

## ADDRESS

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<http://www.stanford.edu/group/nqp>

## EDUCATION

Ph.D	Electrical Engineering	California Institute of Technology	2002
M.S.	Electrical Engineering	California Institute of Technology	1997
Diploma	Electrical Engineering	University of Nis, Serbia	1994

## APPOINTMENTS

Sept. 2008 – present: Associate Professor of Electrical Engineering (with tenure), Stanford University

January 2003–Aug. 2008: Assistant Professor of Electrical Engineering, Stanford University.

September 2002–December 2002: Acting Assistant Professor of Electrical Engineering, Stanford University.

January 2002–August 2002: Postdoctoral Scholar, Stanford University, Applied Physics Department.

2002: Consultant, Luxtera Inc.

Sept 1996–December 2001: Research and Teaching Assistant, California Institute of Technology.

1996: Research and Teaching Assistant, Communications Science and Engineering Group, School of Electrical Engineering, University of Sydney, Australia.

1994–1995: Assistant, Faculty of Electronic Engineering, University of Nis, Yugoslavia.

## AWARDS and HONORS

2010: Humboldt Prize (Humboldt Research Award)

2009: Teaching Excellence Award, Society of Women Engineers, Stanford University

2008: Chambers Faculty Scholar, Stanford University  
2008: DARPA Young Faculty Award  
2007: Presidential Early Career Award for Scientists and Engineers (PECASE)  
2006: Okawa Foundation Research Grant Recipient  
2006: Office of Naval Research Young Investigator Award  
2003: Frederick E. Terman Fellowship  
2002: Charles Lee Powell Foundation Faculty Award  
1996: Postgraduate Research Award (UPRA) from the University of Sydney, Australia  
1994: Silver Sign of the University of Nis, awarded to the best university student in the graduating class  
1994: Best student at the Faculty of Electronic Engineering, University of Nis, Serbia  
1993, 1991: The October Award (the highest award for student achievements at the University of Nis)  
1989-1993 Fellowship from the Foundation for Development of Sciences and Arts, Yugoslavia, awarded to most talented high-school and university students in Yugoslavia (awarded as a high-school student, continued throughout university)  
Before 1989: a number of top awards in physics and math competitions in Serbia and Former Yugoslavia.

## RESEARCH ACTIVITIES & INTERESTS

Broad definition: experimental and theoretical research in nanophotonics and quantum photonics.

Topics include: Quantum optics, cavity QED and quantum information processing with quantum dots in photonic crystals; single quantum dot switches and modulators; Electrically injected active III-V lasers and modulators; Silicon Germanium photonics; inverse photonic crystal design; nonlinear optics in photonic crystals; and Atoms and photonic crystal cavities.

Recent achievements: demonstration of the ultrafast (10Gb/s modulation) and efficient (0.25fJ/bit) single mode photonic crystal LED (*Nature Communications*, Nov. 2011); demonstration of the lowest threshold (~180nA) electrically injected laser (*Nature Photonics*, May 2011); demonstration of the control of a photonic crystal cavity reflectivity with a single quantum dot and of the optical nonlinearity at a single photon level (*Nature*, Dec. 2007), of controlled phase shift with a single quantum dot in a photonic crystal cavity (*Science*, May 2008), of photon blockade and photon induced tunneling (*Nature Physics*, Sept. 2008), and of electrical control of a single quantum dot (*Phys. Rev. Letters*, Feb. 2010). Demonstration of a semiconductor laser with highest (>100GHz) direct modulation speed (*Nature Physics*, July 2006).

## PROFESSIONAL ACTIVITIES

Co-Editor of the *New Journal of Physics*, Focus Issue on the cavity QED in solids, 2012

*Quantum Africa II*, Sep. 2012, Program Committee member

Expert Adviser/External Panelist for the Nature Index (Nature Publishing Group), Aug. 2011

Special Issue of the IEEE Journal of Selected Topics in Quantum Electronics (JSTQE) on Quantum and Nanoscale Photonics, 2012 - Primary Guest Editor

Co-Editor of the *New Journal of Physics*, Focus Issue on integrated quantum photonics/optics, 2011

*PECS IX (9<sup>th</sup> International Conference on Photonic and Electromagnetic Crystal Structures)*, 2010 – International Organizing Committee Member

*CLEO/QECC Europe 2009* – Semiconductor Lasers Committee Member

*QELS 2008* - Subcommittee chair for “Fundamental optics in periodic and random media”

*IEEE LEOS (Lasers and Electro-Optics Society) Nanophotonics* Committee Member, 2006

Co-Editor of the *New Journal of Physics*, Focus Issue on Single-Photons on Demand, 2004

Principal Investigator of the ARO-IARPA MURI Center for Photonic Quantum Information Systems, 2003-2008

Regular reviewer of scientific publications for: *Nature*, *Science*, *Nature Physics*, *Nature Photonics*, *Nature Materials*, *Applied Physics Letters*, *Physical Review Letters*, *Physical Reviews A, B & E*, *IEEE Journal of Quantum Electronics* and *Journal on Selected Topics in Quantum Electronics*, *Photonics Technology Letters*, *Optics Letters*, *Optics Express*, *Journal of Lightwave Technology*, *Journal of Applied Physics*, *New Journal of Physics*, etc.

Chair of sessions at numerous conferences including Gordon Research Conferences on Quantum Information Science and Plasmonics, CLEO/QELS, IEEE LEOS Annual Meetings, SPIE Annual Meeting - Photonics West, etc.

Co-organizer of the *Stanford Photonics Research Center Annual Symposium* (Sept. 2003, 2005, 2008, 2010), *Nanophotonics Workshop at Stanford University* (Jan. 2004), *MURI Center for Photonic Quantum Information Systems Kick-Off and Review Meetings* (Oct. 2003, 2006 and 2007), and the *Quantum Repeater Workshop* (Harvard, November 2005).

## PROFESSIONAL MEMBERSHIPS

Member, Optical Society of America (2007-)  
Member, American Physical Society (2003- )  
Member, IEEE (2003- )  
Student member, IEEE (1992-2002)  
Member, MRS (2002, 2009)

## MENTORING and ADVISING

### Stanford University (2003-present)

Currently a research advisor for eight PhD students and two postdocs. Academic advisor for about 20 EE MS students, and a co-advisor/reading committee member for about 10 EE/AP students.

(Please see <http://www.stanford.edu/group/nqp> for updated info).

### Present and former PhD students

Hatice Altug (2006): Assistant Professor, Boston University  
Dirk Englund (2008): Assistant Professor, Columbia University  
Ilya Fushman (2008): Business Development, Dropbox  
Andrei Faraon (2009): Postdoctoral Fellow, HP Labs, Palo Alto, CA/ Assistant Professor, Applied Physics, Caltech  
Maria Makarova (2010): Visiting Professor, CINVESTAV, Guadalajara, Mexico  
Yiyang Gong (2010): Postdoctoral Scholar, Applied Physics, Stanford University  
Bryan Ellis (2011): Research Scientist, Soraa  
Kelley Rivoire (2012): Postdoctoral Fellow, HP Labs, Palo Alto  
Jesse Lu (expected 2012)  
Arka Majumdar (expected 2012)  
Gary Shambat (expected 2013)  
Sonia Buckley (expected 2014)  
Armand Rundquist (expected 2014)  
Jan Petykiewitz (expected 2015)  
Marina Radulaski (expected 2016)

### Present and former postdocs

Edo Waks (2003-2006): Assistant Professor, University of Maryland and JQI  
Vanessa Sih (2007-2008): Assistant Professor, University of Michigan  
Erik Kim (2009-2011): Research Scientist, KLA Tencor  
Michal Bajcsy (2010-)  
Konstantinos Lagoudakis (2012-)  
Tom Babinec (2012-)

## **OTHER INTERESTS AND SKILLS**

Languages: Serbian (native), English (fluent), and French (intermediate).

