

CURRICULUM VITAE

MASSIMO CAZZANELLI

Nationality : Italian
Birthplace : Levico Terme (TN)
Birth : February, 10th 1972
Residence : Novaledo (TN)
Languages: Italian mother tongue; English spoken and written at a professional level.
 Elements of French and German.

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Academic track:

July 1996:

Laurea in Fisica (106/110)
 Università di Trento, Povo (TN)

Title: "Spettroscopia Ottica Veloce: applicazione a Microcavità di Silicio Poroso e alla luminescenza calda in GaAs" → Ultrafast Spectroscopy: application to porous silicon microcavities and to the hot luminescence in GaAs.

October-December 1996:

Research activity (INFM fellowship) on Time resolved measurements on porous silicon microcavities.

January/November 1997:

First year of specialization course on Materials Science at Milan 2 University

September 1997/February 1999:

Master of Science in Physics at the Department of Physics
 Trinity College-University of Dublin
 Dublin 2-Ireland
 Thesis' title: "Pulsed laser deposition and characterization of gallium nitride thin films".

1999:

I worked as research assistant at the Group de Physique Applique of the University of Geneva under the supervision of prof. N. Gisin. The project was on the generation and exploitation of correlated photon pairs for optical fiber characterization.

January 2000 – December 2001:

I have been hired as research technician for a fixed term (2y) at the Dept. of Physics of the University of Trento. I worked at the Optical Spectroscopy Laboratory on a semiconductor physics activity.

November 2000:

I started my PhD activity on nonlinear optics of silicon nanocrystals and also on their optical gain properties.

December 2001:

The fixed term position became a permanent position in the technical staff of the University of Trento and I worked at the Department of Physics on semiconductor optics and on silicon in particular.

December 2003:

I obtained my PhD grade on "Nonlinear Optical properties of Silicon Nanocrystals" IT-GPA: "Ottimo".

January 2006- March 2015:

I changed partly my professional activity and have been involved actively in the redaction of scientific projects to finance the research activity of Laboratorio di Nanoscienze where I worked since 2006. In particular I conceived the ideas and collaborated to the redaction of the Project Naomi (financed by Provincia Autonoma di Trento) where I acted as an independent researcher. This activity produced –among other results- also a high impact factor paper (a Nature Materials). I also collaborated to the conception, redaction and experimental work of other two financed projects (The two CARIPLO projects reported below). Finally I conceived and co-wrote the Project named Siquro on on-chip silicon quantum photonics where I acted as workpackage leader.

December 2012:

I got the Italian habilitation to the functions of Associate Professor in the Experimental Matter Physics sector.

March 2015-June 2016:

I moved to Idrogeno-Energia-Ambiente Laboratory of Dipartimento di Fisica, Università di Trento and here I work on nanodiamonds synthesis via pulsed laser deposition (with a Lambda-Physik excimer laser), on photocatalysis of doped TiO₂ and on Laser Ablation Propulsion.

June 2016-June 2017: I held a postdoc research position at Istituto Italiano di Tecnologia on quantum applications of nanodiamonds

June 2017: I came back to Idrogeno-Energia-Ambiente Laboratory of Dipartimento di Fisica, Università di Trento working on several Materials Science topics

April 2018-April 19: I have been affiliated at Istituto Italiano di Tecnologia within a collaboration with Idrogeno-Energia-Ambiente Laboratory of Dipartimento di Fisica, Università di Trento on Quantum Magnetometry with NV centers in (nano)diamonds.

During my career I worked both as a PhD technician as well as an independent researcher. My technical activity concentrated on a series of achievements that I describe below. In particular I developed a strong expertise in the field of design, installation and running of optical spectroscopy Laboratories having the common factor to use cutting-edge technology laser systems that I contributed to finance by co-writing the relative research grants.

