

LUCA DAL NEGRO

CURRICULUM VITAE

PERSONAL DATA

Birth Date 12-03-1975
Work address: Boston University
Department of Electrical and Computer Engineering
8 Saint Mary's street, room 825
Boston, MA 02215-2421
Phone: 617-358-2627, fax 617-353-6440
E-mail: dalnegro@bu.edu

EMPLOYMENT AND EDUCATION

Jan.1, 2006–present: Assistant Professor
Department of Electrical and Computer Engineering
Boston University
2006 Visiting Professor
Department of Materials Science
Massachusetts Institute of Technology
2003-Dec.31, 2005 Post doctoral associate MIT
2000-2003 Ph.D. (Physics), University of Trento, Italy
1999-2000 Research Associate, University of Trento, Italy
1995-1999 Laurea (Physics), University of Trento, Italy

RESEARCH ACHIEVEMENTS

Publications: 83

Relevant papers in: Nature, Physical Review Letters, Physical Review B, Applied Physics Letters, Journal of Applied Physics. Book Chapters in: Springer-Verlag, Kluwer Academic Publishers.

Editor of: *“Towards the First Silicon Laser”* edited by L. Pavesi, S. Gaponenko, L. Dal Negro, NATO Science Series, Kluwer Academic Publishers, Dordrecht 2003.

Reviewer of: Journal of Applied Physics, IEEE Journal of Quantum Electronics, Journal of Applied Physics, Thin-film materials, Journal of Nanotechnology,

DETAILS

EDUCATION

Studies

- 2003-2006 Post Doctoral Associate at MIT, supervisor Prof. L.C. Kimerling
- 2000-2003 PhD in Semiconductor Physics at the University of Trento (supervisor Prof. L. Pavesi). PhD thesis title: “*Stimulated Emission and Photon Diffusion in Low Dimensional Silicon Structures*”)
- 1999-2000 Research Associate in “Dipartimento di Fisica” at the Semiconductor Research Group headed by Prof. L. Pavesi.
- 1994-1999 Degree (Laurea in Fisica, 07/26/1999) *summa cum laude* in Physics at the University of Trento (final evaluation of 110/110 cum laude). The diploma thesis was titled “*Optical Properties of silicon nanostructures for photonics*” and the work has been performed in the Semiconductor Research Group of the University of Trento. Supervisor: Prof. Lorenzo Pavesi.
- 1989-1994 Scientific School Certificate at the Scientific Liceo “G. Fracastoro” in Verona (Italy) with final evaluation of 60/60. Winner of best students awards for 3 consecutive years.

Scientific Schools and Workshops

- March 2001 “*Optoelectronics and Photonics Winter School*” in Sardinia (Trento), Italy
- June 2001 European Research Conference (EURESCO) on “Electromagnetic Crystal Structures” at St. Andrews, Scotland
- July 2001 “*Materials processes far from equilibrium*”, Gordon Research Conference, Kimbal Academy, MA
- July 2000 “*Nanoscale Linear and Nonlinear Optics*” at the International School of Physics, E.Majorana in Erice, Sicily
- July 1998 “*Silicon-based Microphotonics*” held at the International Physics School “E.Fermi” in Varenna, Como, Italy.

Workshop and Conference Organization

- Chair of the subcommittee on “*Advanced Materials Technologies*” for the 6th International Conference on Group IV Photonics, to be held September 9-11, 2009 in San Francisco, USA
- Co-organizer of the Symposium “*Plasmonics, Metamaterials, and Light Localization*”, Materials Research Society Spring Meeting, Saint Francisco, April 13-17, 2009

- Principal Organizer of the Symposium “*Frontiers in Silicon-based Photonics*”, Annual European Materials Society (E-MRS) Meeting, Strasbourg, France, May 26-30, 2008
- Co-organizer of the Symposium “*Group IV Nanostructures*”, Materials Research Society Fall Meeting, Boston, MA, December 1-5, 2008.
- Co-organizer of the Workshop “*Engineering Applications on Symbolic Dynamics*” Boston University Center for Computational Physics, June 6, 2007
- Scientific Secretary of the NATO Advanced Research Workshop OASIS, “*Towards the First Silicon Laser*”, Sardagna, Trento, Italy. 9/2002

Visit and exchange

6/2002 Univesita’ di Catania: group of Prof. Francesco Priolo

5/2002 Van Der Waals-Zeeman Institute of Amsterdam (The Netherlands): group of Prof. Ad Lagendijk, ultrafast transport measurements on quasicrystals.

10/ 2000 – 1/2001 Max Planck Institute for Microstructure Physics in Halle, Germany: group of Prof. U.Goesele

HONORS AND AWARDS

2009 National Science Foundation (NSF) CAREER Award

2007 Dean’s Catalyst Award, College of Engineering, Boston University

2005 MIT Rewards and Recognition Program, Materials Processing Center Award.

2004 MIT Rewards and Recognition Program, Materials Processing Center Award.

2001 Young Italian Scientist Award, Project “MARC” (*MAcroporous silicon Random Cavities*)

6/2000 "Young Scientist Award" for the best work presented, Symposium G, European Congress EMRS 2000, Strasbourg, France.

PUBLICATION LIST

Relevant publications

1. L. Pavesi, L. Dal Negro, C. Mazzoleni, G. Franzo, F. Priolo “Optical gain in Si nanocrystals”, **Nature** 408, 440, 23 November 2000. **Full Article**
2. F. Giorgis, P. Mandracci, L. Dal Negro, C. Mazzoleni and L. Pavesi, “*Optical absorption and luminescence properties of wide-band gap amorphous silicon based alloys*”, **J. Non-Crystalline Solids** 266-269, 588-592, 2000.

