

## 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.

**Address:**

Via Spiazzi, 7  
 38050 Novaledo (TN)  
 tel. +39-333-3662538

<https://it.linkedin.com/in/massimocazzanelli>  
[https://www.researchgate.net/profile/Massimo\\_Cazzanelli/](https://www.researchgate.net/profile/Massimo_Cazzanelli/)  
<https://scholar.google.it/citations?user=VtdFqf0AAAAJ&hl=it>

e-mail [massimo.cazzanelli@gmail.com](mailto:massimo.cazzanelli@gmail.com)



#### 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 was upgraded to 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) and on photocatalysis of doped TiO<sub>2</sub>

**Since June 2016: I am holding a postdoc research position at Istituto Italiano di Tecnologia on quantum applications of nanodiamonds**

During my career I worked both as a PhD technician as well as an independent researcher. My technical activity concentrated on a seires 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 feable 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 TiS 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  $\mu\text{m}$ ) 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  $\mu\text{m}$ ) with very sensitive NIR, MIR and FIR (THz) detectors. This laboratory in 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  $\mu\text{m}$ .

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 20 on ISI Web of Science and 23 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://www.iit.it/it/people/massimo-cazzanelli>; [https://www.researchgate.net/profile/Massimo\\_Cazzanelli](https://www.researchgate.net/profile/Massimo_Cazzanelli); <https://scholar.google.it/citations?user=VtdFqf0AAAAJ&hl>

#### Patents:

I co-authored an Italian patent (under extension in the US) 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
  - 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.
- Classes and exams given in English**

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 Scientific Reports (Nature Publishing Group).

I have been reviewer of projects for the Agence National de la Recherche – France. 2009-2010.

I am in the Editorial board of ISRN Nanotechnology (online <http://www.hindawi.com/journals/isrn/editors/nanotechnology/>)

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 INFN 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: Research technician
- Progetto PAISS INFN 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 nanocrystals: 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 CARIPO "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 CARIPO "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 3<sup>rd</sup> 2015.**

**PUBLICATION LIST OF MASSIMO CAZZANELLI:**

Google Scholar

Indici citazioni

Indice	Tutte	Dal 2011
Citazioni	2103	770
Indice H	23	13
h10-index	31	19

**ISI Web of Science 16/08/2016**

Published Items in Each Year

Citations in Each Year

Results found: 59	
Sum of the Times Cited [?]	1443
Sum of Times Cited without self-citations [?]	1375
Citing Articles [?]	1039
Citing Articles without self-citations [?]	1004
Average Citations per Item [?]	24.46
h-index [?]	29

1. L. Basso, F. Gorriani, N. Bazzanella, **M. Cazzanelli**, C. Dorigoni, A. Bifone, and A. Miotello, Synthesis of nanodiamonds with laser ablation of graphite and diamond-like carbon in liquid-confined ambient. Submitted to COLA 2017. International Conference on Laser Ablation. 3-8 September 2017, Marseille, France. Proceedings to be published in Applied Physics: A.
2. F. Gorriani, **M. Cazzanelli**, N. Bazzanella, R. Edla,, M. Gemmi, V. Cappello, J. David, C. Dorigoni, A. Bifone, and A. Miotello, Synthesis of nano-sized diamonds by confined-pulsed-laser-ablation in water, Sci. Rep. **6**, 35244 (2016). Doi: 10.1038/srep35244
3. 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
4. **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
5. 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.
6. 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).
7. 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
8. 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
9. F. Bianco, **M. Cazzanelli**, A. Yeremian, 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/QE), (2013) Conference on and International Quantum Electronics Conference Proceedings. ISBN: 978-1-4799-0593-5 DOI: [10.1109/CILOE-QE.2013.6801415](#)
10. 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)
11. 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).
12. **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
13. **M. Cazzanelli**, F. Bianco, E. Borgia, G. Pucker, M. Ghulinyan, E. Degoli, E. Luppi, V. Véniard, 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).
14. F. Bianco, E. Borgia, A. Yeremian, 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)
15. R. Spano, N. Daldosso, **M. Cazzanelli**, 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)
16. R. Adamo, A. Anopchenko, P. Bettotti, **M. Cazzanelli**, E. D'Amato, N. Daldosso, L. Ferraioli, 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)
17. 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)
18. 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)
19. 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)
20. R. Spano, **M. Cazzanelli**, N. Daldosso, Z. Gaburro, L. Ferraioli, 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)
21. [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)
22. L. Ferraioli, **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)
23. K. Luterová, D. Navarro, **M. Cazzanelli**, T. Ostatnicky, 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)
24. 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)
25. D. Navarro-Urriós, 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)
26. 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)
27. **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)
28. **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)
29. 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)
30. 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)
31. 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)
32. 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)