List of designed/installed Laboratories:

1. CW photoluminescence Laboratory (1995-1996 plus 2002-2003): I designed, installed and then upgraded a typical photoluminescence laboratory equipped with CW argon-ion lasers, CW DPSS (from UV to green) pump lasers, scanning monochromators and VIS as well as NIR photomultipliers. The typical measurements here conducted were aimed at the measurement of feeble photoluminescence signals from room-temperature or cryogenically cooled semiconductor samples and also at the demonstration of CW optical gain in silicon nanocrystals.
2. #2 Waveguide light-coupling laboratories (2000-2002). Here I designed, installed and used two different laboratories where CW as well as pulsed laser pumps are butt-coupled (end-fire coupling) inside silicon-based ridge waveguides with the aim to characterize their linear and nonlinear properties.
3. Time-resolved photoluminescence measurement with ultrafast laser source (1995-1996 and 2012-2014). Here I designed and installed a full laboratory to perform time-resolved (time resolution up to 10 ps) photoluminescence measurements. The laser here employed is an ultrafast Ti:S operating between 690 and 1100 nm equipped with a SHGenerator and a pulse picker (fs-ps tunable Tsunami, Spectra Physics) while the detection system is a HAMAMATSU VIS-NIR streak-camera with a dispersing spectrograph. The main measurements performed here have been: time resolved photoluminescence, optical gain in silicon nanocrystals, time-jitter characterization of silicon photon counters and other nonlinear optics experiments. Very recently this system has been modified to be used as the pump for a parametric down-conversion experiment to be performed in the Siquro project cited below.
4. Regenerative amplifier Laboratory (2008-2013). Here I designed, installed and used a laboratory with a 35-fs high power regenerative amplifier (SPTFIRE SPLasers) pumping a tunable (1.1 -2.6 μm) traveling-wave optical parametric amplifier. This laser has been employed to butt-couple the fs pump light into nonlinear silicon waveguides to perform nonlinear transmission measurement aimed at the demonstration of second order nonlinear effects in silicon. The Laboratory is equipped with a wide range vacuum operated FTIR (fourier transform interferometer operating between 1-1000 μm) with very sensitive NIR, MIR and FIR (THz) detectors. This laboratory is quite unique being able to collect light of the sub-micron sized silicon waveguides and detect them in a very wide spectral range with very high sensitivity through the external port of the FTIR.
5. Nonlinear Optics Laboratory based on a low repetition rate (10 Hz) Nd:YAG high power laser (10 W) equipped with a widely tunable optical parametric oscillator (MOPO-PO SPLasers). The main aim of this laboratory is to serve as a high power source of nanosecond laser pulses tunable between 0.4 and 2.3 μm .
6. Wide-Field Optically Detected Magnetic Resonance Microscope for quantum sensing characterization of fluorescent nanodiamonds and diamonds.

The main product of my professional activity are the scientific publications on international peer-reviewed journals in the field of Physics and Materials Science and Engineering. I have more than 60 paper on 15 years lasting activity plus a couple of Book chapters. I co-authored also more than 40 conference presentation (oral and poster). The bibliometric figure of merit of my research activity is my H-index which is 21 on ISI Web of Science and 24 on Google Scholar. This quantitative parameter is higher than the Italian median of H-factor of Condensed Matter experimental physicists and for this reason I have been awarded in 2013 of the Italian habilitation to associate professor functions.

Here I have an updated list of my papers and recent presentations <https://webapps.unitn.it/du/it/Persona/PER0003953/Curriculum>.

Patents:

I co-authored an italian patent (extended to the US in 2017) on a silicon integrated quantum random number generator:

[“True Random Number Generator” Patent: WO2016016741 A1. Authors: L. Pavese, P. Bettotti, M. Cazzanelli, L. Gasparini, N. Massari, G. Pucker, A. Rimoldi, M. Sala, A. Tomasi.](#)

<https://www.google.com.uy/patents/WO2016016741A1>

In 1998 I received a “Graduate Student Award for the best paper presented at symposium L, E-MRS (European-Materials Research Society) 1998, Strasbourg-France, 16-19 June 1998.” For my Dublin work on Gallium Nitride.