3. L. Dal Negro, L. Pavesi, G. Pucker, G. Franzo, F. Priolo, “*Optical gain in silicon nanocrystals*”, **Optical Materials** 17, 41-44, 2001.
4. M.Galli, M.Agio, L.C.Andreani, M.Belotti, G.Guizzetti, F.Marabelli, M.Patrini, P.Bettotti, L.Dal Negro, Z.Gaburro, L.Pavesi, A.Lui, P.Bellutti, “*Spectroscopy of photonic bands in macroporous silicon photonic crystals*”, **Physical Rev. B**, vol 65, 113111, 2002.
5. P.Bettotti, L.Dal Negro, Z.Gaburro, L.Pavesi, A.Lui, M.Galli, M.Patrini, F.Marabelli, “*P-type macroporous silicon for two dimensional photonic crystals*”, **Journal of Applied Physics**, 92, 6966, 2002
6. C.J.Oton, Z.Gaburro, M.Ghulinyan, L.Pancheri, P.Bettotti, L.Dal Negro and L.Pavesi, “*Scattering rings and anisotropy in porous silicon*”, **Appl. Phys. Lett.**, 81,26,4919, 2002
7. L.Dal Negro, C.J.Oton, Z.Gaburro, L.Pavesi, P.Johnson, Ad.Legendijk, R.Righini, M.Colocci and D.Wiersma, “*Light transport through the band-edge states of fibonacci quasicrystals*”, **Physical Review. Letters**, vol 90, 5, 055501, 2003
8. Z. Gaburro, C. J. Oton, P. Bettotti, L. Dal Negro, G. Vijaya Prakash, M.Cazzanelli and L. Pavesi, «*Interferometric method for monitoring electrochemical etching of thin films*», **Journal of Electrochem. Soc.**, **150** (6), C381-C384, 2003
9. N. Daldosso, G. Dalba, R. Grisenti, L. Dal Negro, L. Pavesi, F. Rocca, F. Priolo, G. Franzò, D. Pacifici and F. Iacona “*X-ray absorption study of light emitting silicon nanocrystals*” **Physica E** **16**, 321-325, 2003
10. C.J. Oton, L. Dal Negro, Z. Gaburro, L. Pavesi, P. J. Johnson, A.Legendijk, and D. S. Wiersma, “*Light propagation in one dimensional porous silicon complex systems*”, **Physica Status Solidi A**. 197, (1), 298, 2003
11. D. Pacifici, G.Franzò, F.Priolo, F.Iacona, L.Dal Negro, “*Modeling and Perspectives of the Si nanocrystals-Erbium Interaction for Optical Amplification*”, **Phys. Rev B**, **67**, 245301, 2003
12. L.Dal Negro, M.Cazzanelli, L.Pavesi, S.Ossicini,, D.Pacifici, G:Franzò, F.Priolo, F.Iacona, “*Dynamics of Stimulated Emission in Silicon Nanocrystals*”, **Appl. Phys. Lett.**, **82**, 26, 4636, 2003
13. J.Ruan, P.M.Fauchet, L. Dal Negro, M.Cazzanelli, L.Pavesi, “*Stimulated emission in nanocrystalline silicon superlattices*”, **Appl. Phys. Lett.**, **83**, 26, 5479, 2003
14. L.Dal Negro, M.Cazzanelli, N.Daldosso, Z.Gaburro, L.Pavesi, F.Priolo, D.Pacifici, G.Franzò and F,Iacona, “*Stimulated emission in plasma enhanced chemical vapour deposited silicon nanocrystals*”, **PHYSICA E-LOW-DIMENSIONAL SYSTEMS & NANOSTRUCTURES** 16 (3-4) 297-308, 2003
15. L.Dal Negro, P.Bettotti, M.Cazzanelli, , D.Pacifici, L.Pavesi, “*Applicability conditions and experimental analysis of the variable stripe length method for gain measurements*”, **Optics Communications**, **229**, 337-348, 2004

16. L. Dal Negro, M.Stolfi, Y.Yi, J.Michel, X.Duan, L.C.Kimerling, J.LeBlanc, J.Haavisto, “*Photon bandgap properties and omnidirectional reflectance in Si/SiO₂ Thue-Morse quasicrystals*”, **Appl. Phys. Lett.**, **84**, 25, 5186, 2004
17. L. Dal Negro, M.Cazzanelli, B.Danesi, L.Pavesi, F.Iacona, G.Franzò, F.Priolo, “*Light Amplification in Silicon Nanocrystals by pump and probe transmission measurements*”, **Journal of Applied Physics**, 96, 10, 5747, 2004
18. M.Cazzanelli, D.Kovalev, L.Dal Negro, Z.Gaburro, L.Pavesi, “*Polarized optical gain and polarization narrowing of oxidized anisotropic silicon nanocrystals*”, **Physical Review Letters**, **93**, 20, 207402, 2004
19. M. Ghulinyan, C.J. Oton, L. Dal Negro, L. Pavesi, R. Sapienza, M. Colocci, D. Wiersma, “*Light pulse propagation in Fibonacci quasicrystals*”, **Physical Review B**, **71**, 094204, 2005
20. L. Dal Negro, J.H.Yi, Y.Yi, V.Nguyen, J.Michel, L.C.Kimerling, “*Spectrally enhanced light emission from aperiodic photonic structures*” **Appl. Phys. Lett.**, 86, 261905, 2005
21. P.M. Fauchet, J. Ruan, H. Chen, L. Pavesi, L. Dal Negro, M. Cazzanelli, R.G. Elliman, N. Smith, M. Samoc, B. Luther-Davies, “*Optical gain in different silicon nanocrystal systems*”, **Optical Materials**, **27**, 745, (2005)
22. L. Dal Negro, J.H. Yi, L. C. Kimerling, S. Hamel, A. Williamson, G. Galli, “*Light Emission from Silicon-rich nitride Nanostructures*”, **Appl. Phys. Lett.**, **88**, 183103, 2006
23. L. Dal Negro, Y.H. Yi, M. Hiltunen, J. Michel, L.C. Kimerling, S. Hamel, A.Williamson, G. Galli, T.D.F. Chang, V. Sukhovatkin, E.H. Sargent, “*Light emitting silicon-rich nitride systems and photonic structures*”, *Journal of Exper. Nanoscience*, vol. **1**, 1-21, 2006
24. L. Dal Negro, J.H. Yi, J. Michel, L. C. Kimerling, T.-W. F. Chang, V. Sukhovatkin, E. H. Sargent, “*Light Emission Efficiency and Dynamics in Silicon-rich Silicon nitride films*”, **Appl. Phys. Lett.**, **88**, 233109, 2006
25. L. Dal Negro, J. H. Yi, J. Michel, L. C. Kimerling, S. Hamel, A. Williamson, and G. Galli “*Light emitting silicon nanocrystals and photonic structures in silicon nitride*”, **IEEE Journal of Selected topics in Quantum Electronics**, Silicon Photonics, vol 12, no 6, pg. 1628, November 2006
26. L. Dal Negro, S. Hamel, N. Zaitseva, J.H.Yi, A. Williamson, M. Stolfi, J. Michel, G. Galli, L.C. Kimerling, “*Synthesis, characterization and modelling of colloidal and thin-film silicon nanocrystals*”, **IEEE Journal of Selected topics in Quantum Electronics**, Nanophotonics, vol 12, no 6, pg. 1151, December 2006
27. Ning-Ning Feng, Mark L. Brongersma & Luca Dal Negro, “*Metal-dielectric slot waveguide structures for the propagation of surface plasmon polaritons at 1.55 μ m*” **IEEE, Journal of Quantum Electronics**, vol. 43, no. 6, 479, June 2007