Computer languages: C, C++,Tcl

Nanofabrication techniques (etching, e-beam lithography, etc)

## **PUBLICATIONS**

117 in refereed journals, cited more than 6000 times, h-index of 38 (Web of Science) and 42 (Google Scholar) as of Jan 2012

12 book chapters, one book in preparation

9 issued US patents, several pending

Over 140 invited talks, three plenary, and one keynote talk

(the list follows; selected publications available online on my website)

## PUBLICATIONS LIST

### REFEREED JOURNAL PUBLICATIONS

#### In preparation

1. Sonia Buckley, Kelley Rivoire, and Jelena Vuckovic, "'Fast quantum-dot single photon sources,'" *Reports on Progress in Physics* (2011) [invited article]

#### Submitted

1. Arka Majumdar, Armand Rundquist, Michal Bajcsy, and Jelena Vuckovic, "Cavity Quantum Electrodynamics of a Single Quantum Dot Coupled to a Photonic Molecule," submitted to *Physical Review Letters* (2012)
2. Jan Petykiewicz, Gary Shambat, Bryan Ellis, Jelena Vuckovic, "Free-carrier injection and current flow in laterally-doped GaAs nanobeam and L3-defect photonic crystal cavity PIN diodes," submitted to *Optics Express* (2012)
3. Arka Majumdar, Michal Bajcsy, Dirk Englund, and Jelena Vuckovic, "All Optical Switching with a Single Quantum Dot Strongly Coupled to a Photonic Crystal Cavity," submitted to *IEEE Journal of Selected Topics in Quantum Electronics, Focus Issue on Nanoscale and Quantum Photonics* (2011)
4. Gary Shambat, Bryan Ellis, Jan Petykiewicz, Marie A. Mayer, Arka Majumdar, Tomas Sarmiento, James Harris, Eugene E. Haller, and Jelena Vuckovic, "Electrically driven photonic crystal nanocavity devices," submitted to *IEEE Journal of Selected Topics in Quantum Electronics, Focus Issue on Nanoscale and Quantum Photonics* (2011)
5. Arka Majumdar, Michal Bajcsy, Armand Rundquist, and Jelena Vuckovic, " Loss-enabled sub-Poissonian light generation in a bimodal nanocavity," submitted to *Physical Review Letters* (2011)
6. Arka Majumdar, Michal Bajcsy, Armand Rundquist, Erik Kim, and Jelena Vuckovic, "Phonon-mediated coupling between quantum dots through an off-resonant microcavity," submitted to *Physical Review B* (2011)
7. Arka Majumdar, Dirk Englund, Michal Bajcsy, and Jelena Vuckovic, "Nonlinear Temporal Dynamics of Strongly Coupled QD-Cavity System," submitted to *Physical Review A* (2011)
8. Jesse Lu and Jelena Vuckovic, "High-Efficiency, Small-Footprint Couplers Between Arbitrary Nanophotonic Waveguide Modes," submitted to *Optics Express* (2011)
9. Arka Majumdar\*, Michal Bajcsy\*, and Jelena Vuckovic, "Probing the ladder of dressed states and nonclassical light generation in quantum dot-cavity QED," submitted to *Physical Review A* (2011) [\* equal contributors]
10. Dirk Englund, Arka Majumdar, Michal Bajcsy, Andrei Faraon, Pierre Petroff, and Jelena Vuckovic, " Ultrafast photon-photon interaction in a strongly coupled quantum dot-cavity system," to appear in *Physical Review Letters* (2011)

Published

11. Kelley Rivoire, Sonia Buckley, Yuncheng Song, Paul J. Simmonds, Minjoo Larry Lee, Jelena Vuckovic, "Photoluminescence from  $\text{In}_{0.5}\text{Ga}_{0.5}\text{As}/\text{GaP}$  quantum dots coupled to photonic crystal cavities," *Physical Review B*, vol. 85, 045319 (2012)
12. Alexander Papageorge, Arka Majumdar, Erik D. Kim, and Jelena Vuckovic, "Bichromatic Driving of a Solid State cavity QED System," *New Journal of Physics*, vol. 14, 013028 (2012)
13. Armand Rundquist, Arka Majumdar, and Jelena Vuckovic, "Off-resonant coupling between a single quantum dot and a nanobeam photonic crystal cavity," *Applied Physics Letters*, vol. 99, 251907 (2011)
14. Gary Shambat, Bryan Ellis, Arka Majumdar, Jan Petykiewicz, Marie Mayer, Tomas Sarmiento, James Harris, Eugene E. Haller, and Jelena Vuckovic, "Ultrafast direct modulation of a single mode photonic crystal nanocavity light-emitting diode," *Nature Communications*, 2:539 doi: 10.1038/ncomms1543 (2011)  
 Featured in Stanford Report, San Francisco Chronicle, Stanford Daily, Wired, Forbes, Physorg, Science Codex, Stanford School of Engineering News, Laser Focus World, Science Daily, BBC Mundo, Fox News, etc.  
 One of top downloaded and top e-mailed articles from Nature Communications
15. Gary Shambat, J Provine, Kelley Rivoire, Tomas Sarmiento, James Harris, and Jelena Vuckovic, "Optical fiber tips functionalized with semiconductor photonic crystal cavities," *Applied Physics Letters*, vol. 99, 191102 (2011)  
 One of the top read articles in Applied Physics Letters in Dec. 2011
16. Arka Majumdar, Erik Kim, and Jelena Vuckovic, "The effect of photo-generated carriers on the spectral diffusion of a quantum dot coupled to a photonic crystal cavity," *Physical Review B*, vol. 84, 195304 (2011)
17. Kelley Rivoire, Sonia Buckley, and Jelena Vuckovic, "Multiply resonant photonic crystal cavities for nonlinear frequency conversion," *Optics Express Focus Issue: "Collective phenomena in photonic, plasmonic and hybrid structures,"* vol. 19, pp. 22198-22207 (2011) [invited article]
18. Seongjae Cho, Robert Chen, Sukmo Koo, Gary Shambat, Namkyoo Park, Jelena Vučković, Theodore I. Kamins, Byung-Gook Park, and James S. Harris, Jr., "Fabrication and Analysis of Epitaxially Grown  $\text{Ge}_{1-x}\text{Sn}_x$  Microdisk Resonator with 20-nm Free Spectral Range," *IEEE Photonics Technology Letters*, Vol. 23, No. 20, pp. 1535-1537 (2011)
19. Arka Majumdar, Alexander Papageorge, Erik D. Kim, Michal Bajcsy, Hyochul Kim, Pierre Petroff & Jelena Vuckovic, "Probing of Single Quantum Dot Dressed States Via an Off-Resonant Cavity," *Physical Review B*, vol. 84, 085310 (2011)
20. Arka Majumdar, Yiyang Gong, Erik D. Kim, Michal Bajcsy, and Jelena Vuckovic, "Phonon-mediated off-resonant quantum dot-cavity coupling under resonant excitation of the quantum dot," *Physical Review B*, vol. 84, 085309 (2011)

21. Gary Shambat, Bryan Ellis, Jan Petykiewicz, Marie A. Mayer, Tomas Sarmiento, James Harris, Eugene E. Haller, and Jelena Vuckovic, "Nanobeam Photonic Crystal Cavity Light-Emitting Diodes," *Applied Physics Letters*, vol. 99, 071105 (2011)

One of the top downloaded articles from *Applied Physics Letters* in August 2011

22. Kelley Rivoire, Sonia Buckley, and Jelena Vuckovic, "Multiply resonant photonic crystal nanocavities," *Applied Physics Letters*, vol. 99, 013114 (2011)
23. Szu-Lin Cheng, Gary Shambat, Jesse Lu, Hyun-Yong Yu, Krishna Saraswat, Ted Kamins, Yoshio Nishi, and Jelena Vuckovic, "Cavity-enhanced direct band electroluminescence near 1550nm from germanium microdisk resonator diode on silicon," *Applied Physics Letters*, Vol. 98, 211101 (2011)
24. Kelley Rivoire, Sonia Buckley, Fariba Hatami, and Jelena Vuckovic, "Second harmonic generation in GaP photonic crystal waveguides," *Applied Physics Letters*, vol. 98, 263113 (2011) (2011)
25. Andrei Faraon, Arka Majumdar, Dirk Englund, Erik Kim, Michal Bajcsy, and Jelena Vuckovic, "Integrated quantum optical networks based on quantum dots and photonic crystals," *New Journal of Physics, Special issue on Integrated Quantum Photonics*, Vol. 13, pp. 055025 (2011)
26. Jesse Lu, Stephen Boyd, and Jelena Vuckovic, "Inverse Design of 3D Nanophotonic Resonators," *Optics Express*, Vol. 19, Issue 11, pp. 10563-10570 (2011)