Since 2006 I demonstrated during Laboratory sessions and I also gave frontal lessons for the following courses:

- FISICA (Computer Science Faculty) a.a. 2006/07→2009/10
- LABORATORIO DI FISICA I (Physics Faculty) a.a. 2009/10→2012/13
- FISICA 2 (Biotechnology Faculty) a.a. 2010/11→2015/16
- LABORATORIO DI FISICA II (Physics Faculty) a.a. 2011/12→2014/15 and 2018/19→2019-20
- LABORATORIO DI FISICA III (Physics Faculty) a.a. 2013/14→ 2014/15
- STATISTICAL METHODS IN EXPERIMENTAL SCIENCES (Biotechnology Faculty) a.a. 2012/13→ 2015/16 and 2018-19 → 2019-20 **Classes and exams given in English**
- EXPERIMENTAL PHYSICS (Physics Department) a.a. 2017/18->2019/20

I co-tutored a Laurea thesis in 2009 (candidate Elisa Borga) on: *Second harmonic generation from strained-silicon waveguides*.

International scientific service

Referee for Journal of Applied Physics & Applied Physics Letters (AIP, American Institute of Physics), for Elsevier Optical Materials, for SPIE Optical Engineering, for Laser Physics (IOP, Institute of Physics), for Journal of the European Optical Society (EOS), for the Optical Society of America (OSA) & Optics Express, for IEEE Journal of Selected Topics in Quantum Electronics, for IEEE Photonics Journal, for Wiley Eds Advanced Optical Materials & Physica Status Solidi and for Crystals edited by MDPI.

- [Guest Editor of special issue of C](#) (ISSN 2311-5629) on “Fluorescent C-based materials and nanopowders for magnetic sensing”
- [Guest Editor of special issue of Applied Sciences](#) (ISSN 2076-3417; WoS indexed; IF=2.2) on “Optical Functionalization of Nanomaterials”
- [Member of the editorial Board of MicroMachines \(MDPI; WoS indexed\)](#)
- Reviewer for the Agence National de la Recherche – France. 2009-2010. I am in the list of Italian scientific projects ministerial (MIUR) evaluators.

I fund-raised, co-wrote, proposed, conceived and participated to a list of national and international research projects:

Involvement and scientific responsibility in national and international Research Projects:

- Progetto MURST COFIN 2000 "Cristalli Fotonici mono e bidimensionali" 2001-02 24months role: Research Technician
- Progetto PAISS INFM sez. E "SMOG gas sensing in silicon" 2001-02 24months role: Research Technician
- Progetto PAT (Provincia Autonoma di Trento) "Sensori" 2001-02 24months role: Research Technician
- Progetto Ricerca Avanzata "RAMSES PRA" 2000-03 36months role: Reserch technician
- Progetto PAISS INFM sez. E "RANDS" 2002-03 36months role: Research technician
- Progetto FIRB "Cristalli Fotonici in Silicio" coord. naz. O. Svelto 2002-05 48months Research Technician
- Progetto MIUR PRIN2002 "Silicon-based photonic crystal" 2003-04 24months role: Research technician
- Progetto PAT (Provincia Autonoma di Trento) Fondo Unico "PROFILL microcavities infill" 2003-05 36months PhD Technician with research duties
- Progetto Europeo CE-ICT "SINERGIA" 2001-03 36months PhD Technician with research duties
- Progetto FIRB "Nanostrutture molecolari e ibride organiche(inorganiche per fotonica" coord. naz. prof. Bozio 2002-05 48months Research Technician
- Progetto CE SEMINANO (call id: FP6-2002-NMN-1) "Physics and Technology of elemental, alloy and compound semiconductor nancrystals: materials and devices" 2004-2006 36months role: PhD Technician with research duties
- Progetto MIUR PRIN2004 "Cristalli Fotonici a base di silicio per il controllo della propagazione e dell'emissione di luce" 2005-06 24months role: PhD Technician with research duties
- Progetto CE "PhoLogic" (call id: FP6-2002-NMN-1) 2005-07 36months role: PhD Technician with research duties
- Progetto CE "LANCER Light amplifiers with nanoclusters of erbium" 2006-09 36months role: PhD Technician with research duties
- Progetto CE "Polycernet" (Marie-Curie research training network on tailored multifunctional polymer derived nano-ceramics, HRM network) 2006-10 48months role: PhD Technician with research duties
- Progetto PAT Bando Grandi Progetti 2006 "NAOMI Nano on Micro" <http://naomi.science.unitn.it/> 2008-12 48months. **co-author of a workpackage and workpackage leader**
- Progetto Fondazione CARIPLO "Studio della non linearità di guide ottiche in silicio periodicamente stressato per nuove sorgenti laser nel medio infrarosso" 2010-12 24months. **Co-author and Workpackage leader**
- Progetto Fondazione CARIPLO ""Supercontinuo nell'infrarosso ad onde medie da guide d'onda in silicio" 2012-13 24months. **Workpackage leader**
- Progetto CE "LIMA Improve Photovoltaic efficiency by applying novel effects at the limits of light to matter interaction" <http://www.limaproject.eu/> 2010-13 48months PhD Technician with research duties
- Progetto CE "POSITIVE "A highly integrated and sensitive PORous Silicon based lab on a chip for multiple quantitative monitoring of Food allergies at point of care" FP7 project (No. 257401) 2010-13 48months role: PhD Technician with research duties
- Progetto PAT Bando Grandi Progetti 2011 "On silicon chip quantum optics for quantum computing and secure communication" 2013-16 36months **co-author of the full project and workpackage leader** until march 3rd 2015.
- Coauthor in a project submitted to Italian Space Agency about Laser Ablation Propulsion

