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# SASAN FATHPOUR

## CURRICULUM VITAE

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### EDUCATION

#### University of Michigan, Ann Arbor (April 2005)

Ph.D. in Electrical Engineering

- Dissertation Title: “*High Performance Lasers and Spin-Polarized Light Emitting Diodes with Quantum Dot Active Regions*”
- Advisor: *Prof. Pallab Bhattacharya*

#### University of British Columbia, Vancouver, Canada (August 2000)

M.S., Electrical and Computer Engineering

- Thesis Title: “*Performance Predictions for AlGaIn/GaN Heterojunction Bipolar Transistors*”
- Supervisor: *Prof. David Pulfrey*

#### Isfahan University of Technology, Isfahan, Iran (September 1995)

B.S. (Honors), Electrical Engineering (Electronics)

### EMPLOYMENT

**2008-Present:** Assistant Professor of Optics, CREOL – the College of Optics and Photonics,  
University of Central Florida

Assistant Professor of Electrical Engineering, School of Electrical Engineering and Computer  
Science, University of Central Florida

**2008:** Senior Member Research Staff, Ostendo Technologies Inc., Carlsbad, CA

**2007:** Visiting Assistant Professor, Electrical Engineering Department, University of California, Los  
Angeles (UCLA).

**2005 – 2007:** Postdoctoral Research Fellow, Optoelectronic Circuits and Systems Laboratory, Electrical  
Engineering Department, UCLA  
Director of the Laboratory: *Prof. Bahram Jalali*

**2000 – 2005:** Graduate Student Research Assistant, Solid-State Electronics Laboratory, University of  
Michigan, Ann Arbor

**1999 – 2000:** Graduate Student Research Assistant, Department of Electrical and Computer  
Engineering, University of British Columbia, Vancouver, Canada

**1997 – 1998:** R&D Engineer, Pardisan Inc., Isfahan, Iran

**1995 – 1997:** Quality Control Engineer, Isfahan Optical Industry, Isfahan, Iran

### ACADEMIC HONORS AND RESEARCH AWARDS

**2007:** Featured in the 62nd Edition of Marquis Who’s Who in America

**2007:** Recipient of the 2007 UCLA Chancellor’s Award for Postdoctoral Research

**2006:** Worldwide Press Coverage of Research in Silicon Photonics (List Attached)

**2000:** International Graduate Student Fellowship, University of Michigan

**1991 – 1995:** Fellowship for Outstanding Undergraduate Student, Isfahan University of Technology

**1991:** 14<sup>th</sup> rank of the “National Entrance Exam for Undergraduate Programs” among more than 300,000 applicants nationwide

**1990:** Selected Student in the National Physics Olympics Exam

**1989:** First rank of Isfahan Province High Schools Scientific Competitions

## TEACHING EXPERIENCES

**2009:** Instructor for the graduate course OSE6938S, “Integrated Photonic Devices”, CREOL

**2009-2010:** Instructor for the graduate course OSE5312, “Fundamentals of Optical Science”, CREOL

**2007:** Instructor for the graduate course EE274, “Fiber Optic System Design”, UCLA

**2006:** Lectured some sessions in the course EE122L, “Semiconductor Devices Laboratory”, UCLA

**2004:** Lectured some sessions in the graduate course EECS529, “Semiconductor Lasers and LEDs”, University of Michigan, Ann Arbor

**2002:** Lab Tutor and Teaching Assistant for the course EECS429, “Semiconductor Optoelectronic Devices”, University of Michigan, Ann Arbor

**1999 –2000:** Lab Tutor and Teaching Assistant for “Project Integrated Program” of sophomore students of Electrical Engineering, University of British Columbia, Vancouver, Canada

**1999:** Teaching Assistant for the course EECE457, “RF Electronics”, University of British Columbia, Vancouver, Canada

## RESEARCH HIGHLIGHTS

- **Ostendo Technologies Inc., Carlsbad, CA:**

*Visible LEDs:* Design, fabrication and modeling of ‘vertical waveguide’ nitride-based green and blue LEDs

- **University of California, Los Angeles:**

*Demonstration of energy harvesting in silicon photonic chips with worldwide press coverage (list attached):* High power dissipation is the central problem in integration of silicon photonic devices with CMOS electronics. The breakthrough demonstrated that not only high electrical power dissipation can be avoided in Si photonic devices (optical amplifiers, wavelength converters and optical modulators) but electrical power can be generated in the process.