Top downloaded article in *Optics Express* and image of the week at Optics Info-Base

27. Bryan Ellis, Marie Mayer, Gary Shambat, Tomas Sarmiento, James Harris, Eugene Haller, and Jelena Vuckovic, "Ultra-low threshold electrically pumped quantum dot photonic crystal nanocavity laser," *Nature Photonics*, vol. 5, pp. 297-300 (2011)

Featured in Stanford Report, Stanford Daily, Laser Focus World, Physorg.com, domain-b.com, and numerous other media outlets. Top downloaded article from *Nature Photonics* (May 2011)

28. Gary Shambat, Bryan Ellis, Marie Mayer, Arka Majumdar, Eugene Haller, and Jelena Vuckovic, "Ultra-low power fiber-coupled gallium arsenide photonic crystal cavity electro-optic modulator," *Optics Express*, Vol. 19, Issue 8, pp. 7530-7536 (2011)
29. Kelley Rivoire, Sonia Buckley, Arka Majumdar, Hyochul Kim, Pierre Petroff, and Jelena Vuckovic, "Fast quantum dot single photon source triggered at telecommunications wavelength," *Applied Physics Letters*, Vol. 98, article 083105 (2011)
30. Yiyang Gong, Armand Rundquist, Arka Majumdar, and Jelena Vuckovic, "Low-power Resonant Optical Excitation of an Optomechanical Cavity," *Optics Express*, Vol. 19, No. 2, pp. 1429–1440 (2011)
31. Yijie Huo, Hai Lin, Robert Chen, Maria Makarova, Yiwen Rong, Mingyang Li, Theodore I. Kamins, Jelena Vuckovic, and James S. Harris, "Strong enhancement of direct-transition photoluminescence with highly tensile-strained Ge grown by molecular beam epitaxy," *Applied Physics Letters*, vol. 98, 011111 (2011)

32. Gary Shambat, Szu-Lin Cheng, Jesse Lu, Yoshio Nishi, and Jelena Vuckovic, "Direct band Ge photoluminescence near 1.6 $\mu$ m coupled to Ge-on-Si microdisk resonators," *Applied Physics Letters*, vol. 97, 241102 (2010)
33. Dirk Englund, Brendan Shields, Kelley Rivoire, Jelena Vuckovic, Fariba Hatami, Hongkun Park, Mikhail D. Lukin, "Deterministic coupling of a single nitrogen vacancy center to a photonic crystal nanocavity," *Nano-letters*, vol. 10, No. 10, pp 3922–3926 (2010)
34. Erik D. Kim, Arka Majumdar, Hyochul Kim, Pierre Petroff, and Jelena Vuckovic, "Differential Reflection Spectroscopy of a Single Quantum Dot Strongly Coupled to a Photonic Crystal Cavity," *Applied Physics Letters*, vol. 97, 053111 (2010)
35. Arka Majumdar, Ziliang Lin, Andrei Faraon, and Jelena Vuckovic, "Proposal for high-speed and high-fidelity electron spin initialization in a negatively charged quantum dot coupled to a microcavity in a weak external magnetic field," *Phys. Rev. A*, vol. 81, 022301 (2010)
36. Kelley Rivoire, Ziliang Lin, Fariba Hatami, and Jelena Vuckovic, "Sum-frequency generation in doubly resonant GaP photonic crystal nanocavities," *Applied Physics Letters*, vol. 97, 043103 (2010)
37. Hideo Iwase, Dirk Englund, and Jelena Vučković, "Analysis of Purcell effect in photonic and plasmonic crystals with losses," *Optics Express*, Vol. 18, Issue 16, pp. 16546-16560 (2010)
38. Arka Majumdar, Andrei Faraon, Erik Kim, Dirk Englund, Hyochul Kim, Pierre Petroff, and Jelena Vuckovic, "Linewidth broadening of a quantum dot coupled to an off-resonant cavity" *Physical Review B*, vol. 82, 045306 (2010)
39. Yiyang Gong, Maria Makarova, Selcuk Yerci, Rui Li, Marty Stevens, Burm Baek, Sae Woo Nam, Luca Dal Negro, and Jelena Vuckovic, "Observation of Transparency of Er-doped Silicon nitride in photonic crystal nanobeam cavities," *Optics Express*, Vol. 18, Issue 13, pp. 13863-13873 (2010)
40. Yiyang Gong, Satoshi Ishikawa, Szu-Lin Cheng, Yoshio Nishi, and Jelena Vuckovic, "Photoluminescence from silicon dioxide photonic crystal cavities with embedded silicon nanocrystals," *Physical Review B*, vol. 81, 235317 (2010)  
 Article selected as *Phys. Rev. B* Editor's suggestion, and spotlighted by the American Physical Society
41. Gary Shambat, Kelley Rivoire, Jesse Lu, Fariba Hatami, W. Ted Masselink, and Jelena Vuckovic, "Tunable-wavelength second harmonic generation from GaP photonic crystal cavities coupled to fiber tapers," *Optics Express*, Vol. 18, Issue 12, pp. 12176-12184 (2010)
42. Bryan Ellis, Tomas Sarmiento, Marie Mayer, Bingyang Zhang, James Harris, Eugene Haller, and Jelena Vuckovic, "Electrically pumped photonic crystal nanocavities using a laterally doped p-i-n junction," *Applied Physics Letters*, vol. 96, 181103 (2010)  
 One of the top downloaded articles from *Applied Physics Letters* in May 2010
43. Yiyang Gong, Bryan Ellis, Tomas Sarmiento, Gary Shambat, James S. Harris, and Jelena Vuckovic, " Nanobeam photonic crystal cavity quantum dot laser," *Optics Express*, Vol. 18, pp. 8781-8789 (2010)

44. Andrei Faraon, Arka Majumdar, and Jelena Vuckovic, "Generation of non-classical states of light via photon blockade in optical nanocavities," *Physical Review A*, Vol. 81, 033838 (2010).
45. Gary Shambat, Yiyang Gong, Jesse Lu, Selçuk Yerci, Rui Li, Luca Dal Negro, and Jelena Vučković, "Coupled fiber taper extraction of 1.53  $\mu\text{m}$  photoluminescence from erbium doped silicon nitride photonic crystal cavities," *Optics Express*, Vol. 18, No. 6, pp. 5964-5973 (2010)
46. Dirk Englund, Arka Majumdar, Andrei Faraon, Mitsuru Toishi, Nick Stoltz, Pierre Petroff, and Jelena Vuckovic, "Resonant excitation of a quantum dot strongly coupled to a photonic crystal nanocavity," *Physical Review Letters*, vol.104, 073904 (2010)
47. Arka Majumdar, Nicolas Manquest, Andrei Faraon, and Jelena Vuckovic, "Theory of electro-optic Modulation via a Quantum Dot Coupled to a Nano-resonator," *Optics Express*, Vol. 18, No. 5, pp. 3974–3984 (2010)
48. Jesse Lu and Jelena Vuckovic, "Inverse design of nanophotonic structures using complementary convex optimization," *Optics Express*, Vol. 18, Issue 4, pp. 3793-3804 (2010)
49. Maria Makarova, Yiyang Gong, Szu-Lin Cheng, Yoshio Nishi, Selcuk Yerci, Rui Li, Luca Dal Negro, and Jelena Vuckovic, "Photonic Crystal and Plasmonic Silicon Based Light Sources," *IEEE Journal on Selected Topics in Quantum Electronics, Special Issue on Silicon Photonics*, Vol. 16, pp. 132-140 (2010)
50. Yiyang Gong, Maria Makarova, Selcuk Yerci, Rui Li, Martin J. Stevens, Burm Baek, Sae Woo Nam, Robert H. Hadfield, Sander N. Dorenbos, Val Zwiller, Jelena Vuckovic, and Luca Dal Negro, "Linewidth narrowing and Purcell enhancement in photonic crystal cavities on an Er-doped silicon nitride platform," *Optics Express*, vol. 18, pp. 2601-2612 (2010)
51. Yiyang Gong and Jelena Vuckovic, "Photonic Crystal Cavities in Silicon Dioxide," *Applied Physics Letters*, vol. 96, 031107 (2010)  
One of the top 20 downloaded papers from *Applied Physics Letters* in Jan. 2010
52. Andrei Faraon, Arka Majumdar, Hyochul Kim, Pierre Petroff and & Jelena Vuckovic, "Fast electrical control of a quantum dot strongly coupled to a photonic crystal cavity," *Physical Review Letters*, vol. 104, 047402 (2010)  
Highlighted in *Laser Focus World*, April 2010
53. Ziliang Lin and Jelena Vuckovic, "Two-Photon Absorption and Emission in Quantum Dots coupled to Photonic Crystal Nanocavities," *Phys. Rev. B*, vol. 81, 035301 (2010)
54. Jeremy O'Brien, Akira Furusawa, and Jelena Vuckovic, "Photonic quantum technologies," *Nature Photonics*, vol. 3, pp. 687-695 (2009) [invited article]
55. Kelley Rivoire, Ziliang Lin, Fariba Hatami, W. Ted Masselink, and Jelena Vuckovic, "Second harmonic generation in gallium phosphide photonic crystal nanocavities with ultralow continuous pump power," *Optics Express*, Vol. 17, pp 22609-22615 (2009)