PUBLICATION LIST OF MASSIMO CAZZANELLI:



1. L. Basso, N. Bazzanella, **M. Cazzanelli**, and A. Miotello, *Carbon* **153**, 148-155 (2019).
2. F. Gorrini, R. Giri, C. E. Avalos, S. Tambalo, S. Mannucci, L. Basso, N. Bazzanella, C. Dorigoni, **M. Cazzanelli**, P. Marzola, A. Miotello, A. Bifone, Fast and sensitive detection of hemoglobin and other paramagnetic species using coupled charge and spin dynamics in strongly fluorescent nanodiamonds, *ACS Applied Materials Interface* **11**, 24412-24422 (2019).
3. R. Giri, F. Gorrini, C. Dorigoni, C. Avalos, **M. Cazzanelli**, and A. Bifone, Coupled charge and spin dynamics in high-density ensembles of nitrogen-vacancy centers in diamond, *Phys. Rev B* **98**, 045401 (2018). <https://doi.org/10.1103/PhysRevB.98.045401>
4. L. Basso, F. Gorrini, **M. Cazzanelli**, N. Bazzanella, A. Bifone, and A. Miotello, An all-optical single-step process for production of nanometric-sized fluorescent diamonds, *Nanoscale* **10**, 5738-5744 (2018). doi: 10.1039/C7NR08791H
5. Luca Basso, Federico Gorrini, Nicola Bazzanella, **Massimo Cazzanelli**, Carla Dorigoni, Angelo Bifone, and Antonio Miotello, The modeling and synthesis of nanodiamonds by laser ablation of graphite and diamond-like carbon in liquid-confined ambient, *Appl. Phys. A* **124**, 72 (2018). doi: 10.1007/s00339-017-1491-3
6. F. Gorrini, **M. Cazzanelli**, N. Bazzanella, R. Edla, M. Gemmi, V. Cappello, J. David, C. Dorigoni, A. Bifone, and A. Miotello, On the thermodynamic path enabling a room-temperature, laser-assisted graphite to nanodiamond transformation, *Scientific Reports* **6**, 35244 (2016). Nature Publishing Group. doi: 10.1038/srep35244
7. Z. El Koura, **M. Cazzanelli**, N. Bazzanella, N. Patel, R. Fernandes, G. E. Arnaoutakis, A. Gakamsky, A. Dick, A. Quaranta, and A. Miotello, Synthesis and characterization of Cu and N co-doped RF sputtered TiO₂ films: photoluminescence dynamics of charge carriers relevant for water splitting, *J. Phys. Chem. C* **120**, 12042-12050 (2016). DOI: 10.1021/acs.jpcc.6b03058
8. **M. Cazzanelli**, and J. Schilling, Second order optical nonlinearity in silicon by symmetry breaking, *Applied Physics Reviews* **Vol. 3**, 011104 1-23 (2016). DOI:10.1063/1.4941558
9. Jörg Schilling, Clemens Schriever, Federica Bianco, **Massimo Cazzanelli**, Lorenzo Pavesi, Second order nonlinearity in Si by inhomogeneous strain and electric fields, *Proc. SPIE* **9546**, Active Photonic Materials VII, 95461T (2015). DOI:10.1117/12.2190136.
10. C. Schriever, F. Bianco, **M. Cazzanelli**, M. Ghulinyan, C. Eisenschmidt, G. Schmidt, J. de Boor, A. Schmid, J. Heitmann, L. Pavesi, J. Schilling, Second order optical nonlinearity in silicon waveguides - inhomogeneous stress and interfaces. *Adv. Opt. Mater.* **Vol. 3**, 129-136 (2015).
11. F. Acerbi, A. Ferri, A. Gola, **M. Cazzanelli**, L. Pavesi, N. Zorzi and C. Piemonte Characterization of Single-Photon Time Resolution: from single SPAD to Silicon Photomultipliers. *IEEE Trans. on Nucl. Sci.* **vol. 61**, no. 5, 2679-2686 (2014). DOI: 10.1109/TNS.2014.2347131
12. F. Acerbi, **M. Cazzanelli**, A. Ferri, A. Gola, L. Pavesi, N. Zorzi and C. Piemonte High detection efficiency and time resolution integrated-passive-quenched single-photon avalanche diodes. *IEEE Journ. Sel. Topics in Quantum Electron.* **vol. 20**, art.# 3804608 (2014) DOI: 10.1109/JSTQE.2014.2341580