*Demonstration of electronic tuning of optical properties (birefringence) of silicon:* Using the stress induced by an integrated piezoelectric transducer on top of a Si waveguide, the birefringence of the devices were tuned in order to achieve phase matching in third-order nonlinear devices.

- **University of Michigan:**

*First demonstration of temperature invariant operation in any semiconductor laser:* Achieved infinite characteristics temperature in p-doped 1.3  $\mu\text{m}$  InAs/GaAs self-assembled quantum dot lasers; Development of a theory that attributed the  $T_0=\infty$  experimental result to the role of Auger recombination; First experimental report of modulation bandwidth in p-doped quantum dot lasers and comparison with theory.

*Report of highest modulation bandwidth (~25 GHz) in any quantum dot laser:* unbeaten to date, demonstrated by utilizing p-doping and tunneling injection; report of superior dynamic performance (*zero linewidth enhancement factor* and *negligible chirp*) and suppressed filamentation in the same lasers.

*Demonstration of quantum dot DFB lasers:* gain-coupled distributed feedback with 30 dB side-mode suppression ratio and 4  $\text{\AA}$  lasing mode linewidth.

**Room-temperature spintronic materials:** Report of diluted magnetic In(Mn)As/GaAs quantum dots with Curie temperatures above 300K with potential applications in *room-temperature* spintronic memory devices and light sources.

**Spin-polarized LEDs:** Demonstration of spin-polarized InGaAs/GaAs quantum dot LEDs with an output polarization efficiency of 30% and *record-high* temperature operation of 95 K.

- **University of British Columbia, Canada:**

**Nitride transistors:** Performance prediction for nitride-based (AlGaIn/GaN) heterojunction bipolar transistors (HBTs) and theoretical studies on the effect of quasi-ballistic transport in the frequency response of nanoscale (<40 nm) HBTs.

## RESEARCH EXPERTISE

### Device Fabrication

- Three years of experience in processing GaN-based LEDs and Si photonic devices at UCLA's Nanoelectronics Research Facility.
- Four years of experience in processing state-of-the-art III-V (GaAs and InP-based) single-mode Fabry-Perot and DFB lasers, VCSELs and other optoelectronic and spintronic devices at Michigan Nanofabrication Facility, a member of the National Nanotechnology Infrastructure Network.
- Major employed processes include photolithography, dry etching (RIE), wet chemical etching, thin film deposition, plasma-enhanced chemical vapor deposition (PECVD), furnace oxidation and doping, rapid thermal annealing, wire bonding, substrate thinning and polishing.

### Material and Device Characterization

Characterization of nonlinear optical effects, e.g., Raman and Kerr, in photonic devices; DC characteristics of semiconductor lasers; Modulation response, linewidth enhancement factor, chirp and other dynamic characterizations of high-speed semiconductor lasers; Characterization of optical waveguides; Cryogenic magneto-optical measurements at liquid helium temperature; Superconducting quantum interference device (SQUID) magnetometry; Scanning electron microscopy (SEM); Photoluminescence (PL); Polarization-dependent electroluminescence (EL); Optical spectroscopy and reflectometry; Hall and magnetoresistance measurements;.

### Physical Modeling and Device Design

Developing codes for modeling physical properties of confined heterostructures and analysis of transistors and optoelectronic devices; Optical mode calculations and design of epitaxial heterostructures for optical microcavities, waveguides and photonic devices; Design of single-mode edge-emitting lasers and VCSELs; Various software packages and computer languages such as MATLAB, BeamProp, Zemax, ATLAS, MEDICI, DAVINCI, ATHENA, COMSOL, ANSYS, OrCAD, HSPICE, Labview and TMS family DSP processors assembly language.