28. Marianne Hiltunen, Luca Dal Negro, Ning-Ning Feng, Lionel C. Kimerling and Jurgen Michel, “*Design of aperiodic fractal waveguide structures for multifrequency light transport*” **IEEE/OSA Journal of Lightwave Technology**, vol. 25, no. 7, 1841, July 2007
29. L. Dal Negro, N. Feng, “*Spectral gaps and mode localization in Fibonacci chains of metal nanoparticles*” **Optics Express**, **15**, 22, 14396, October 2007
30. N. Feng, L. Dal Negro, “*Plasmon mode transformation in modulated-index metal-dielectric slot waveguides*”, **Optics Letters**, **32**, 21, November 2007
31. H. Perry, A. Gopinath, D. Kaplan, L. Dal Negro, F. Omenetto, “*Nano and micro patterning of optically transparent mechanically robust, bio-compatible silk fibroin films*” **Adv. Mater.**, **20**, 3070, July 2008
32. L. Dal Negro, N.N. Feng, A. Gopinath “*Electromagnetic coupling and plasmon localization in deterministic aperiodic arrays*”, **J. Opt. A: Pure Appl. Opt.** **10**, 064013, May 2008
33. R. Dallapiccola, A. Gopinath, F. Stellacci, L. Dal Negro, “*Quasi-periodic distribution of plasmon modes in two-dimensional Fibonacci arrays of metal nanoparticles*” **Optics Express**, **16**, 8, 5544, April 2008
34. M. Saleh, L. Dal Negro, B. Saleh, “*Second-order parametric interactions in 1D photonic-crystal microcavity structures* ” **Optics Express**, **16**, 8, 5261, April 2008
35. M. Makarova, V. Sih, J. Warga, L. Dal Negro, J. Vuckovic, “*Enhanced light emission in photonic crystal nanocavities with Erbium-doped silicon nanocrystals*”, **Appl. Phys. Lett.**, **92**, 161107, April 2008.
36. L. Dal Negro, R. Li, J. Warga, S.N. Basu, “*Sensitized Erbium emission from silicon-rich nitride/silicon superlattice structures*”, **Appl. Phys. Lett.**, **92**, 181105 May 2008.
37. A. Gopinath, S. Boriskina, N.N. Feng, B.M. Reinhard, L. Dal Negro, “*Photonic-plasmonic scattering resonances in deterministic aperiodic structures*”, **Nanoletters**, **8**, 2423, June 2008
38. L. Dal Negro, G. Miano, G. Rubinacci, A. Tamburrino, S. Ventre, “*A fast computational method for the analysis of an array of metallic nanoparticles*”, **IEEE transactions on Magnetism**, **45**, 1618, March 2009
39. R. Li, J. Schneck, J. Warga, L. Ziegler, L. Dal Negro, “*Carrier Dynamics and Erbium sensitization in Silicon Rich Nitride*” , **Appl. Phys. Lett.**, **93**, 091119 (2008)
40. S. Boriskina, L. Dal Negro “*Sensitive label-free biosensing using critical modes in aperiodic photonic structures*”, **Optics Express**, **16**, 12511 (2008)
41. J. Warga, R. Li, S.N., Basu, L. Dal Negro, “*Electroluminescence from Si-rich nitride/silicon superlattice structures*”, **Appl. Phys. Lett.** **93** 151116 (2008)

42. S. Boriskina, A. Gopinath, L. Dal Negro, “*Optical gap formation and localization properties of optical modes in deterministic aperiodic photonic structures*”, **Optics Express**, 16, 18813 (2008)
43. L. Sirleto, M.A. Ferrara, I. Rendina, J. Warga, R. Li, S.N. Basu & L. Dal Negro, “*Enhanced stimulated Raman scattering in silicon nanocrystals embedded in silicon-rich nitride/silicon superlattice structures*”, **Appl. Phys. Lett.**, 93, 251104, (2008)
44. C. Forestiere, G. Miano, G. Rubinacci, L. Dal Negro, “*Role of aperiodic order in the spectral, localization, and scaling properties of plasmon modes for the design of nanoparticles arrays*”, **Phys. Rev. B.**, 79, 085404 (2009)
45. S. Boriskina, A. Gopinath, L. Dal Negro, “*Optical gaps, mode patterns and dipole radiation in two-dimensional aperiodic photonic structures*”, accepted for publication in **Physica E**, 41, 1102 (2009)
46. J. Warga, R. Li, S.N. Basu, L. Dal Negro, “*Erbium-doped silicon nanocrystals in silicon/silicon nitride superlattice structures: Light emission and energy transfer*”, **Physica E**, 41, 1040, (2009)
47. A. Gopinath, S. Boriskina, B. Reinhard, L. Dal Negro, “*Deterministic Aperiodic Arrays of Metal nanoparticles for surface-enhanced Raman scattering*”, **Optics Express**, 17, 3741, March (2009).
48. B. Yan, A. Thubagere, R. Premasiri, L. Ziegler, L. Dal Negro, B. M. Reinhard, "Engineered SERS Substrates with Multiscale Signal Enhancement: Nanoparticle Cluster Arrays", **ACS Nano**, vol. 3, no. 5, 1190 (2009)
49. C. Forestiere, G. Miano, C. Serpico, M. d'Aquino, L. Dal Negro, "Dipolar mode localization and spectral gaps in quasi-periodic arrays of ferromagnetic nanoparticles", **Phys. Rev. B.** 79, 214419 (2009)
50. C. Forestiere, G. Miano, S. Boriskina, L. Dal Negro "The role of nanoparticles shapes and deterministic aperiodicity for the design of nanoplasmonic arrays", **Optics Express**, 17, 9648 (2009)
51. O. M. Bakr, V. Amendola, C. M. Aikens, W. Wenseleers, R. Li, L. Dal Negro, G. C. Schatz, and F. Stellacci, "Silver Nanoparticles with Broad Multi-Band Linear Optical Absorption", accepted for publication in **Angewandte Chemie**, DOI: 10.1002/anie.200
52. R. Dallapiccola, C. Dubois, A. Gopinath, F. Stellacci, L. Dal Negro, "Near-field detection and near-field excitation of propagating surface-plasmon polaritons on Au waveguide structures", **Appl. Phys. Lett.** 94, 243118 (2009)
53. S. Yerci, R. Li, S. O. Kucheyev, T. van Buuren, S. N. Basu, and L. Dal Negro, “*Energy transfer and 1.54 μm emission in amorphous silicon nitride films*”, **Appl. Phys. Lett.**, 95, 031107 (2009).