13. F. Bianco, **M. Cazzanelli**, A. Yermian, M. Ghulinyan, G. Pucker, D. Modotto, S. Wabnitz, L. Pavesi, Mid-infrared difference-frequency generation in silicon waveguides strained by silicon nitride, *Lasers and Electro-Optics Europe (CLEO EUROPE/IQEC)*, (2013) Conference on and International Quantum Electronics Conference Proceedings. ISBN: 978-1-4799-0593-5 DOI: 10.1109/CLEOE-IQEC.2013.6801415
14. F. Bianco, K. Fedus, F. Enrichi, R. Pierobon, **M. Cazzanelli**, M. Ghulinyan, G. Pucker and L. Pavesi, 2D Raman mapping of stress and strain in silicon waveguides *Europhysics News*, **vol.43**, 14-14 (2012)
15. F. Bianco, K. Fedus, F. Enrichi, R. Pierobon, **M. Cazzanelli**, M. Ghulinyan, G. Pucker and L. Pavesi Two-dimensional micro-Raman mapping of stress and strain distributions in strained silicon waveguides *Semiconductor Science and Technology*, **vol. 27**, art. 085009 (2012).
16. **M. Cazzanelli**, F. Bianco, M. Ghulinyan, G. Pucker, D. Modotto, S. Wabnitz, F. M. Pigozzo, S. Ossicini, E. Degoli, E. Luppi, V. Veniard, and L. Pavesi Second-order nonlinear silicon photonics *SPIE NEWSROOM*, 28 March (2012). DOI: 10.1117/2.1201203.004138
17. **M. Cazzanelli**, F. Bianco, E. Borgia, G. Pucker, M. Ghulinyan, E. Degoli, E. Luppi, V. Veniard, S. Ossicini, D. Modotto, S. Wabnitz, R. Pierobon and L. Pavesi Second-harmonic generation in silicon waveguides strained by silicon nitride *Nature Materials*, **vol. 11**, 148-154 (2012).
18. F. Bianco, E. Borgia, A. Yermian, B. Dierre, K. Fedus, P. Bettotti, A. Pitanti, R. Pierobon, M. Ghulinyan, G. Pucker, **M. Cazzanelli**, and L. Pavesi Second-order susceptibility $\chi^{(2)}$ in Si waveguides *IEEE International Conference on Group IV Photonics GFP*, art. no 6053704, pp. 27-29, (2011)
19. R. Spano, N. Daldosso, **M. Cazzanelli**, L. Ferraioni, L. Tartara, J. Yu, V. Degiorgio, E. Jordana, J. M. Fedeli, and L. Pavesi Bound electronic and free carrier nonlinearities in Silicon nanocrystals at 1550nm *Optics Express*, **vol. 17**, no. 5, pp. 3941-3950, (2009)
20. R. Adamo, A. Anopchenko, P. Bettotti, **M. Cazzanelli**, E. D'Amato, N. Daldosso, L. Ferraioni, E. Froner, Z. Gaburro, R. Guider, S.M. Hossain, D. Navarro-Urrios, A. Pitanti, S. Prezioso, M. Scarpa, R. Spano, M. Wang, L. Pavesi Low dimensional silicon structures for photonic and sensor applications *Applied Surface Science*, **vol. 255**, no. 3, pp. 624-627, (2008)
21. R. Spano, **M. Cazzanelli**, N. Daldosso, L. Tartara, J. Yu, V. Degiorgio, S. Hernandez, Y. Lebour, P. Pellegrino, B. Garrido, E. Jordana, J. M. Fedeli, and L. Pavesi Non linear optical properties of Silicon nanocrystals for applications in photonic logic gates devices_2008 *IEEE/LEOS Winter Topical Meeting Series*, art. No. 4444374, pp. 10-11, (2008)
22. S. Hernández, P. Pellegrino, A. Martínez, Y. Lebour, B. Garrido, R. Spano, **M. Cazzanelli**, N. Daldosso, L. Pavesi, E. Jordana, and J. M. Fedeli Linear and nonlinear optical properties of Si nanocrystals in SiO₂ deposited by plasma-enhanced chemical-vapor deposition *Journal of Applied Physics*, **vol. 103**, no. 6, (2008)