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56. Yiyang Gong, Selcuk Yerci, Rui Li, Luca Dal Negro, Jelena Vuckovic, "Enhanced Light Emission from Erbium Doped Silicon Nitride in Plasmonic Metal-Insulator-Metal Structures," *Optics Express*, Vol 17, pp 18651-18658 (2009)
  57. Dirk Englund, Andrei Faraon, Arka Majumdar, Nick Stoltz, Pierre Petroff, and Jelena Vuckovic "An optical modulator based on a strongly coupled quantum dot-cavity system in a p-i-n junction," *Optics Express*, Vol. 17, pp 18651-18658 (2009)
  58. Kelley Rivoire, Anika Kinkhabwala, W.E. Moerner, Jelena Vuckovic, Fariba Hatami, Yuri Avlasevich, Klaus Müllen , "Lithographic Positioning of Fluorescent Molecules on High-Q Photonic Crystal Cavities," *Applied Physics Letters*, Vol. 95, 123113 (2009)
  59. Dirk Englund, Bryan Ellis, Tomas Sarmiento, Elizabeth Edwards, David A. B. Miller, James Harris, and Jelena Vuckovic, "Electrically controlled optical modulation in a photonic crystal circuit," *Optics Express*, Vol. 17, pp 15409-15419 (2009)
  60. Mitsuru Toishi, Dirk Englund, Andrei Faraon, Nick Stoltz, Pierre Petroff, and Jelena Vuckovic, "High-brightness single photon source from a quantum dot in a directional-emission nanocavity," *Optics Express*, Vol. 17, Issue 17, pp. 14618-14626 (2009)
  61. Andrei Faraon , Jelena Vuckovic, "Local temperature control of photonic crystal devices via micron-scale electrical heaters," *Applied Physics Letters*, vol. 95, 043102 (2009)
  62. Szu-Lin Cheng, Jesse Lu, Gary Shambat, Hyun-Yong Yu, Krishna Saraswat, Jelena Vuckovic and Yoshio Nishi, "Room temperature 1.6  $\mu\text{m}$  electroluminescence from Ge light emitting diode on Si substrate," *Optics Express* Vol. 17, No. 12, pp.10019-10024 (2009)  
Also featured in Stanford School of Engineering News, Slashdot.org, Laser Focus World.
  63. Dirk Englund, Hatice Altug, and Jelena Vuckovic, "Time-resolved lasing action from single and coupled photonic crystal nanocavity array lasers emitting in the telecom band," *Journal of Applied Physics*, vol. 105, 093110 (2009)
  64. Dirk Englund, Andrei Faraon, Ilya Fushman & Jelena Vuckovic, "Quantum dots in photonic crystals: from quantum information processing to single photon nonlinear optics," special issue of "Photonics and Nanostructures: Fundamentals and Applications (PNFA)," vol. 7, pp. 56–62 (2009)
  65. Yiyang Gong, Jesse Lu, Szu-Lin Cheng, Yoshio Nishi, and Jelena Vuckovic, "Plasmonic enhancement of emission from silicon nanocrystals," *Applied Physics Letters*, Vol. **94**, 013106 (2009)
  66. Kelley Rivoire, Andrei Faraon, and Jelena Vuckovic, "Gallium-Phosphide Photonic Crystal Nanocavities in the Visible," *Applied Physics Letters*, Vol. 93, article 063103 (2008)
  67. Andrei Faraon, Ilya Fushman, Dirk Englund, Nick Stoltz, Pierre Petroff, and Jelena Vuckovic, "Dipole induced transparency in waveguide coupled photonic crystal cavities," *Optics Express*, Vol. 16, pp. 12154-12162 (2008)
  68. Andrei Faraon, Ilya Fushman, Dirk Englund, Nick Stoltz, Pierre Petroff, and Jelena Vuckovic, "Coherent generation of nonclassical light on a chip via photon-induced tunneling and blockade," *Nature Physics*, Vol. 4, pp. 859 - 863 (2008)
  69. Ilya Fushman, Dirk Englund, Andrei Faraon, Nick Stoltz, Pierre Petroff, and Jelena

Vuckovic, "Controlled phase shift with a single quantum dot," *Science*, vol. 320, number 5877, pp. 769-772 (2008)

Highlighted in Stanford Report, Compound Semi News, Technology Research News, photonics.com, Semiconductor International, physorg.com,

70. Maria Makarova, Vanessa Sih, Joe Warga, Rui Li, Luca Dal Negro, and Jelena Vuckovic, "Enhanced light emission in photonic crystal nanocavities with Erbium-doped silicon nanocrystals," *Applied Physics Letters*, vol. 92, article 161107 (2008)

71. Ilya Fushman, Dirk Englund, Andrei Faraon, Jelena Vuckovic, "Probing the Interaction Between a Single Quantum Dot And a Photonic Crystal Cavity," *Physica Status Solidi (c)*, Vol. 5, No. 9, 2808–2815 (2008)

72. Dirk Englund, Hatice Altug, Bryan Ellis, and Jelena Vuckovic, "Ultrafast Photonic Crystal Lasers," Invited Article for *Lasers and Photonics Review*, Volume 2, No. 4, pp 264-274 (2008)

73. Andrei Faraon, Dirk Englund, Barry Luther-Davies, Douglas Boulla, Benjamin J. Eggleton, Nick Stoltz, Pierre Petroff, and Jelena Vuckovic, "Local tuning of photonic crystal cavities using chalcogenide glasses," *Applied Physics Letters*, vol. 92, 043123, January 2008

74. Hideo Iwase, Dirk Englund, and Jelena Vuckovic, "Spontaneous emission control in high extraction efficiency plasmonic crystals," *Optics Express*, vol. 16, Issue 1, pp. 426-434, Jan. 2008

75. Dirk Englund, Andrei Faraon, Ilya Fushman, Nick Stoltz, Pierre Petroff, and Jelena Vuckovic, "Controlling cavity reflectivity with a single quantum dot," *Nature*, vol. 450, No. 7171, pp. 857-861, December 2007

Highlighted in Photonics Spectra (Feb. 2008), Stanford Report (Jan. 2008), optics.org, Heise Computer Magazine, ONR Navigator, OLE Magazine etc.