54. R. Li, S. Yerci, and L. Dal Negro, “*Temperature dependence of the energy transfer from amorphous silicon nitride to Er ions*”, **Appl. Phys. Lett.**, 95, 041111 (2009).
55. S. Yerci, R. Li, S. O. Kucheyev, A. Van Buuren, S. N. Basu, and L. Dal Negro, “*Visible and 1.54 μ m emission from amorphous silicon nitride films by reactive co-sputtering*”, **IEEE J. Sel. Topics Quantum Electron**, accepted (2009).
56. M. Makarova, Y. Gong, S. Cheng, Y. Nishi, S. Yerci, R. Li, L. Dal Negro, and J. Vuckovic, “*Photonic crystal and plasmonic silicon based light sources*”. **IEEE J. Sel. Topics Quantum Electron**, accepted (2009).
57. A. Gopinath, S. Boriskina, R. Presamiri, L. Ziegler, B.M. Reihard, L. Dal Negro, “*Plasmonic nanogalaxies: multi-scale aperiodic arrays for Surface enhanced Raman sensing*”, accepted for publication in **Nanoletters**, 101021/nl902134r (2009)

Book Contributions

58. L. Dal Negro, M. Cazzanelli, Z. Gaburro, P. Bettotti, L. Pavesi, F. Priolo, G. Franzò, D. Pacifici, F. Iona, “*Stimulated emission in silicon nanocrystals: Gain measurement and rate equation modelling*” in *Towards the first silicon laser* edited by L. Pavesi, S. Gaponenko, L. Dal Negro, NATO Science Series, **Kluwer Academic Publishers**, Dordrecht 2003.
59. S. Ossicini, C. Arcangeli, O. Bisi, Elena Degoli, Marcello Luppi, Rita Magri, L. Dal Negro, L. Pavesi “*Gain theory and models in silicon nanostructures*” in *Towards the first silicon laser* edited by L. Pavesi, S. Gaponenko, L. Dal Negro, NATO Science Series, **Kluwer Academic Publishers**, Dordrecht 2003.
60. F. Marabelli, M. Agio, L.C. Andreani, D. Bajoni, M. Belotti, M. Galli, G. Guizzetti, M. Patrini, L. Pavesi, P. Bettotti, L. Dal Negro, Z. Gaburro, G. Pucker, A. Lui, P. Bellutti, D. Peyrade, Y. Chen, “*Optical properties of one- and two-dimensional photonic crystals based on silicon*”, in *Radiation-Matter Interaction in Confined Systems*, edited by L. C. Andreani, G. Benedek, E. Molinari, published by the **Italian Physical Society**, Bologna 2002.
61. C.J. Oton, L. Dal Negro, P. Bettotti, L. Pancheri, Z. Gaburro, and L. Pavesi, “*Photon States in one-dimensional photonic crystals based on porous silicon multilayers*” in *Radiation-Matter Interaction in Confined Systems*, edited by L. C. Andreani, G. Benedek, E. Molinari, published by the **Italian Physical Society**, Bologna 2002.
62. L.C.Kimerling, L. Dal Negro, S.Saini, Y.Yi, D.Ahn, S.Akiyama, D.Cannon, J.Liu, J.G.Sandland, D.Sparacin, J.Michel, K.Wada, M.R.Watts, “*Monolithic Silicon Microphotonics*” in *Silicon Photonics* edited by L.Pavesi, D.J. Lockwood, **Springer-Verlag**, Berlin 2004
63. L.C.Kimerling, L. Dal Negro, M. Stolfi, J. H. Yi, J. Michel and X. Duan, E. H. Sargent, T.-W. F. Chang and V. Sukhovatkin, J. Haavisto and J. LeBlanc, “*Si-rich Dielectrics for Active Photonic Devices*” in “*Device Applications of Silicon Nanocrystals and Nanostructures*” edited by N. Koshida, **Springer-Verlag**, Berlin 2007

64. L. Dal Negro, R. Li, J. Warga, S. Yerci, S. Basu, H. Hamel, G. Galli, “*Light-emission from silicon-rich nitride nanostructures*”, in *Silicon Nanophotonics: Basic Principles, Present Status and Perspectives*, edited by L. Khriachtchev, Pan Stanford Publishing, 2008

Invited papers

65. P. Bettotti, M. Cazzanelli, L. Dal Negro, B. Danese, Z. Gaburro, C.J. Oton, G.V. Prakash and L. Pavesi, “*Silicon nanostructures for photonics*”, *Journal of Physics: Condensed Matter* **14**, 1-29, 2002.
66. L. Pavesi, Z. Gaburro, L. Dal Negro, P. Bettotti, G. Vijaya Prakash, M. Cazzanelli, C. Oton, “*Nanostructured silicon as a photonic material*”, special issue “*Optics in Italy*”, **Optics and Laser Engineering**, 39(3), 345-368, 2003.
67. L. Dal Negro, M. Cazzanelli, N. Daldosso, Z. Gaburro, L. Pavesi, F. Priolo, D. Pacifici, G. Franzò and F. Iacona, “*Stimulated emission in plasma enhanced chemical vapour deposited silicon nanocrystals*”, invited paper at Symposium G of the E-MRS Conference in Strasbourg 2002.
68. L. Dal Negro, M. Cazzanelli, Z. Gaburro, L. Pavesi, D. Pacifici, F. Priolo, G. Franzò, F. Iacona, “*Optical gain in PECVD grown silicon nanocrystals*”, invited paper at the SPIE Conference, Seattle 2002.
69. L. Pavesi, L. Dal Negro, N. Daldosso, Z. Gaburro, M. Cazzanelli, F. Iacona, G. Franzò, D. Pacifici, F. Priolo, S. Ossicini, M. Luppi and E. Degoli “*Will silicon be the photonics material of the third millennium?*” in **Physics of Semiconductors 2002** edited by A R Long and J H Davies, Institute of Physics Conference Series Number 171 (Institute of Physics Publishing Bristol (UK), pag. 261-268. 2003).
70. L. Dal Negro, J. H. Yi, M. Stolfi, J. Michel, J. LeBlanc, J. Haavisto, L. C. Kimerling, “*Light Emitting Silicon Nanostructures*”, invited paper IEEE-IEDM Conference, Washington DC, December 4-7, 2005