23. A. Martínez, S. Hernández, P. Pellegrino, Y. Lebour, G. Carles, S. Marco, B. Garrido, R. Spano, **M. Cazzanelli**, N. Daldosso, L. Pavesi, E. Jordana and J. M. Fedeli. Non-linear optical properties of PECVD Si-nc under nanosecond excitation *Proceedings of SPIE - The International Society for Optical Engineering*, **vol. 6591**, (2007)
24. R. Spano, **M. Cazzanelli**, N. Daldosso, Z. Gaburro, L. Ferraioni, L. Tartara, J. Yu, V. Degiorgio, S. Hernandez, Y. Lebour, P. Pellegrino, B. Garrido, E. Jordana, J. M. Fedeli, and L. Pavesi Nonlinear optical properties of Si nanocrystals *Materials Research Society Symposium Proceedings*, **vol. 958**, pp. 233-238, (2007)
25. Spano, R.; **Cazzanelli** M. Daldosso, N.; Gaburro, Z.; Hernandez, S.; Lebour, Y.; Pellegrino, P.; Garrido, B.; Jordana, E.; Fedeli, J.M.; Pavesi, L. Non-linear optical properties of Si nanocrystals *IEEE International Conference on Group IV Photonics GFP*, art. no 1708162, pp. 52-54, (2006)
26. L. Ferraioni, **M. Cazzanelli**, N. Daldosso, V. Mulloni, P. Bellutti, S. Yerci, R. Turan, A. N. Mikhaylov, D. I. Tetelbaum and L. Pavesi Dielectric matrix influence on the photoluminescence properties of silicon nanocrystals *IEEE International Conference on Group IV Photonics GFP*, art. no 1708221, pp. 225-227, (2006)
27. K. Luterová, D. Navarro, **M. Cazzanelli**, T. Ostatnický, J. Valenta, S. Cheylan, I. Pelant, and L. Pavesi Stimulated emission in the active planar optical waveguide made of silicon nanocrystals *Physica Status Solidi C: Conferences*, **vol. 2**, no. 9, pp. 3429-3434, (2005)
28. P. M. Fauchet, J. Ruan, H. Chen, L. Pavesi, L. Dal Negro, **M. Cazzanelli**, R.G. Elliman, N. Smith, M. Samoc and B. Luther-Davies Optical gain in nanocrystalline silicon: Comparison of planar waveguide geometry with a non-waveguiding ensemble of nanocrystals *Optical Materials*, **vol. 27**, no. 5, pp. 750-755, (2005)
29. D. Navarro-Urrios, F. Riboli, **Massimo Cazzanelli**, A. Chiasera, N. Daldosso, L. Pavesi, C. J. Otón, J. Heitmann, L.X. Yi, R. Scholz and M. Zacharias Birefringence characterization of mono-dispersed silicon nanocrystals planar waveguides *Optical Materials*, **vol. 27**, no. 5, pp. 763-768, (2005)
30. L. Dal Negro, **M. Cazzanelli**, B. Danese, L. Pavesi, F. Iacona, G. Franzò and F. Priolo Light amplification in silicon nanocrystals by pump and probe transmission measurements *Journal of Applied Physics*, **vol. 96**, no. 10, pp. 5747-5755, (2004)
31. **M. Cazzanelli**, D. Kovalev, L. Dal Negro, Z. Gaburro, and L. Pavesi Polarized optical gain and polarization-narrowing of heavily oxidized porous silicon *Physical Review Letters*, **vol. 93**, no. 20, pp. 207402-1-207402-4, (2004)
32. **M. Cazzanelli**, D. Navarro-Urrios, F. Riboli, N. Daldosso and L. Pavesi, J. Heitmann, L.X. Yi, R. Scholz, M. Zacharias, and U. Gösele Optical gain in monodispersed silicon nanocrystals *Journal of Applied Physics*, **vol. 96**, no. 6, pp. 3164-3171, (2004)
33. L. Dal Negro, P. Bettotti, **M. Cazzanelli**, L. Pavesi, D. Pacifici Applicability conditions and experimental analysis of the variable stripe length method for gain measurements *Optics Communications*, **vol. 229**, no. 1-6, pp. 337-348, (2004)
34. J. Ruan, P. M. Fauchet, L. Dal Negro, **M. Cazzanelli**, L. Pavesi Stimulated emission in nanocrystalline silicon superlattices *Applied Physics Letters*, **vol. 83**, no. 26, pp. 5479-5481, (2003)