### Epitaxial Growth

Four years of experience in molecular beam epitaxial (MBE) growth:

- MBE growth of self-organized quantum dots and InGaAs/AlGaAs/GaAs heterostructures for lasers and other electronic and optoelectronic devices.
- MBE growth of (III,Mn)-V diluted magnetic semiconductor nanostructures for spintronic applications.
- General maintenance and repair of MBE and other ultra-high vacuum systems.

## PROFESSIONAL MEMBERSHIP

Member of the Institute of Electrical and Electronics Engineers (IEEE).

Member of the Optical Society of America (OSA).

Member of the International Society for Optical Engineering (SPIE).

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## PRESS COVERAGE OF RESEARCH

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- *EE Times*, “Silicon laser harnessed”  
<http://www.eetimes.com/news/latest/showArticle.jhtml?articleID=189800074>
- *MIT Technology Review*, “Self-Powered Silicon Laser Chips”  
[http://www.technologyreview.com/read\\_article.aspx?id=17123&ch=infotech](http://www.technologyreview.com/read_article.aspx?id=17123&ch=infotech)
- *The New Scientist*, “Energy harvesting can boost optoelectronic efficiency”  
<http://www.newscientisttech.com/article/dn11784-energy-harvesting-can-boost-optoelectronic-efficiency.html>
- *Science News*, “Power Play: Shift from loss to gain may boost silicon devices”  
<http://www.sciencenews.org/articles/20060708/fob7ref.asp>
- *Photonics Spectra*, “Raman Amplifier in Silicon Generates Electrical Power”  
<http://www.photonics.com/content/spectra/2006/September/tech/84212.aspx>
- *Electronic Design*, “Military R&D 101 (Free Energy)”  
<http://www.elecdesign.com/Articles/Index.cfm?ArticleID=13281&pg=3>
- *PhysOrg.com*, “Scientists Announce Breakthrough in Silicon Photonics Devices”  
<http://www.physorg.com/news70726109.html>
- *Laser Focus World Magazine*, “UCLA Engineering announces another silicon photonics breakthrough”  
[http://lfw.pennnet.com/Articles/Article\\_Display.cfm?ARTICLE\\_ID=259067&p=12](http://lfw.pennnet.com/Articles/Article_Display.cfm?ARTICLE_ID=259067&p=12)
- *Photonics.com*, “New Approach Announced in Si Photonic Devices”  
<http://www.photonics.com/content/news/2006/June/28/83208.aspx>
- *Optics.org*, “Silicon photonics solves its “fundamental problem””  
<http://optics.org/articles/news/12/7/20>
- *United Press International*, “UCLA creates new silicon photonics devices”  
<http://www.upi.com/NewsTrack/view.php?StoryID=20060628-052415-9358r>
- *Technology News Daily*, “Breakthrough in Silicon Photonics Devices”  
<http://www.technologynewsdaily.com/node/3528>
- *Planet Analog*, “Silicon laser harnessed”  
<http://www.planetanalog.com/news/showArticle.jhtml?articleID=190100094>
- *ACM Tech News*, “UCLA Engineering Announces Breakthrough in Silicon Photonics Devices”  
<http://technews.acm.org/archives.cfm?fo=2006-06-jun/jun-30-2006.html#268286>
- *ZP Energy*, “Scientists Announce Breakthrough in Silicon Photonics Devices”  
<http://www.zpenergy.com/modules.php?name=News&file=article&sid=1957>
- *Engineer Online (UK)*, “Silicon Photonics Breakthrough”  
<http://www.e4engineering.com/Articles/295083/Silicon%20photonics%20breakthrough.htm>
- *Azom.com*, “Silicon Photonic Breakthrough”  
<http://www.azom.com/details.asp?newsID=5845>
- *Advanced nanotechnology*, “other tech: Silicon photonics advance”  
<http://advancednano.blogspot.com/2006/06/other-tech-silicon-photonics-advance.html>
- *DailyIndia.com*, “UCLA creates new silicon photonics devices”  
<http://www.dailyindia.com/show/38277.php/UCLA-creates-new-silicon-photonics-devices>
- *Post Chronicle*, “UCLA Creates New Silicon Photonics Devices”  
[http://www.postchronicle.com/news/science/article\\_21225687.shtml](http://www.postchronicle.com/news/science/article_21225687.shtml)
- *Political Gateway*, “UCLA creates new silicon photonics devices”  
<http://www.politicalgateway.com/news/read/21911>
- *Science Blog*, “Breakthrough in Silicon Photonics Devices”  
<http://www.blogspan.org/blogs/science-blog.html>
- *Iran Daily*, “Breakthrough in Silicon Photonics Devices”  
<http://www.iran-daily.com/1385/2600/pdf/i8.pdf>
- *Technology-blog.com*, “Breakthrough in Silicon Photonics Devices”  
<http://www.technology-blog.com/blogs/permalinks/6-2006/breakthrough-in-silicon-photonics-devices.html>
- *Daily Bruin*, “Silicon uses may advance technology”  
<http://www.dailybruin.ucla.edu/news/articles.asp?id=37737>
- *Mediabong.com*, “Scientists Announce Breakthrough in Silicon Photonics Devices”  
<http://mediabong.com/comment.php?comment.news.1319.3>
- *The All I need*, “Breakthrough in Silicon Photonics Devices”  
<http://www.theallined.com/engineering/06071202.htm>
- *Net World Directory*, “Breakthrough in Silicon Photonics Devices”  
<http://www.networlddirectory.com/blogs/permalinks/6-2006/silicon-photonics-devices.html>
- *Inovacao Tecnologica*, “Componente de silício combina amplificação de luz e efeito fotovoltaico”  
<http://www.inovacaotecnologica.com.br/noticias/noticia.php?artigo=010110060630>