76. Dirk Englund, Hatice Altug, and Jelena Vuckovic, "Low-Threshold Surface-Passivated Photonic Crystal Nanocavity Laser," *Applied Physics Letters*, Vol. 91, 071124, August 2007

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## PLENARY AND KEYNOTE TALKS

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## INVITED TALKS AT MAJOR INTERNATIONAL CONFERENCES

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6. Jelena Vuckovic, "Photonic crystal nanocavity lasers and modulators," *IEEE Photonics Conference,* Burlingame, CA, Sept. 23-27, 2012
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25. Jelena Vuckovic, Arka Majumdar, Kelley Rivoire, Erik Kim, Andrei Faraon, Dirk Englund, Ilya Fushman, Hyochul Kim, and Pierre Petroff, "Quantum dot-nanocavity devices for information processing," *OSA IPR-2010 (Integrated Photonics, Silicon and Nano Photonics conference collocated with the OSA Photonics in Switching conference)*, Santa Cruz/Monterey, CA, July 25-29, 2010.
26. Jelena Vuckovic, Arka Majumdar, "Classical and quantum information processing with a single quantum dot in a photonic crystal nanocavity," The 22nd International Conference on

Indium Phosphide and Related Materials (IPRM 2010), May 31 - June 4, Takamatsu, Kagawa, Japan

27. Arka Majumdar, Andrei Faraon, Carter Lin, Nicolas Manquest, Dirk Englund, Ilya Fushman, and Jelena Vuckovic, "Quantum and classical information processing with a single quantum dot in photonic crystal cavity," *The 6th International Conference on the Physics of Quantum Dots (QD2010)*, Nottingham, UK. April 25-30, 2010
28. Jelena Vuckovic "Active photonic crystal devices: from switches and modulators controlled with sub-fJ energies, to silicon-based light sources," *SPIE - Photonics West, Photonic and Phononic Crystal Materials and Devices*, San Francisco, CA, Jan. 23-28, 2010
29. Jelena Vuckovic, Andrei Faraon, Arka Majumdar, Carter Lin, Dirk Englund, "Optical manipulation of quantum dot excitons strongly coupled to photonic crystal cavities," *SPIE - Photonics West, Advances in Photonics of Quantum Computing, Memory, and Communication III*, San Francisco, CA, Jan. 23-28, 2010
30. Jelena Vuckovic, "Quantum dots in photonic crystals: from quantum information processing to ultra-low energy optical switching," *International Conference on Quantum Information and Technology*, National Institute of Informatics, Tokyo, Japan, Dec. 3-5, 2009.
31. Jelena Vučković, Maria Makarova, Yiyang Gong, Selcuk Yerci, Rui Li, Luca Dal Negro, Erbium Doped Silicon Photonic Crystals for Light Sources and Amplifiers, *OSA Frontiers in Optics*, San Jose, CA, Oct. 11-15, 2009
32. Jelena Vuckovic, "Quantum dots in photonic crystals: from quantum information processing to single photon nonlinear optics," *Conference on Quantum Information and Quantum Control (QCIC)*, Fields Institute, University of Toronto, Toronto, CA, Aug. 24-27, 2009
33. Jelena Vuckovic, "Photonic crystal nanocavities: from active nanophotonics, to quantum information processing and nonlinear optics at a single photon level," *DAMOP, Session on Quantum Information with Matter and Light*, University of Virginia, Charlottesville, May 19-23, 2009
34. Jelena Vuckovic, "Photonic crystal nanocavities: from active nanophotonics, to quantum information processing and nonlinear optics at a single photon level" *MRS Spring Meeting, Symposium on "Plasmonics, metamaterials, and light localization,"* San Francisco, CA, April 13-17, 2009
35. Jelena Vuckovic, "Cavity QED in photonic crystals: from quantum information processing to single photon nonlinear optics," *PECS VIII (8th International Photonic & Electromagnetic Crystal Structures Meeting)*, Sydney, Australia, April 5-9th, 2009.
36. Andrei Faraon, Ilya Fushman, Dirk Englund, and Jelena Vuckovic, "Photon blockade in a photonic crystal cavity with a strongly coupled quantum dot," *SPIE Annual Meeting, Photonics West, Symposium on "Advanced Optical Concepts in Quantum Computing, Memory, and Communication II"*, San Jose, CA (Jan. 2009)
37. Dirk Englund, Andrei Faraon, Ilya Fushman, Jelena Vuckovic, "Optical probing and manipulation of single quantum dots in photonic crystal cavities," *SPIE Annual Meeting, Photonics West, Symposium on "Advanced Optical Concepts in Quantum Computing, Memory, and Communication II"*, San Jose, CA, USA, January 2009
38. Jelena Vuckovic, Dirk Englund, Andrei Faraon, Ilya Fushman, and Arka Majumdar "Quantum Dots in Photonic Crystals: from single photon sources to single photon nonlinear

- optics,” *SPIE Annual Meeting, Photonics West, Symposium on single photon sources*, San Jose, CA, USA, January 2009
39. Jelena Vuckovic, Dirk Englund, Andrei Faraon, Ilya Fushman, “Cavity QED, single photon nonlinear optics, and quantum information processing with quantum dots in photonic crystals,” *Frontiers in Optics/Laser Science, XXIV annual meeting*, Rochester, NY, Oct. 19-23, 2008
  40. Dirk Englund, Jelena Vuckovic, “Classical and quantum light sources based on photonic crystals,” *SPIE Optics and Photonics Meeting*, San Diego, Aug. 10-14, 2008
  41. Jelena Vuckovic, Andrei Faraon, Ilya Fushman, Dirk Englund, “Controlling photonic crystal cavity reflectivity with a single quantum dot: from quantum information processing to single photon nonlinear optics,” *European Materials Research Society (EMRS) Spring Meeting, Symposium on Active materials in photonic crystals for (strong) light matter coupling*, Strasbourg, France, May 26-30, 2008
  42. Jelena Vuckovic, Dirk Englund, Ilya Fushman, Bryan Ellis, and Hatice Altug, “Ultrafast photonic crystal nanocavity lasers and optical switches,” *SPIE Photonics West Conference, Conference on “Physics and Simulation of Optoelectronic Devices,”* San Jose, CA, Jan. 2008
  43. Jelena Vuckovic, Dirk Englund, Andrei Faraon, Ilya Fushman, Vanessa Sih “Quantum information processing with quantum dots in photonic crystals,” *SPIE Photonics West Conference, Conference on “Advanced Optical Concepts in Quantum Computing, Memory and Communication,”* San Jose, CA, Jan. 2008
  44. Jelena Vuckovic, Dirk Englund, Andrei Faraon, Ilya Fushman, Bryan Ellis, and Hatice Altug “Photonic crystal chips for optical interconnects and quantum information processing,” *SPIE Photonics West Conference, Conference on “Photonic Crystal Materials and Devices,”* San Jose, CA, Jan. 2008
  45. Jelena Vuckovic, Ilya Fushman, Andrei Faraon, Dirk Englund, Bryan Ellis, Yiyang Gong, and Maria Makarova, “Photonic crystal chips for classical and quantum information processing,” *ISCS (International Symposium on Compound Semiconductors)*, Kyoto, Japan, Oct. 15-18, 2007
  46. Jelena Vuckovic, Ilya Fushman, Andrei Faraon, Dirk Englund, and Bryan Ellis, “Nonlinear optical processes in photonic nanocavities,” *OSA Nonlinear Optics Topical Meeting*, Kona, Hawaii, July 30-August 3 2007
  47. Jelena Vuckovic, Hatice Altug, Dirk Englund, and Bryan Ellis, “Coupled photonic crystal nanocavity arrays,” *CLEO/EUROPE-IQEC 2007*, Munich, Germany, 17 – 22 June 2007
  48. Jelena Vuckovic, Andrei Faraon, Dirk Englund, and Ilya Fushman, “Cavity QED with quantum dots in photonic crystals,” *the 9<sup>th</sup> Rochester Conference on Coherence and Quantum Optics (CQO9)*, the University of Rochester, the Symposium on quantum optics in mesoscopic condensed matter devices June 10-13, 2007.
  49. Hatice Altug, Dirk Englund and Jelena Vučković, “High Speed Dynamics of Photonic Crystal Nanocavity Laser,” *IEEE LEOS Annual Meeting*, Montreal, Canada, Nov. 2006
  50. Jelena Vuckovic, “Quantum optics and quantum information processing with photonic crystal devices” *APS LS/OSA XXII Meeting (Quantum Optics in Photonic Materials)*,

Rochester, NY, Oct. 2006.