Conference Proceedings

71. L. Pavesi, L. Dal Negro, M. Cazzanelli, G. Pucker, Z. Gaburro, G. Prakash, G. Franzò, F. Priolo, “*Optical gain in Silicon Nanocrystals*», in *Silicon-based and Hybrid Optoelectronics III*, David J. Robbins, John A. Trezza, Ghassan E. Jabbour, Editors, Proceedings of **SPIE** Vol. 4293 pag. 162-172, 2001.
72. L. Dal Negro, M. Cazzanelli, Z. Gaburro, P. Bettotti, L. Pavesi, D. Pacifici, G. Franzò, F. Priolo, F. Iacona, “*Optical gain and stimulated emission in silicon nanocrystals*” MRS Proceedings volume, fall meeting 2002.
73. L. Pavesi, P. Bettotti, M. Cazzanelli, S. Cella, N. Daldosso, L. Dal Negro, B. Danese, Z. Gaburro, C. J. Oton, L. Pancheri, G. Vijaya Prakash “*Silicon nanostructures for photonics*”,

International Semiconductor Conference, 2002. CAS 2002 Proceedings pag. 103-112, IEEE 2002.

74. L. Dal Negro, C. J. Oton, Z. Gaburro, L. Pavesi, P. J. Johnson, A. Legendijk and D. S. Wiersma, “*Time resolved light propagation at the band-edge states of 1D Fibonacci quasicrystals*” Mat. Res. Soc. Symp. Proc. Vol. 722 L6.9.1, 2002.
75. P. Bettotti, Zeno Gaburro, Luca Dal Negro, and Lorenzo Pavesi, *New progress on p-type macroporous silicon electrodisolution*, Mat. Res. Soc. Symp. Proc. Vol. 722 L6.7.1, 2002.
76. L. Pavesi, P. Bettotti, M. Cazzanelli, S. Cella, N. Daldosso, L. Dal Negro, B. Danese, Z. Gaburro, C. J. Oton, L. Pancheri, G. Vijaya Prakash “*Silicon nanostructures for photonics*” Semiconductor Conference, 2002. CAS 2002 Proceedings International.
77. L. Dal Negro, M. Stolfi, Y. Yi, J. Michel, X. Duan, L. C. Kimerling, J. LeBlanc, J. Haavisto, “*Omnidirectional Reflectance and Optical Gap Properties of Si/SiO₂ Thue-Morse Quasicrystals*” MRS 2004, Spring Conference proceedings.
78. Dal Negro, J. H. Yi, V. Nguyen, Y. Yi, J. Michel and L. C. Kimerling, “*Light Emission in Aperiodic Thue-Morse Dielectrics*”, Proceedings of MRS, **92331**, F1.3 (2005).
79. S. Saini, J. G. Sandland, A. Eshed, D. K. Sparacin, L. Dal Negro, J. Michel, L. C. Kimerling, “*A High Index Contrast Silicon Oxynitride Materials Platform for Er-doped Microphotonics Amplifiers*”, Mat. Res. Soc. Symp. Proc. Vol. 817 © 2004 Materials Research Society

Popular Science publications

80. L. Pavesi, L. Dal Negro, M. Cazzanelli, C. Mazzoleni, Z. Gaburro, F. Priolo, G. Franzò, D. Pacifici, A. Irrera, F. Iacona, “*Towards a silicon laser*”, Highlights INFM 2000/2001
81. L. Dal Negro, L. Pavesi, G. Franzò, F. Priolo, “*Amplificazione ottica in nanocristalli di silicio*”, atti di Fotonica 2001 (Associazione Elettrotecnica ed Elettronica Italiana 2001), pag. 101-106.
82. L. Pavesi, L. Dal Negro, F. Priolo, G. Franzò “*Amplificazione di luce in nanostrutture di silicio*”, Il Nuovo Saggiatore (luglio/agosto 2001).
83. L. Dal Negro, G. Franzò, “*Più luce dal silicio*”, Sapere, anno 67 n°3, giugno, pg 50, (2001)

Invited Seminars

Several invited seminars on optical properties of silicon-based nanostructures and light localization in silicon quasicrystals have been held at the University of Trento (Italy), MIT (USA), University of British Columbia (Canada), Mc Gill University (Canada), Stanford University (USA), Caltech, Yale University and Boston University.

1. “*Deterministic aperiodic nanostructures for nanophotonics applications*”, VTT Technical Research Center of Finland, 15-16 September 2009, Oulu, Finland

2. ***“Deterministic aperiodic structures for nanophotonics and sensing applications”***, EPFL, Lausanne, Switzerland, June 10, 2009
3. ***“Light in aperiodic materials”***, New York University (NYU), may 4, 2009
4. ***“Light in Deterministic Aperiodic Structures”***, Yale University, December 17, New Haven (CT) 2008
5. ***“Light in Deterministic Aperiodic Structures”***, Boston University, *Symposium of Light*, December 7, Boston (MA) 2008
6. ***“Silicon-based light emitting nanomaterials and plasmonic structures”*** California Institute of Technology, April 1, 2008, Pasadena, CA, USA
7. ***“Light scattering, SERS sensing and structural colour in deterministic aperiodic structures”***, University of Trento, March 07, 2008, Trento, Italy.
8. ***“Surface enhanced Raman scattering and structural colour in deterministic aperiodic structures”***, University of Verona, March 05, 2008, Verona, Italy.
9. ***“Light scattering and localization in deterministic aperiodic structures”***, European Laboratory for Nonlinear Spectroscopy (LENS), March 03, 2008, Florence, Italy.
10. ***“Silicon-based light-emitting nanomaterials and plasmonic structures”***, Photonics Center Nanophotonics Symposium, Boston University, May 16, 2007
11. ***“Silicon-based nanomaterials and plasmonic structures”***, University of Rochester, March 14, 2007
12. ***“Light in silicon nanostructures”*** University of Toronto, Canada, 4/26/2005
13. ***“Silicon based light emitting nanomaterials and photonic structures”*** University of Padova, Italy, December 22, 2004
14. ***“Complex photonic structures and silicon based light emitting nano-materials”*** MIT-Microphotonics Center 2004
15. ***“Light propagation in Fibonacci quasicrystals”***, European Laboratory for Nonlinear Spectroscopy (LENS) , Florence, 2001,2003,2004
16. ***“Stimulated emission and light transport in silicon based nanostructures”*** KTH, Stockholm, Sweden 2003
17. ***“Light Amplification in Silicon Nanocrystals”***, University of Modena (Italy), 2001 and 2002
18. ***“Light Localisation in one dimensional Fibonacci quasicrystals”***, University of Catania (Italy) 2002