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## PUBLICATION LIST

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### ARCHIVAL JOURNAL PUBLICATIONS

#### Silicon Photonics

- [1] **S. Fathpour**, and N. Riza, "Silicon-Photonics-Based Wideband Radar Beamforming: Basic Design," *SPIE Journal of Optical Engineering*, vol. 49, p. 018201, 2010.
- [2] O. Lopatiuk-Tirpak, and **S. Fathpour**, "Effects of the Surrounding Medium on the Optical Properties of a Subwavelength Aperture," *Optics Express*, vol. 17, pp. 23861-23866, December 2009.
- [3] B. Jalali, **S. Fathpour**, and K. K. Tsia, "Green Silicon Photonics," *OSA Optics and Photonics News*, vol. 20, No. 6, pp. 18-23, June 2009.
- [4] D. Borlaug, **S. Fathpour**, and B. Jalali, "Extreme Value Statistics in Silicon Photonics," *IEEE Photonics Journal*, vol. 1, pp. 33-39, June 2009.
- [5] B. Jalali, **S. Fathpour**, and K. K. Tsia, "Green Silicon Photonics," *Optics and Photonics News*, vol. 20, pp. 18-23, June 2009.
- [6] K. K. Tsia, **S. Fathpour**, and B. Jalali, "Electrical control of parametric processes in silicon waveguides," *Optics Express*, vol. 16, pp. 9838-9843, June 2008.
- [7] M. Krause, H. Renner, **S. Fathpour**, B. Jalali, and E. Brinkmeyer, "Raman-Gain Enhancement in Cladding-Pumped Silicon Waveguides," *IEEE Journal of Quantum Electronics*, vol. 44, pp. 692-704, July 2008.
- [8] K. K. Tsia, **S. Fathpour**, and B. Jalali, "Electrical Tuning of Birefringence in Silicon Waveguides," *Applied Physics Letters*, vol. 92, p. 061109, February 2008.
- [9] **S. Fathpour**, K. M. Tsia, and B. Jalali, "Two-Photon Photovoltaic Effect in Silicon," *IEEE Journal of Quantum Electronics*, vol. 43, pp. 1211-1217, December 2007.
- [10] B. Jalali and **S. Fathpour**, "Silicon Photonics," *Journal of Lightwave Technology*, 40<sup>th</sup> Anniversary Special Issue on Optoelectronics, vol. 24, pp. 1400-1415, December 2006 (INVITED).
- [11] K. K. Tsia, **S. Fathpour**, and B. Jalali, "Energy Harvesting in Silicon Wavelength Converter," *Optics Express*, vol. 14, pp. 12327-12333, December 2006.
- [12] B. Jalali, V. Raghunathan, R. Shori, **S. Fathpour**, D. Dimitropoulos, and O. Stafsudd, "Prospects for Silicon Mid-IR Raman Lasers," *IEEE Journal of Selected Topics in Quantum Electronics*, vol. 12, pp. 1618-1627, December 2006.
- [13] **S. Fathpour** and B. Jalali, "Energy Harvesting in Silicon Optical Modulators," *Optics Express*, vol. 14, pp. 10795-10799, October 2006.
- [14] **S. Fathpour**, K. M. Tsia, and B. Jalali, "Energy Harvesting in Silicon Raman Amplifiers," *Applied Physics Letters*, vol. 89, p. 061109, August 2006.
- [15] D. Dimitropoulos, **S. Fathpour**, and B. Jalali, "Intensity Dependence of the Carrier Lifetime in Silicon Raman Lasers and Amplifiers," *Applied Physics Letters*, vol. 87, p. 261108, December 2005.