51. Edo Waks, Dirk Englund, Andrei Faraon, Ilya Fushman, Jelena Vuckovic “Nanophotonic devices for quantum information processing,” *Third Feynman Festival*, University of Maryland, August 2006.
52. Jelena Vuckovic, Dirk Englund, Ilya Fushman, Andrei Faraon, and Edo Waks, “Quantum information processing with quantum dot-photonic crystal devices,” *IEEE/LEOS Summer Topical Meeting on Quantum Information*, Quebec City, Digest. pp. 6-7, Canada, July 2006.
53. Jelena Vuckovic, Ilya Fushman, Dirk Englund, Andrei Faraon, Edo Waks, “Quantum information processing with quantum dot-photonic crystal devices,” *Conference on Coherent Control of the Fundamental Processes in Optics and X-Ray Optics*, Nizhny Novgorod – Kazan, Russia, June 29-July 4, 2006.
54. Jelena Vuckovic, "Photonic crystal microcavities for classical and quantum information processing," *ICTON06 (8<sup>th</sup> International Conference on Transparent Optical Networks)*, Special Session on Microresonators and Photonic Molecules: Trapping, Harnessing, and Releasing Light, Proceedings pp. 75-76, Nottingham, U.K., June 2006.
55. Jelena Vuckovic, Dirk Englund, Edo Waks, Ilya Fushman, and Andrei Faraon, “Nanophotonic devices for quantum information processing,” *CLEO/QELS, Joint CLEO/QELS Session on Enabling Technologies for Quantum Communication*, Long Beach, CA, May 2006.
56. Jelena Vuckovic, Dirk Englund, Hatice Altug, Ilya Fushman, Edo Waks, “Nanophotonic devices for classical and quantum information processing,” *NIMS Conference on Photonic Processes in Semiconductor Nanostructures*, Tsukuba, Japan, March 2005.
57. Jelena Vuckovic, Dirk Englund, Hatice Altug, Ilya Fushman, Edo Waks, “Photonic crystal devices for quantum and nanoscale photonics,” *SPIE (The International Society for Optical Engineering) Optics East Conference*, Boston, MA, October 2005.
58. Jelena Vuckovic, Dirk Englund, David Fattal, Edo Waks, Bingyang Zhang, Glenn Solomon, Toshihiro Nakaoka, Yasuhiko Arakawa, and Yoshihisa Yamamoto, “Single Photon Source Based on a Quantum Dot in Photonic Crystal,” *IQEC/CLEO Pacific Rim*, Tokyo, Japan, July 2005.
59. Edo Waks, Dirk Englund, David Fattal, and Jelena Vuckovic, “Photonic-crystal based single photon source,” *SPIE Annual Meeting*, San Diego, CA, July 2005
60. Jelena Vuckovic, "Quantum Dot-Photonic Crystal Devices and Circuits for Quantum Information Processing," *Quantum Communications Research Conference (QCRC)*, Boulder, CO, June 1-3, 2005.
61. Jelena Vuckovic, Dirk Englund, David Fattal, Hatice Altug, Edo Waks, and Yoshihisa Yamamoto, "Photonic Crystal Devices for Quantum and Nanoscale Photonics," *NDSI'05 (Second Conference on Nanoscale Devices and System Integration)*, Houston, Texas, April 4-6, 2005.
62. Jelena Vuckovic, "Photonic Crystal Devices for Quantum and Nanoscale Photonics," *American Physical Society (APS) March Meeting*, Los Angeles, CA, March 2005.
63. Jelena Vuckovic, "Nanophotonic Devices for Quantum Information Science," *Gordon*

*Research Conference on Quantum Information Science*, Ventura, CA, Feb. 2005.

64. Edo Waks, David Fattal, Dirk Englund, Jelena Vuckovic, and Yoshihisa Yamamoto, "Single Photon Generation Using a Single Quantum Dot in a Photonic Crystal Cavity," *Physics of Quantum Electronics 2005*, Snowbird, Utah, Jan. 2005.
65. J. Vuckovic, D. Fattal, D. Englund, E. Waks, C. Santori, G. Solomon, and Y. Yamamoto, "Cavity Enhanced Single Photons From a Quantum Dot," Presented at *SPIE Photonics West, Single Photon Devices Minisymposium*, San Jose, CA, Jan. 2005. Published in *Proc. SPIE*, Vol. 5722, pp. 19-29. 2005.
66. Jelena Vuckovic, David Fattal, Edo Waks, Charles Santori, Dirk Englund, Hatice Altug, and Yoshihisa Yamamoto, "Photonic crystal components for solid- state photonic quantum information systems," *European Materials Research Society (EMRS) Annual Meeting, Symposium on Nanophotonic Materials*, Strasbourg, France, May 2004.
67. J. Vuckovic, H. Altug, E. Waks, D. Fattal, Y. Yamamoto, and D. Englund "Photonic Crystal Structures With Large Density of Optical States," *CLEO (Conference on Lasers and Electro-Optics), Special Symposium on Nonlinear Optical Lattices*, San Francisco, CA, May 2004.
68. J. Vuckovic, D. Fattal, C. Santori, G. Solomon, and Y. Yamamoto "Cavity Enhanced Single and Entangled Photons From a Quantum Dot," *QELS (Quantum Electronics and Laser Science) Conference*, Baltimore, MD, June 2003.
69. J. Vuckovic, C. Santori, D. Fattal, M. Pelton, G. Solomon, B. Zhang, J. Plant, and Y. Yamamoto, "Single Photons and Entangled Photons From a Quantum Dot," *Proc. IEEE Int'l Electron Devices Meeting (IEDM 2002)*, San Francisco, CA, pp. 87-90, December 2002.
70. J. Vuckovic, T. Yoshie, M. Loncar, H. Mabuchi, and A. Scherer, "Nano-Scale Optical and Quantum Optical Devices Based on Photonic Crystals," *Proc. IEEE Conf. on Nanotechnology (IEEE-NANO 2002)*, Washington, DC, August 26-28, 2002, pp. 319-321, 2002.
71. J. Vuckovic, A. Scherer, M. Loncar, T. Yoshie, O. Painter, "Applications of Photonic Crystals in Lasers and Light Emitting Diodes," *MRS (Materials Research Society) Spring Meeting*, San Francisco, CA, April 2002.
72. J. Vuckovic, M. Loncar, T. Yoshie, M. Armen, J. Williams, H. Mabuchi and A. Scherer, "High-Q Optical Nanocavities in Planar Photonic Crystals," *Proc. SPIE Photonics West (LASE 2002)*, San Jose, CA, January 2002, Vol. 4629, pp. 190-199, 2002.
73. A. Scherer, A. O. Painter, J. Vuckovic, M. Loncar, T. Yoshie, D. Dapkus, I. Kim, and T. Pearsall, "Photonic Crystal Cavities and Waveguides," *Conf. Digest of Device Research Conference (DRC)*, University of Notre Dame, Notre Dame, Indiana, June 2001, pp. 115-118, 2001.
74. J. Vuckovic, M. Loncar, O. Painter, and A. Scherer, "Surface Plasmon Enhanced LED," *CLEO/QELS (Conference on Lasers and Electro-Optics/Quantum Electronics and Laser Science)*, San Francisco, CA, May 2000. *Technical Digest, Post-Conference Edition*, Vol. 40, pp. 41-42, and Vol. 39, pp. 123-124, 2002.