19. “*Stimulated Emission and Light Transport in Silicon based nanostructures*”, MIT Microphotonics Center, MA, (U.S.A.), December 2002.
20. “*Optical gain measurements in silicon nanocrystals*”, La Laguna, University in Tenerife, 2000
21. “*Stimulated emission in silicon nanostructures*”, Max Planck Institute of Halle (Germany), 2000

INVITED TALKS AND ORAL CONTRIBUTIONS¹

Invited talks

1. L. Dal Negro, M. Cazzanelli, N. Daldosso, L. Pavesi, F. Priolo, G. Franzò, D. Pacifici, F. Iacona, “Optical gain in silicon nanocrystals”, SYMPOSIUM H Si-based Optoelectronics: Advances and Future Perspectives, European Materials Research Society, Spring Meeting, June 18-21, 2002, Strasbourg (France).
2. L. Dal Negro, M. Stolfi, J. Hyung Yi, Y. Yi, V. Nguyen, J. Le Blanc, J. Haavisto, J. Michel, L.C. Kimerling, “Light in 1D aperiodic dielectrics” , 2004 MRS Spring Meeting, April 12-16, San Francisco, CA (USA).
3. L. Dal Negro, M. Stolfi, J. LeBlanc, J. Haavisto, J. Michel, L.C. Kimerling, “Light Emission from Silicon Nanocrystals”, Communications Technology Roadmap Conference, MIT Microphotonics Center, May 04, 2004.
4. L. Dal Negro, M. Stolfi, J. J. Michel, X. Duan, J. Le Blanc, J. Haavisto, , L.C. Kimerling, “Optical gain in strongly coupled erbium-doped silicon nanocrystals annealed at low temperatures” , 2005 MRS Spring Meeting, March 28-April 02, San Francisco, CA (USA).
5. L. Dal Negro, J.H. Yi, Y. Yi, V. Nguyen, J. Michel, L.C. Kimerling, “Light emitting aperiodic photonic structures”, CLEO/QELS 2005, on May 22-27, 2005, Baltimore, MD (USA).
6. L. Dal Negro, M. Stolfi, J. H. Yi, J. Michel, J. LeBlanc, J. Haavisto, L. C. Kimerling, “Light Emitting Silicon Nanostructures”, IEEE International Electron Devices Meeting, December 5-7, 2005, Washington, DC (USA).
7. L. Dal Negro, “Light from Silicon-based Nanostructures”, American Physical Society March meeting 2006, March 13-17, Baltimore, MD (USA).

¹ Presenting author underlined.

8. L. Dal Negro, J. H. Yi, J. Michel, L. C. Kimerling, S. Hamel, A. Williamson, G. Galli “*Light Emission in Silicon-rich Nitride Nanostructures*”, MRS Spring Meeting, April 17-21, 2006 San Francisco, CA (USA).
9. L. Dal Negro, “*Light in Aperiodic Deterministic structures*”, Advanced Computational Electrodynamics Workshop, May 04-06, 2006 Boston, MA (USA).
10. L. Dal Negro, “*LEOS06: Nanophotonics*”, LEOS Conference, 29 October – November 2, 2006 Montreal, Canada.
11. L. Dal Negro, *Silicon-based Light Emitting Nanomaterials and Photonic Structures*, LEOS New Hampshire Chapter, Verizon Labs, Weltham, Nov 07, 2006
12. L. Dal Negro, *Silicon Photonics and Plasmonic Structures*, European Optical Society Meeting, Capri, Italy, September 30 – October 3, 2007
13. L. Dal Negro, *Energy transfer and light emission from erbium-doped silicon nanostructures*, CNEC-LEOS, MIT Lincoln Laboratory, September 13, 2007.
14. L. Dal Negro, *Silicon-based Plasmonic structures*, OSA-Optical Micro-Systems (OMS), 30 Sept.-Oct.3, 2007, Capri, Italy
15. L. Dal Negro, *Giant Field Enhancement and Localization in Aperiodic Plasmonic Structures*, IEEE-LEOS Plasmonics Workshop, MIT Lincoln Laboratory, November 7, 2007.
16. L. Dal Negro, *Silicon nanocrystals in silicon nitride structures: towards efficient light emission under optical and electrical pumping*, IEEE-LEOS, 5th International Conference on group IV Photonics, September 17-19, 2008, Sorrento, Italy
17. L. Dal Negro, *Erbium-coupled silicon nanocrystals in silicon nitride: light emission enhancement in aperiodic photonic structures*, PRIME, Electrochemical Society Meeting, October 12-17, 2008 Honolulu, Hawaii, USA
18. L. Dal Negro, *Deterministic Aperiodic Photonic-plasmonic structures*, International Workshop on Advanced Computational Electromagnetics, (ACE09), January 12-14, 2009 Lincei Academy, Rome, Italy
19. L. Dal Negro, *PL and EL from silicon-rich nitride films and multilayer structures*, 2009 Photonics West Meeting, January 24-29, 2009, San Jose, California, USA
20. L. Dal Negro, *Light in Deterministic Aperiodic Nanostructures*, 2009 Photonics West Meeting, January 24-29, 2009, San Jose, California, USA
21. L. Dal Negro, *Design and engineering of on-chip localized fields with deterministic aperiodic structures*, MRS Spring Meeting, April 13-17, 2009 San Francisco, USA

22. L. Dal Negro, *Light emission from silicon nanostructures: past, present and future perspectives*, tutorial invited presentation at the CLEO/IQEC Conference, May 31 - June 5, 2009 Baltimore, Maryland, USA
23. L. Dal Negro, *Light in aperiodic structures*, IEEE - ICTON Azorres, June 28-July02, 2009
24. L. Dal Negro, *Light scattering and trapping in aperiodic deterministic environments*, 5th Workshop on numerical methods for optical nanostructures, ETH, Zurich, Switzerland, July 6-7, 2009
25. L. Dal Negro, *Aperiodic Plasmonics*, The 9th International Conference on Nanotechnology, IEEE Nano 2009, July 26th – 30th in Genoa, Italy
26. L. Dal Negro, *Understanding localized fields*, International Conference on Electromagnetics in Advanced Applications, Torino, Italy on September 14-18, 2009.
27. L. Dal Negro, *Si-based nanoplasmonics*, 2009 Frontiers in Optics Conference/OSA Annual Meeting OSA FiO/LS 2009 Photonics Division October 11-15, 2009, in San Jose, CA, USA.
28. L. Dal Negro, *Light localization on a chip*, LEOS topical meeting on Optical Microsystems, September 27-30, 2009, Capri, Italy