#### Quantum Dot Lasers

- [16] **S. Fathpour**, Z. Mi, and P. Bhattacharya, "Small-Signal Modulation Characteristics of p-Doped 1.1 and 1.3  $\mu\text{m}$  Quantum Dot Lasers," *IEEE Photonics Technology Letters*, vol. 11, pp. 2250-2252, November 2005.
- [17] Z. Mi, **S. Fathpour**, and P. Bhattacharya, "Measurement of modal gain in 1.1  $\mu\text{m}$  p-doped tunnel injection InGaAs/GaAs quantum dot laser heterostructures," *Electronics Letters*, vol. 41, pp. 1282-1283, November 2005.
- [18] Z. Mi, P. Bhattacharya, and **S. Fathpour**, "High-Speed 1.3  $\mu\text{m}$  Tunnel Injection Quantum Dot Lasers," *Applied Physics Letters*, vol. 86, p. 153109, April 2005.

- [19] **S. Fathpour**, Z. Mi, and P. Bhattacharya, “High-Speed Quantum Dot Lasers,” *Journal of Physics D*, vol. 38, pp. 2103–2111, June 2005 (INVITED).
- [20] **S. Fathpour**, Z. Mi, and P. Bhattacharya, A. R. Kovsh, S. S. Mikhlin, I. L. Krestnikov, A. V. Kozhukhov, and N. N. Ledentsov, “The Role of Auger Recombination in the Temperature Dependent Output Characteristics of p-Doped 1.3 $\mu$ m Quantum Dot Lasers,” *Applied Physics Letters*, vol. 85, pp. 5164–5166, November 2004.
- [21] **S. Fathpour**, P. Bhattacharya, S. Pradhan, and S. Ghosh, “Linewidth Enhancement Factor and Near-Field Pattern in Tunnel Injection In<sub>0.4</sub>Ga<sub>0.6</sub>As Self-Assembled Quantum Dot Lasers,” *Electronic Letters*, vol. 39, pp. 1443–1444, October 2003.

### Spintronic Devices and Materials

- [22] J. N. Gleason, M. E. Hjelmstad, V. D. Dasika, R. S. Goldman, **S. Fathpour**, S. Chakrabarti, and P. Bhattacharya, “Nanometer-Scale Studies of Point Defect Distributions in GaMnAs Alloys,” *Applied Physics Letters*, vol. 86, pp. 11911–11913, 2005.
- [23] **S. Fathpour**, M. Holub, S. Chakrabarti, P. Bhattacharya, “Spin-Polarised Quantum Dot Light-Emitting Diodes with High Polarisation Efficiency at High Temperatures,” *Electronics Letters*, vol. 40, pp. 694 – 695, May 2004.
- [24] S. Chakrabarti, **S. Fathpour**, K. Moazzami, J. Phillips, Y. Lei, N. Browning, and P. Bhattacharya, “Pulsed Laser Annealing of Self-Organized InAs/GaAs Quantum Dots,” *Journal of Electronic Materials*, vol. 33, pp. L5–L8, 2004.
- [25] M. Holub, S. Chakrabarti, **S. Fathpour**, and P. Bhattacharya, Y. Lei, and S. Ghosh, “Mn-Doped InAs Self-Organized Diluted Magnetic Quantum-Dot Layers with Curie Temperatures above 300 K,” *Applied Physics Letters*, vol. 85, pp. 973–975, 2004.