## SHORT COURSES AT MAJOR INTERNATIONAL CONFERENCES

75. D. Englund, J. Vuckovic, "Silicon Nanophotonics," *Frontiers in Optics/Laser Science, XXIV annual meeting*, Rochester, NY, Oct. 19-23, 2008

### **INVITED TALKS AT SYMPOSIA, MEETINGS, AND WORKSHOPS**

76. Jelena Vuckovic, *The 11<sup>th</sup> International Workshop on Nonlinear Optics and Excitation Kinetics in Semiconductors (NOEKS 11)*, Stuttgart, Germany, September 23 -27, 2012
77. Jelena Vuckovic, "Optical nanocavities and quantum dots: from cavity QED to devices," *International Nano-Optoelectronics Workshop (iNOW)*, Berkeley, August 8-11 and Stanford, August 11-14, 2012
78. Gary Shambat, Jelena Vuckovic, *CMOS Emerging Technologies Meeting*, Whistler, BC, June 2011
79. Jelena Vuckovic, "Ultralow threshold electrically injected nanocavity lasers and modulators," *CIS Roundtable and review meeting*, Stanford, CA, May 2011
80. Erik Kim, Jelena Vuckovic, *Quantum Dot Day*, University of Bristol, Bristol, UK (Jan 10, 2010)
81. Jelena Vuckovic, *EE Centennial at CALTECH*, Caltech, Pasadena, CA, Nov. 5-6, 2010.
82. Jelena Vuckovic, *CeNS Workshop "Nanosciences – Merging Disciplines,"* at the Venice International University (VIU), Italy, Sept. 20-24, 2010
83. Jelena Vuckovic, "Photonic crystal nanocavity lasers," *Micro/Nano Laser session at the IEEE Photonics Society Semiconductor Laser Workshop, CLEO/QELS*, San Jose, May, 2010
84. Jelena Vuckovic, "Nanophotonics for optical interconnects and light sources," *Center for Integrated Systems Round Table and Review*, Stanford University, May 18-19, 2010
85. Jelena Vuckovic, *Stanford University Photonics Retreat*, Napa, April 2010
86. Yiyang Gong, Jelena Vuckovic, "Nanophotonic devices for classical and quantum information processing," *NNIN Workshop on "Bridging the gap between theory and experiment: what theoretical approach is most suited to solve real problems in nanotechnology and biology,"* Stanford University, Feb. 2010
87. Jelena Vuckovic, *Frontiers in Nanoscale Science and Technology Workshop*, Harvard University, Cambridge, MA, May 29-31, 2009
88. Jelena Vuckovic, "Quantum nanophotonics: from optical switching with aJ control pulses at 10GHz speed, to quantum information processing," *CIS Roundtable and review meeting*, Stanford, CA, May 2009
89. Dirk Englund, Jelena Vuckovic, *Nanoscience Winterschool*, St. Anton, Arlberg, Austria, March 1-7, 2009.
90. Andrei Faraon and Jelena Vuckovic, workshop on Optical approaches to Topological Cluster State Computing, National Institute for Informatics (NII), Tokyo, Japan (Dec. 2008)
91. Yiyang Gong and Jelena Vuckovic, "Plasmonic enhancement of emission from silicon nanocrystals," *G-COE International Symposium for Young Scientists*, Kyoto, Japan, October 2008

92. Andrei Faraon, Jelena Vuckovic, "Strong light-matter interaction between quantum dots and photonic crystal cavities," *International Workshop on Fundamentals of Light-Matter Interaction*, Recife, Brazil, October 20-22, 2008
93. Ilya Fushman, Jelena Vuckovic, "Quantum dots in photonic crystals: from quantum information processing to single photon nonlinear optics," *Quantum Cairns International Workshop*, Palm Cove, Cairns, Australia, June 30-July 3, 2008.
94. Dirk Englund, Jelena Vuckovic, "Classical and quantum information processing with quantum dots in photonic crystals," CIPS Annual Meeting, Nanophotonics Session, MIT, Cambridge, MA, May 2008
95. Andrei Faraon, Jelena Vuckovic, "Classical and quantum information processing using photonic crystals," *Annual Meeting of CUDOS (Centre for Ultrahigh-bandwidth Devices for Optical Systems, an ARC Centre of Excellence)*, Sydney, Australia, Feb. 2008.
96. Jelena Vuckovic, Dirk Englund, Andrei Faraon, and Ilya Fushman, "Quantum information processing with quantum dots in photonic crystals," *Stanford Photonics Research Center Annual Meeting*, Stanford University, September 2007
97. Ilya Fushman and Jelena Vuckovic, "Photonic Crystal Cavities for Quantum and Classical Information Processing," *Workshop on Physics of Microresonators*, University of North Carolina, Charlotte, NC, June 6-9, 2007
98. Jelena Vuckovic, "Quantum dot-photonic crystal chips for quantum information processing," *Workshop on Hybrid approaches to scalable quantum information systems*, ITAMP - Harvard, May 24-27 2007.
99. Jelena Vuckovic, "Nanophotonic chips for optical interconnects and quantum communication," *CIS Spring Round Table and Review*, Stanford, May 2007
100. Jelena Vuckovic, "Nanophotonic chips for optical interconnects and quantum communication," French-Californian Workshop on Nanophotonics, Stanford March 19th
101. Jelena Vuckovic, "Photonic crystal chips for classical and quantum information processing," *Stanford-NEC Day*, Stanford University, Feb. 16 2007.
102. Hatice Altug and Jelena Vuckovic, "Photonic crystal devices for nano- and biophotonics," *NNIN review*, U. of Texas in Austin, Feb. 2006.
103. Jelena Vuckovic, "Photonic Crystal Devices for Optical Interconnects," *MARCO Interconnect Focus Center (IFC) Workshop*, Stanford University, Stanford, CA March 2006.
104. Jelena Vuckovic, "Photonic crystal devices for nanoscale and quantum photonics," *NNIN CIS Round Table and Review Meeting*, Stanford University, Stanford, CA, May 10-11 2005.
105. Jelena Vuckovic, " Photonic crystal devices for quantum and nanoscale photonics," *DARPA Workshop on Frontiers in Quantum Device Engineering*, Los Angeles, CA, Jan. 18-19 2005.
106. Jelena Vuckovic, "Photonic Crystal Devices for Nanophotonics and Quantum Information Processing," *Joint US-Japan Workshop on "Nanophotonics: Beyond the limit of optical technology" (NSF-MEXT Joint Symposium and Public Lecture)*, Tokyo, Japan, October 2004.

107. Jelena Vuckovic, "MURI Center for Photonic Quantum Information Systems," *Advanced Research and Development Activity (ARDA)/Intelligence Technology Innovation Center (ITIC) Quantum Cryptography Research Conference* McLean, VA, Aug.31-Sept. 1, 2004.
108. Jelena Vuckovic, "Photonic crystal devices for nanophotonics and quantum information processing," *Workshop on Mesoscopic Physics, Quantum Optics, and Quantum Information, Institute for Theoretical Atomic and Molecular Physics*, Harvard University, May 2004.
109. Jelena Vuckovic, "Quantum optical devices based on quantum dots in photonic crystals," *International Symposium on Quantum Entanglement*, Stanford University, Stanford, CA, December 2003.
110. Jelena Vuckovic, "Quantum optical devices based on quantum dots in microcavities," *Quantum Enabled Science and Technology (QUEST) Workshop*, Santa Fe, NM, August 2003.
111. Jelena Vuckovic, "Quantum information applications of microcavities," *NSF DARPA Photonics Technology Access Program (PTAP) Optical Microresonators Workshop*, San Diego, CA July 2003.
112. Jelena Vuckovic, "Photonic crystal-based optical and quantum optical devices," *Symposium of the Center for Fundamental Materials Research*, Michigan State University, East Lansing, MI, March 2003.
113. Jelena Vuckovic, "Paradigm shifts in devices for optoelectronics," *CIS Autumn Roundtables and advisory committee meetings*, Stanford University, Stanford, CA, November 2002.
114. Jelena Vuckovic, "Optical and quantum optical devices in photonic crystals: from nanocavities to single-photon sources," *Stanford Photonics Research Center (SPRC) Annual Meeting*, Stanford University, Stanford, CA, September 2002.
115. Jelena Vuckovic, "Single photons and entangled photons from a quantum dot microcavity," *International Symposium on Quantum Entanglement*, College de France, Paris, France, June 2002.
116. Jelena Vuckovic, "Photonic bandgap materials," *CNOM (Center for Nonlinear Optical Materials) Annual Meeting*, Stanford University, Stanford, CA, September 2000.