35. L. Dal Negro, **M. Cazzanelli**, N. Daldosso, L. Pavesi, F. Priolo, G. Franzò, D. Pacifici, and F. Iacona Time-Resolved Gain Dynamics in Silicon Nanocrystals Materials Research Society Symposium - Proceedings, **vol. 770**, pp. 69–74, (2003)
36. 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? Institute of Physics Conference Series, **vol. 171**, pp. 261–268, (2003)
37. Z. Gaburro, C. J. Otón, P. Bettotti, L. Dal Negro, G. Vijaya Prakash, **M. Cazzanelli**, L. Pavesi Interferometric method for monitoring electrochemical etching of thin films Journal of the Electrochemical Society, **vol. 150**, no. 6, pp. C381–C384, (2003)
38. L. Dal Negro, **M. Cazzanelli**, N. Daldosso, Z. Gaburro, L. Pavesi, F. Priolo, G. Franzò, D. Pacifici and F. Iacona Optical gain and stimulated emission in silicon nanocrystals Materials Research Society Symposium - Proceedings, **vol. 738**, pp. 233–238, (2003)
39. L. Dal Negro, **M. Cazzanelli**, L. Pavesi, S. Ossicini, D. Pacifici, G. Franzò, F. Priolo and F. Iacona Dynamics of stimulated emission in silicon nanocrystals Applied Physics Letters, vol. 82, no. 26, pp. 4636–4638, (2003)
40. C. García, B. Garrido, P. Pellegrino, R. Ferre, J.A. Moreno and J.R. Morante, L. Pavesi, **M. Cazzanelli** Size dependence of lifetime and absorption cross section of Si nanocrystals embedded in SiO₂ Applied Physics Letters, **vol. 82**, no. 10, pp. 1595–1597, (2003)
41. L. Dal Negro, **M. Cazzanelli**, N. Daldosso, L. Pavesi, F. Priolo, G. Franzò, D. Pacifici and F. Iacona Stimulated emission in plasma-enhanced chemical vapour deposited silicon nanocrystals Physica E: Low-Dimensional Systems and Nanostructures, **vol. 16**, no. 3–4, pp. 297–308, (2003)
42. L. Pavesi, Z. Gaburro, L. Dal Negro, P. Bettotti, G. Vijaya Prakash, **M. Cazzanelli**, C. J. Oton Nanostructured silicon as a photonic material Optics and Lasers in Engineering, **vol. 39**, no. 3, pp. 345–368, (2003)
43. C. García, B. Garrido, P. Pellegrino, R. Ferre, L. Pavesi, **M. Cazzanelli** and J.R. Morante Absorption cross-sections and lifetimes as a function of size in Si nanocrystals embedded in SiO₂ Physica E: Low-Dimensional Systems and Nanostructures, **vol. 16**, no. 3–4, pp. 429–433, (2003)
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