### Microelectronic Devices

- [26] D. L. Pulfrey, and **S. Fathpour**, “Performance Predictions for n-p-n Al<sub>x</sub>Ga<sub>1-x</sub>N/GaN HBTs,” *IEEE Transactions on Electron Devices*, vol. 48, pp. 597–602, March 2001.
- [27] D. L. Pulfrey, **S. Fathpour**, A. St. Denis, M. Vaidyanathan, W. A. Hagley, and R. K. Surridge, “Application of the Traditional Compact Expressions for Estimating the Regional Signal-Delay Times of Heterojunction Bipolar Transistors,” *Journal of Vacuum Science and Technology A*, vol. 18, pp. 775–779, 2000.

### PATENT, BOOK CHAPTER AND PROFESSIONAL MAGAZINE

- [28] B. Jalali, **S. Fathpour**, and K. K. Tsia, “Energy Efficiency in Silicon Photonics,” in *Silicon Nanophotonics*, Leonid Khriachtchev, Ed. (John Wiley & Sons, to be published in 2008).
- [29] B. Jalali, D. Dimitropoulos, V. Raghunathan, and **S. Fathpour**, “Silicon Lasers,” in *Silicon Photonics: State of the Art*, Graham Reed, Ed. (John Wiley & Sons, 2008).
- [30] B. Jalali, and **S. Fathpour**, “Have Silicon Lasers Come of Age?,” *Photonics Spectra*, pp. 62–66, November 2005 (INVITED).

### INVITED TALKS

- [31] S. Fathpour, “Green Integrated Photonics,” *Frontiers in Optics*, OSA Annual Meeting, San Jose, CA, October 2009 (INVITED).
- [32] B. Jalali, **S. Fathpour**, and K. K. Tsia, “Energy harvesting in silicon photonics,” *Conference on Lasers and Electro-Optics (IEEE CLEO 2007)*, Paper #356, Baltimore, MD, May 2007 (INVITED).
- [33] R. Claps, D. Dimitropoulos, V. Raghunathan, **S. Fathpour**, B. Jusserand, and B. Jalali, “Si/Ge Platform for Lasers, Amplifiers, and Nonlinear Optical Devices Based on the Raman Effect,” *SPIE Photonics West*, San Jose, CA, January 2007 ( INVITED).

- [34] B. Jalali, **S. Fathpour**, and K. K. Tsia, "Energy Harvesting in Silicon Photonic Devices," *IEEE LEOS Annual Meeting 2006*, pp. 382–83, Montreal, Canada, November 2006 (INVITED).
- [35] P. Bhattacharya, Z. Mi, J. Yang, and **S. Fathpour**, "High Performance 1.3  $\mu\text{m}$  Quantum Dot Lasers on GaAs and Silicon," *Photonics West*, Proc. SPIE, vol. 6133, pp. 61330U1–U9, San Jose, CA, Jan. 2006 (INVITED).
- [36] B. Jalali, **S. Fathpour**, O. Boyraz, D. Dimitropoulos, and V. Raghunathan, "Light Generation in Silicon," *JSAP-MicroOptics Conference*, E1, pp. 1–4, Tokyo, Japan, October 2005 (INVITED).
- [37] P. Bhattacharya, **S. Fathpour**, and Z. Mi, "Dynamic Characteristics of Quantum Lasers," *17<sup>th</sup> Laser and Electro-Optics Society Annual Meeting Conference Proceedings (IEEE LEOS 2004)*, Rio Grande, Puerto Rico, November 2004 (INVITED).
- [38] **S. Fathpour**, and P. Bhattacharya, "High Performance Quantum Dot Lasers," *Photonics Technology Access Program Quantum Dots Workshop*, Albuquerque, NM, September 2004 (INVITED).
- [39] P. Bhattacharya, **S. Fathpour**, Z. Mi, and S. Chakrabarti, A. R. Kovsh, S. S. Mikhlin, I. L. Krestnikov, A. V. Kozhukhov, and N. N. Ledentsov, "High Performance Quantum Dot Lasers," *UKC-Nano2004 Proceedings*, Research Triangle Park, NC, August 2004 (INVITED).
- [40] P. Bhattacharya, **S. Fathpour**, S. Chakrabarti, M. Holub, and S. Ghosh, "Application of Diluted Magnetic Semiconductors and Quantum Dots to Spin Polarized Light Sources," *Materials Research Society Symposium Proceeding*, vol. 794, T8.1.1, Boston, MA, November-December 2004 (INVITED).