Invited contributions

29. L. Dal Negro, M. Cazzanelli, Z. Gaburro, L. Pavese, F. Priolo, G. Franzò, D. Pacifici, F. Iacona Optical gain in silicon nanocrystals, SPIE's International Symposium on Optical Science and Technology, 7-11 July 2002, Seattle, Washington (USA).
30. F. Priolo, G. Franzò, D. Pacifici, A. Irrera, M. Miritello, F. Iacona, L. Dal Negro, L. Pavese "Silicon Nanostructures for Microphotonics" International Workshop on Nanostructures for Electronics and Optics, NEOP, October 2002, Dresden (Germany).
31. Jinhao Ruan, P.M. Fauchet L. Dal Negro, M. Cazzanelli, L. Pavese Stimulated Emission in Nanocrystalline Silicon Superlattices 2003 MRS Spring Meeting, April 21-25, S.Francisco, CA (USA).
32. L. Dal Negro, C. Mazzoleni, L.Pavese, "Optical gain measurements in silicon nanocrystals", INSEL, Milan, 1999.
33. L. Dal Negro, C. Mazzoleni, L. Pavese, G. Franzo, F. Priolo "Optical gain in Silicon nanocrystals", Silicon workshop (Genova 2000).
34. L. Dal Negro, C. Mazzoleni, L. Pavese, G. Franzo, F. Priolo "Optical gain in Silicon nanocrystals", Symposium G Optoelectronics I: Materials and Technologies for Optoelectronic

Devices, Spring meeting of the European Materials Research Society (Strasbourg 2000).

35. L. Dal Negro, C. Oton, P. Johnson, D. Wiersma, L. Pavesi, Ad Lagendijk, “Ultrashort pulse dynamics in Fibonacci quasicrystals”, European Research Conference (EURESCO), “*Electromagnetic Crystal Structures*”, University of St. Andrews, 9-14 June 2001, Scotland.
36. L. Dal Negro, P. Bettotti, L. Pavesi, D. Pacifici, F. Iacona, G. Franzò, F. Priolo, “*V.S.L. & optical gain in silicon nanocrystals*”, Gordon Research Conference, “*Material processes far from equilibrium*” Kimball Union Academy, 1-6 July 2001, Meriden (NH), USA.
37. L. Dal Negro, C. J. Oton, Z. Gaburro, L. Pavesi, P. Johnson, A. Lagendijk, D. Wiersma, “Photon propagation in one-dimensional porous silicon complex systems”, March 2002 PSST-2002 International conference on Porous Semiconductor Science and Technology Tenerife, (Spain).
38. L. Dal Negro, C.J. Oton, Z. Gaburro, L. Pavesi, P. Johnson, Ad Lagendijk, D. Wiersma, “Time-resolved light propagation at the band-edge states of 1D Fibonacci quasicrystals”, 2002 MRS spring meeting, 1-5 April 2002, San Francisco, California (USA)
39. Zeno Gaburro, Paolo Bettotti, Luca Dal Negro, Lorenzo Pavesi “New progress on p-type macroporous silicon electrodisolution”, 2002 MRS spring meeting, 1-5 April 2002, San Francisco, California (USA)
40. F. Iacona, G. Franzò, D. Pacifici, F. Priolo, L. Dal Negro, and L. Pavesi “Luminescence in Er-doped silicon nanostructures” symposium H Si-based Optoelectronics: Advances and Future Perspectives, European Materials Research Society, Spring Meeting, June 18-21, 2002 Strasbourg (France).
41. L. Dal Negro, M. Cazzanelli, N. Daldosso, Z. Gaburro, L. Pavesi, F. Priolo, G. Franzò, D. Pacifici, F. Iacona, “Optical gain and stimulated emission in silicon nanocrystals” 2002 MRS Fall Meeting, 2-6 December 2002, Boston, Massachusetts (USA)
42. L. Dal Negro, M. Stolfi, J. LeBlanc, J. Haavisto, X. Duan, J. Michel and L.C. Kimerling, "Light Emission from Silicon Nanocrystals in SiO_x Films Prepared by RF Magnetron Sputtering", American Vacuum Society, New England Chapter Annual Symposium, June 15, 2004. Burlington, Massachusetts (USA).
43. M. Stolfi, L. Dal Negro, J. Michel, X. Duan, J. LeBlanc, J. Haavisto, and L.C. Kimerling, “CMOS Compatible Erbium Coupled Si Nanocrystal Thin Films for Microphotonics,” 2004 MRS Fall Meeting, Boston MA, November 29-December 2, 2004.
44. L. Dal Negro, J.H. Yi, Y. Yi, V. Nguyen, X. Duan, J. Michel, L.C. Kimerling, “*Light in aperiodic dielectrics*”, 2004 MRS Fall Meeting, Boston MA, November 29-December 2, 2004.

Current research interests

Currently working on linear and nonlinear optics of semiconductor nanostructures, (Si nanocrystals, Si

nitride structures and semiconductor quantum dots), energy coupling phenomena in rare earth atoms and semiconductor quantum dots, nanostructures fabrication and electron beam-lithography, complex photonic crystals structures, Si-based nano-plasmonics.

TEACHING EXPERIENCE

Boston University courses:

- Fall 2009 EC410: *Introduction to electronics*
- Spring 2009 EC570: *Lasers and Applications*
- Fall 2008 EK131/132: *Exploring the Science of Light*: developed for the undergraduate for the Fall 2008. The aim of this course is to introduce the students to the basic elements of light-wave technology thorough a series of classroom lectures, hands-on computer simulations of optical devices and Lab experiments.
- Spring 2008 EC777: *Nano-optics*: the course has been entirely developed by Luca Dal Negro and approved by the Department of Electrical and Computer Engineering as a regular advanced graduate course in optics in 2008.
- Fall 2007 EC770: *Guided-wave optoelectronics*, ECE Department, Boston University, graduate course level
- Spring 2007 EC560: *Introduction to Photonics* (SC560), ECE Department, Boston University, graduate course level
- Fall 2006 Lecturer of *Introduction to Photonics* (SC560), ECE Department, Boston University
- Spring 2006 EC700: *Nanophotonics*, developed and taught the course in the ECE Department at Boston University for the first time