## **INVITED COLLOQUIA AND SEMINARS**

117. Jelena Vuckovic, "Nonlinear optics at the single photon level in optical nanocavities," *Optics and Quantum Electronics Seminar, Ginzton Lab*, Stanford University, Nov. 2011
118. Jelena Vuckovic, " Quantum dots in optical nanocavities: from cavity QED to device applications," *MIT Physics Colloquium*, Nov. 2011
119. Jelena Vuckovic, *IFC e-seminar*, Nov. 2011.
120. Jelena Vuckovic, " Quantum dots in optical nanocavities: from cavity QED to device applications," *Humboldt University*, Berlin, Germany, May 2011

121. Jelena Vuckovic, " Quantum dots in optical nanocavities: from cavity QED to device applications," *Institute Colloquium, Max Planck Institute for Quantum Optics (MPQ)*, Munich-Garching, Germany, May 2011
122. Jelena Vuckovic,"Quantum dots in optical nanocavities: from cavity QED to device applications," *Physics Colloquium, Stanford University*, Stanford, CA, Feb. 15, 2011
123. Jelena Vuckovic, "Quantum dots in nanocavities: from cavity QED to optical switches" *U.C. Berkeley Nanoscale Science and Engineering (NSE) seminars*, Berkeley, October 2010
124. Jelena Vuckovic, *MARCO IFC e-seminar*, May 2010.
125. Jelena Vuckovic, "Quantum dots in photonic crystals for classical and quantum information processing," *U.C. Berkeley, EECS Department*, Photonics and plasmonics seminar, April 2010.
126. Jesse Lu, Jelena Vuckovic, "Inverse design of nanophotonics structures using complementary convex optimization," *U.C. Berkeley, EECS Department*, Photonics and plasmonics seminar, March 2010.
127. Jelena Vuckovic, *Caltech, Materials Research Lectures (MRL)*, March 2010
128. Jelena Vuckovic, Physics Colloquium, *Harvard University*, February 2010.
129. Jelena Vuckovic, " Quantum dots in photonic crystals: from quantum information processing to single photon nonlinear optics," MIT, *Optics and Quantum Electronics Seminar*, Nov. 2008
130. Jelena Vuckovic, "Quantum dots in photonic crystals: from quantum information processing to single photon nonlinear optics," *Harvard – MIT Center for Ultracold Atoms Talk Series*, November 2008
131. Jelena Vuckovic, "Quantum dots in photonic crystals: from quantum information processing to single photon nonlinear optics," Stanford University, *Ginzton Lab Seminar*, April 2008
132. Jelena Vuckovic, " Photonic crystal devices for classical and quantum information processing," Columbia University, *Department of Physics Colloquium*, November 2006.
133. Ilya Fushman and Jelena Vuckovic, "Quantum information processing with quantum dots in photonic crystals," UC Berkeley, *Quantum Computation Seminar*, April 2006.
134. Jelena Vuckovic, "Photonic crystal devices for classical and quantum information processing," University of Connecticut, Department of Physics, *Hascoe Lecture*, April. 2006.
135. Jelena Vuckovic, "Photonic crystal devices for classical and quantum information processing," Harvard University, *Engineering and Applied Science Seminar Series*, March 2006.
136. Jelena Vuckovic, "Photonic crystal devices for classical and quantum information processing," University of Toronto, *Optics and Quantum Optics Seminar*, March 2006.
137. Jelena Vuckovic, "Nanoscale and quantum photonic devices," Stanford University, *Electrical Engineering Graduate Seminar*, February 2006.

138. Jelena Vuckovic, "Generation and manipulation of classical and nonclassical light using photonic crystals," University of California Santa Barbara, *Materials Colloquium*, October 2005.
139. Jelena Vuckovic, "Generation and manipulation of classical and nonclassical light using photonic crystals," Caltech, *Joint EE-AP seminar*, May 2005.
140. Jelena Vuckovic, "Photonic crystal devices for quantum and nanoscale photonics," UC Berkeley, *AMO Seminar*, December 2004.
141. Jelena Vuckovic, "Photonic crystal devices for nanophotonics and quantum information processing," Harvard University, *Joint Atomic Physics Colloquium*, March 2004.
142. Jelena Vuckovic, "Photonic crystals and their applications in optoelectronics and quantum optics," Stanford University, Materials Science and Engineering Department, May 2003.
143. Jelena Vuckovic, "Optical and quantum optical devices based on photonic crystals," Palo Alto Research Center (PARC), February 2003.
144. Jelena Vuckovic, "Quantum optical devices based on photonic crystals," Los Alamos National Laboratory, *Quantum Lunch Seminar Series*, January 2003.
145. Jelena Vuckovic, "Optical and quantum optical devices based on photonic crystals," Princeton University, Electrical Engineering Department, April 2002.
146. Jelena Vuckovic, "Optical and quantum optical devices based on photonic crystals," Stanford University, Electrical Engineering Department, April 2002.
147. Jelena Vuckovic, "Optical and quantum optical devices based on photonic crystals," California Institute of Technology (Caltech), Applied Physics Department, April 2002.
148. Jelena Vuckovic, "Optical and quantum optical devices based on photonic crystals," Massachusetts Institute of Technology (MIT), Electrical Engineering Department, March 2002.
149. Jelena Vuckovic, "Photonic crystals," Stanford University, Applied Physics Department, November 2001.
150. Jelena Vuckovic, "Photonic crystals," University of California San Diego, Electrical Engineering Department, April 2001.

## **REFEREED CONFERENCE PUBLICATIONS**

1. "Photon blockade with a four-level atom coupled to a microcavity," M. Bajcsy, A. Majumdar, J. Vuckovic, *DAMOP 2012 Meeting*, Orange County, CA, June 2012
2. "Electrically Driven Photonic Crystal Cavity Devices," Gary Shambat, Bryan Ellis, Jan Petykiewicz, Marie A. Mayer, Arka Majumdar, Tomas Sarmiento, James Harris, Eugene E. Haller, and Jelena Vučković, *PECS-X: 10<sup>th</sup> International Symposium on Photonic and Electromagnetic Crystal Structures*, Santa Fe, New Mexico, USA, June 3-June 8, 2012
3. "Phonon Mediated Off-resonant Quantum Dot-Cavity Coupling," Arka Majumdar, Armand Rundquist, Michal Bajcsy, Alexander Papageorge, Erik D. Kim, Jelena Vuckovic, *7th*

*International Conference on Quantum Dots (QD 2012)*, Santa Fe, NM (May 2012)

4. "Room Temperature Photoluminescence from Ge/SiGe Quantum Well Structure in Microdisk Resonator," Xiaochi Chen, Yijie Huo, Edward T. Fei, Gary Shambat, Xi Liu, Theodore I. Kamins, Jelena Vuckovic, James S. Harris, *Symposium on Photonics and Optoelectronics (SOPO)*, Shanghai, China (May 2012)
5. "Light Emission in Ge Quantum Wells," Edward T. Fei, Yijie Huo, Gary Shambat, Xiaochi Chen, Xi Liu, Stephanie A. Claussen, Elizabeth H. Edwards, Theodore I. Kamins, David B. Miller, Jelena Vuckovic, James S. Harris, *CLEO*, San Jose, CA, May 2012
6. "Off-resonant Coupling Between a Single Quantum Dot and a Nanobeam Photonic Crystal Cavity," Armand Rundquist, Arka Majumdar, and Jelena Vuckovic, *CLEO*, San Jose, CA, May 2012
7. "Free-carrier injection and current flow in laterally-doped GaAs photonic crystal cavity PIN diodes," Jan Petykiewicz, Gary Shambat, Bryan Ellis, and Jelena Vuckovic, *CLEO*, San Jose, CA, May 2012
8. "Multiply Resonant Photonic Crystal Cavities for Nonlinear Frequency Conversion," Sonia Buckley, Kelley Rivoire and Jelena Vuckovic, *CLEO*, San Jose, CA, May 2012
9. "Optical fiber tips functionalized with semiconductor photonic crystal cavities," Gary Shambat, J Provine, Kelley Rivoire, Tomas Sarmiento, James Harris, and Jelena Vučković *CLEO*, San Jose, CA, May 2012
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