics Of Electron-Hole Plasmas Close To The Melting Phase Transition In Silicon And Gallium Arsenide,” P. M. Fauchet and A. E. Siegman, in the *Proceedings of the International Conference on Lasers '83*, Powell, editor (STS Press, 1985), pp. 38–44.
  12. “Picosecond Dynamics Of Dense Hot Electron-Hole Plasmas In Crystalline And Amorphized Si And GaAs,” P. M. Fauchet and A. E. Siegman, in *Ultrafast Phenomena IV*, Auston and Eisenthal, editors (Springer-Verlag, 1984), pp. 129–132.
  11. “Two-Color Picosecond Measurements On Electron-Hole Plasmas Close To The Melting Phase Transition,” P. M. Fauchet and A. E. Siegman, in *Energy Beam-Solid Interactions and Transient Thermal Processing*, Fan and Johnson, editors (North-Holland, 1984), pp. 63–68.
  10. “Evidence For A Dense Electron-Hole Plasma Close To The Melting Phase Transition In Silicon,” P. M. Fauchet and A. E. Siegman, *Appl. Phys. Lett.* **43**, 1043 (1983).
  9. “Observations Of Higher-Order Laser-Induced Surface Ripples On <111> Germanium,” P. M. Fauchet and A. E. Siegman, *Appl. Phys. A* **32**, 135 (1983).
  8. “Picosecond Laser-Induced Surface Transitions In Solids,” P. M. Fauchet, Zhou Guosheng, and A. E. Siegman, in *Laser-Solid Interactions and Transient Thermal Processing of Materials*, Narayan, Brown, and Lemons, editors (North-Holland, 1983), pp. 205–210.
  7. “Gradual Surface Transitions On Semiconductors Induced By Multiple Picosecond Laser Pulses,” P. M. Fauchet, *Phys. Lett. A* **93**, 155 (1983).
  6. “Growth Of Periodic Surface Structures On Solids During Laser Illumination,” Zhou Guosheng, P. M. Fauchet, and A. E. Siegman, *Phys. Rev. B* **26**, 5366 (1982).
  5. “Periodic Ripple Structure On Semiconductors Under Picosecond Pulse Illumination,” P. M. Fauchet, Zhou Guosheng, and A. E. Siegman, in *Picosecond Phenomena III*, Eisenthal *et al.*, editors (Springer-Verlag, 1982), pp. 376–379.
  4. “Surface Ripples On Silicon And Gallium Arsenide Under Picosecond Laser Illumination,” P. M. Fauchet and A. E. Siegman, *Appl. Phys. Lett.* **40**, 824 (1982).
  3. “The Auger Rate In Highly Excited Indium Antimonide,” P. M. Fauchet, *Phys. Stat. Sol. (b)* **110**, K11 (1982).
  2. “Nonlinear Transmission Of Picosecond 10.6 Microns Pulses In InSb,” B. D. Schwartz, P. M. Fauchet, and A. V. Nurmikko, *Opt. Lett.* **5**, 371 (1980).
  1. “Optical Probing Of Auger-Governed Decay Of Laser Induced Plasma In InSb,” P. M. Fauchet, *Phys. Stat. Sol. (a)* **58**, K211(1980).