Short courses:

Nanoplasmonics: science and technology of metal nanostructures – University Federico II, Naples, Italy, July 13-24, 2009

Nanoplasmonics: science and technology of metal nanostructures – University Federico II, Naples, Italy, July 7-11, 2008

Teaching Assistant of course 3.46 “*Optical and Optoelectronic Materials*”, Department of Materials Science, MIT, 2003-2005

SKILLS AND EXPERTISES

Optical Spectroscopy of Semiconductors

Ultrafast Optics, optical characterization of optical gain in semiconductor nanocrystal waveguides and bulk materials, CW-VSL Technique and Time resolved VSL method, pump and probe measurements with CW lasers and optical losses characterizations. Optical characterization of silicon nanostructures and Erbium related systems: CW photoluminescence, ultrafast spectroscopy with Ti:Sa laser, time resolved high power spectroscopy (Nd:Yag Laser), Linear optical characterization with reflectance measurements, transmission measurements, Prism coupling of waveguides, nonlinear optics, z-scan, Second Harmonic generation and self diffraction techniques, Raman spectroscopy of semiconductors and bio-materials.

Photonic Crystal and Complex System Research

Fabrication of nano and macro-porous silicon samples by electrochemical anodization and subsequent thermal and chemical treatments. Electrochemical migration of Erbium ions in porous silicon samples (Microcavities and complex structures like Fibonacci quasicrystals). Fabrication of macro-porous silicon for photonic crystals applications and random macro-porous, strongly scattering silicon samples for light localization and transport studies in complex dielectric systems. Optical Characterization of one dimensional porous silicon Microcavities and quasicrystals (transmission, absorption, reflectance, time resolved pulse propagation), Electron-beam fabrication of nano-plasmonic structures and metal nanoparticle arrays.

Fabrication techniques

Electrochemical etching, Reactive and direct magnetron sputtering of thin semiconductor films, thin film evaporation, PE-CVD deposition, E-beam evaporation, thermal evaporation, E-beam lithography, optical photolithography.

Theoretical models for laser physics and nanostructures: space independent rate equations, space-time dependent rate equations models, coupled mode theory, Maxwell-Bloch equation models for semiconductor nanostructures, k.p methods, Hartree-Fock, introductory Density Functional Theory (DFT).

Numerical simulations of photonic components: waveguide analysis, planar optical waveguides, ridge waveguides. Mode propagation and profiles. Calculations of 2D-eigenstates of propagating modes in ridge waveguides. Fimmwave and Fimmprop simulation software from Photon Design, R-Soft and MIT, Finite Element simulations (COMSOL), Finite Difference Time Domain simulations of photonic components, Mode matching methods, Finite Difference simulations, Beam propagation methods.

Light scattering and diffraction Theory: Fourier Optics, Kirchoff-Fresnel theory for general diffraction problems, Fresnel diffraction theory for light coupling problems in waveguides and lasers, Abbe and Sommerfeld diffraction theory, matrix ray optics methods, Mie scattering theory, T-matrix and Generalized Mie Theory (GMT), Coupled Dipole Methods (CDM), Volume Integral Equations, Dyadic Green's function approaches, Angular Spectrum Representation, perturbation approaches to multiple scattering and radiative transfer theory.

Complex systems: Light Localization Theory, Localization Scaling Theory, Fractal Modelling of Random systems, Dynamical system Theory, Symbolic Dynamics Applied Number theory, Multifractal measures, Diffusion and Transport on Fractal supports, Harmonic and Wavelet Analysis of complex signals.

Literary Awards

Winner of the *Young Italian Poets Competition 2000* with the publication of the book:

1. L. Dal Negro, “**Ostinate Solitudini**”, Collana Poeti Italiani Contemporanei, Libro Italiano, Editrice Letteraria Internazionale, Ragusa, (Italy) 2000.

REFERENCES

Prof. Lionel C. Kimerling

Thomas Lord Professor of Materials Science and Engineering
Director, MIT Materials Processing Center and MIT Microphotonics Center
617-253-5383 (O)
617-253-6782 (F)
617-834-8836 (M)
E-mail: lckim@MIT.EDU

Prof. Bahaa Saleh

Department of Electrical and Computer Engineering
Boston University
8 Saint Mary's street
Boston, MA 02215-2421
617-353-7176 (O)
E-mail: besaleh@bu.edu

Prof. Philippe M. Fauchet

Distinguished Professor
Department of Electrical and Computer Engineering
Professor of Optics, Biomedical Engineering, and Materials Science
Senior Scientist at the Laboratory for Laser Energetics
Computer Studies Building
160 Trustee Road
University of Rochester
P.O. Box 270231
Rochester, NY 14627-0231
Voice: (585) 275-1487
Fax: (585) 276-2058

e-mail: fauchet@ece.rochester.edu

Prof. Lorenzo Pavesi (PhD advisor)

Dipartimento di Fisica, Università di Trento
via Sommarive 14, I-38050 Povo (Trento), Italy
tel +39 0461881605
fax +39 0461881696
E-mail: pavesi@science.unitn.it

Prof. Francesco Priolo

INFN - MATIS
Dipartimento di Fisica e Astronomia
Università di Catania
Via Santa Sofia 64
I-95123 Catania (Italy)
Tel: ++39-095-3785401
Fax: ++39-095-3785243
E-mail: priolo@ct.infn.it

Prof. Nicola Marzari

Department of Materials Science and Engineering
13-5066 MIT 77 Massachusetts Avenue,
Cambridge MA 02139-4307 USA
tel 617.4522758
fax 617.2586534
E-mail: marzari@MIT.EDU

Prof. Francesco Stellacci

Assistant Professor
Massachusetts Institute of Technology
Department of Materials Science and Engineering
Room 13-4053
77 Massachusetts Ave.
Cambridge, MA 02139
tel. 617-452-3704
fax. 617-324-2500
E-mail: frstella@mit.edu

Prof. D.S. Wiersma

European Laboratory for Non-linear Spectroscopy (LENS)

Polo Scientifico
Via nello Carrara 1
50019 Sesto-Fiorentino (Florence), Italy
tel: +390-55-4572492
fax: +390-55-4572451
E-mail: wiersma@lens.unifi.it

Prof. Mark Brongersma
Department of Materials Science and Engineering
Stanford University
476 Lomita Mall, Rm 349
Stanford, CA 94305
Phone: (650) 679 9161
Fax: (650) 679 1984
Email: markb29@stanford.edu