## CONTRIBUTED CONFERENCE PROCEEDINGS

### Silicon Photonics

- [41] K. K. Tsia, **S. Fathpour**, B. Jalali, "Dynamic Tuning of Birefringence in Silicon Waveguides," *CLEO/QELS 2008*, paper #CTuDD4, San Jose, CA, May 2008
- [42] **S. Fathpour**, K. K. Tsia, and B. Jalali, "Nonlinear Photovoltaic Effect," *IEEE LEOS Annual Meeting 2007*, Paper# ThY 4, Lake Buena Vista, FL, October 2007.
- [43] K. K. Tsia, **S. Fathpour**, and B. Jalali, "Two-Photon Photovoltaic Effect in Silicon Wavelength Converters," *IEEE LEOS Annual Meeting 2006*, pp. 386–87, Montreal, Canada, November 2006.
- [44] K. K. Tsia, **S. Fathpour**, and B. Jalali, "Energy Harvesting in Silicon Raman Amplifiers," in *Group IV Photonics Conference*, pp. 231–233, Ottawa, Canada, September 2006.
- [45] M. Krause, H. Renner, E. Brinkmeyer, **S. Fathpour**, D. Dimitropoulos, V. Raghunathan, and B. Jalali, "Efficient Raman Amplification in Cladding-Pumped Silicon Waveguides," in *Group IV Photonics Conference*, pp. 61–63, Ottawa, Canada, September 2006.
- [46] **S. Fathpour**, K. Tsia, and B. Jalali, "Photovoltaic Effect in Silicon Raman Amplifiers," *Optical Amplifiers and Their Applications (OAA 2006)*, paper PD1, Whistler, BC, June 2006.
- [47] **S. Fathpour**, O. Boyraz, D. Dimitropoulos, and B. Jalali, "Demonstration of CW Raman Gain with Zero Electrical Power Dissipation in *p-i-n* Silicon Waveguides," *Conference on Lasers and Electro-Optics (IEEE CLEO 2006)*, paper CMK3, Long Beach, CA, May 2006.
- [48] D. Dimitropoulos, **S. Fathpour**, and B. Jalali, "Predicaments in CW Operation of Silicon Raman Lasers and Amplifiers," *Integrated Photonics Research and Applications (IPRA 2006)*, Paper ITuH4, Uncasville, CT, April 2006.

### Quantum Dot Laser

- [49] Z. Mi, **S. Fathpour**, and P. Bhattacharya, "Characteristics of p-Doped Tunnel Injection 1.3  $\mu\text{m}$  Quantum Dot Lasers," *Conference on Lasers and Electro-Optics (IEEE CLEO 2005)*, vol. 3, pp. 1677–1679, Baltimore, MD, May 2005.

- [50] Z. Mi, **S. Fathpour**, and P. Bhattacharya, R. Kovsh, S. S. Mikhlin, I. L. Krestnoikov, A. V. Kozhukhov, and N. N. Ledentsov, "Temperature Dependent Output Characteristics of  $p$ -doped 1.1 and 1.3  $\mu\text{m}$  In(Ga)As Quantum Dot Lasers," *Photonics West, Proc. SPIE*, vol. 5722, pp. 60–71, San Jose, CA, January 2005.
- [51] **S. Fathpour**, Z. Mi, S. Chakrabarti, P. Bhattacharya, A. R. Kovsh, S. S. Mikhlin, I. L. Krestnikov, A. V. Kozhukhov, and N. N. Ledentsov, "Characteristics of High-Performance 1.0  $\mu\text{m}$  and 1.3  $\mu\text{m}$  Quantum Dot Lasers: Impact of  $p$ -doping and Tunnel Injection," *62nd Device Research Conference Digest*, pp. 156–160, Notre Dame, IN, June 2004.
- [52] **S. Fathpour**, P. Bhattacharya, and S. Ghosh, "Low Linewidth Enhancement Factor and Chirp and Suppressed Filamentation in Tunnel Injection In<sub>0.4</sub>Ga<sub>0.6</sub>As/GaAs Self-Assembled Quantum Dot Lasers," *Photonics West, Proc. SPIE*, vol. 5361, pp. 29–34, San Jose, CA, January 2004.
- [53] **S. Fathpour**, P. Bhattacharya, S. Pradhan, S. Ghosh, and J. Topol'ančik, "Modulation Characteristics of In<sub>0.4</sub>Ga<sub>0.6</sub>As/GaAs Quantum Dot Gain-Coupled Distributed Feedback Lasers," *16<sup>th</sup> Laser and Electro-Optics Society Annual Meeting Conference Proceedings (IEEE LEOS 2003)*, pp. 202–203, Tucson, AZ, November 2003.
- [54] S. Chakrabarti, K. Moazzami, **S. Fathpour**, P. Bhattacharya and J. Phillips, "Pulsed Laser Annealing of Self-Organized InAs/GaAs Quantum Dots," *Electronics Materials Conference*, Salt Lake City, UT, June 2003.

### Spintronic Devices and Materials

- [55] M. Holub, **S. Fathpour**, S. Chakrabarti, J. Topol'ančik, P. Bhattacharya, and Y. Lei, "High-Temperature Spin-Polarized Quantum Dot Light-Emitting Diodes," *62<sup>nd</sup> Device Research Conference Digest*, Notre Dame, pp. 160–161, IN, June 2004.
- [56] M. Holub, S. Chakrabarti, **S. Fathpour**, and P. Bhattacharya, Y. Lei, T. D. Mishima, M. B. Santos, M. B. Johnson, D. A. Bloom, "Mn-Doped InAs Self-Organized Quantum Dots with Curie Temperature above 300K," *46<sup>th</sup> Electronics Material Conference*, Paper P9, Notre Dame, IN, June 2004.
- [57] J. N. Gleason, M.E. Hjelmstad, V. D. Dasika, **S. Fathpour**, S. Ghosh, P. Bhattacharya, and R. S. Goldman "Nanometer-Scale Studies of Point Defect Distributions in GaMnAs Films," *46<sup>th</sup> Electronics Material Conference*, paper P10, Notre Dame, IN, June 2004.
- [58] J. N. Gleason, M.E. Hjelmstad, V.D Dasika, **S. Fathpour**, S. Charkrabarti, P. Bhattacharya, and R. S. Goldman, "Cross Sectional Scanning Tunneling Microscopy Studies of Mn Distributions in Ga<sub>1-x</sub>Mn<sub>x</sub>As," *31st Conference on the Physics and Chemistry of Semiconductor Interfaces*, Kailua-Kona, HI, January 2004.
- [59] J. N. Gleason, M. E. Hjelmstad, **S. Fathpour**, S. Ghosh, P. K. Bhattacharya, and R. S. Goldman "Cross Sectional Scanning Tunneling Microscopy Studies of Mn Segregation in GaMnAs Films," *Materials Research Society Symposium*, Boston, MA, November-December 2003.
- [60] J. N. Gleason, M. E. Hjelmstad, **S. Fathpour**, S. Ghosh, P. K. Bhattacharya, and R. S. Goldman, "Cross Sectional Scanning Tunneling Microscopy Studies of Mn Segregation in Ga<sub>1-x</sub>Mn<sub>x</sub>As films," *American Vacuum Society 50th International Symposium*, Baltimore, MD, November 2003.

### Microelectronic Devices

- [61] D. L. Pulfrey, A. R. St. Denis, **S. Fathpour**, W. A. Hagley, and R. K. Surridge, "Analysis and Improvement of  $f_T$  in GaAs-Based HBTs," *Ninth Canadian Semiconductor Technology Conference*, Ottawa, Canada, August 1999.