33. Z. Gaburro, C. J. Otòn, 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)
34. 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)
35. 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)
36. C. Garcia, 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 SiO<sub>2</sub>](#) Applied Physics Letters, **vol. 82**, no. 10, pp. 1595–1597, (2003)
37. 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)
38. 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)
39. C. Garcia, 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 SiO<sub>2</sub>](#) Physica E: Low-Dimensional Systems and Nanostructures, **vol. 16**, no. 3-4, pp. 429–433, (2003)
40. L. Dal Negro, **M. Cazzanelli**, Z. Gaburro, P. Bettotti, L. Pavesi, F. Priolo, G. Franzò, D. Pacifici, F. Iacona, [Stimulated emission in silicon nanocrystals – Gain measurements and rate equation modelling. Towards the first silicon laser](#) Ed. L. Pavesi, S. Gaponenko, L. Dal Negro, *NATO Science Series, Series II: Mathematics, Physics and Chemistry*, **Vol. 93**, pp. 145-164 (2003).
41. L. Dal Negro, Z. Gaburro, **M. Cazzanelli**, L. Pavesi, D. Pacifici, F. Iacona, G. Franzò, F. Priolo [Optical gain in PECVD grown silicon nanocrystals](#) Proceedings of SPIE - The International Society for Optical Engineering, **vol. 4808**, pp. 13–27, (2002)
42. P. Bettotti, **M. Cazzanelli**, L. Dal Negro, B. Danese, Z. Gaburro, C. J. Oton, G. Vijaya Prakash, L. Pavesi [Silicon nanostructures for photonics](#) Journal of Physics Condensed Matter, **vol. 14**, no. 35, pp. 8253–8281, (2002)
43. G. Vijaya Prakash, **M. Cazzanelli**, Z. Gaburro, L. Pavesi, F. Iacona, G. Franzò and F. Priolo [Linear and nonlinear optical properties of plasma-enhanced chemical-vapour deposition grown silicon nanocrystals](#) Journal of Modern Optics, **vol. 49**, no. 5-6, pp. 719–730, (2002)
44. G. Vijaya Prakash, **M. Cazzanelli**, Z. Gaburro, L. Pavesi, F. Iacona, G. Franzò and F. Priolo [Nonlinear optical properties of silicon nanocrystals grown by plasma-enhanced chemical vapor deposition](#) Journal of Applied Physics, **vol. 91**, no. 7, pp. 4607, (2002)
45. G. Vijaya Prakash, **M. Cazzanelli**, Z. Gaburro, L. Pavesi, F. Iacona, G. Franzò and F. Priolo [Nonlinear optical properties of plasma enhanced chemical vapour deposition grown silicon nanocrystals](#) Materials Research Society Symposium - Proceedings, **vol. 722**, pp. 219–222, (2002)
46. G. Vijaya Prakash, N. Daldosso, G. Pucker, **M. Cazzanelli**, F. Rocca, Z. Gaburro, P. Dalba, L. Pavesi, F. Iacona, E. Ceretta Moreira, D. Pacifici, G. Franzò, F. Priolo, E. Degoli, S. Ossicini [Structural and Optical Properties of Silicon Nanocrystals Grown by Plasma-Enhanced Chemical Vapor Deposition](#) Journal of Nanoscience and Nanotechnology, **vol. 1**, no. 2, pp. 159–168, (2001)
47. F. Giorgis, S. Ferrero, P. Mandracci, C. F. Pirri, **M. Cazzanelli**, and L. Pavesi [Modified spontaneous emission in amorphous silicon-nitride based optical microcavities](#) Materials Research Society Symposium - Proceedings, **vol. 637**, pp. E271–E276, (2001)
48. G. Pucker, P. Bellutti, **M. Cazzanelli**, Z. Gaburro, L. Pavesi [\(Si/SiO<sub>2</sub>\)<sub>n</sub> multilayers and microcavities for LED applications](#) Optical Materials, **vol. 17**, no. 1-2, pp. 27–30, (2001)
49. L. Pavesi, L. Dal Negro, **M. Cazzanelli**, G. Pucker, Z. Gaburro, G. Prakash, G. Franzò, F. Priolo [Optical gain in silicon nanocrystals](#) Proceedings of SPIE - The International Society for Optical Engineering, **vol. 4293**, pp. 162–172, (2001)
50. G. Pucker, P. Bellutti, C. Spinella, K. Gatterer, **M. Cazzanelli**, and L. Pavesi [Room temperature luminescence from \(Si/SiO<sub>2</sub>\)<sub>n</sub> \(n=1,2,3\) multilayers grown in an industrial low-pressure chemical vapor deposition reactor](#) Journal of Applied Physics, **vol. 88**, no. 10, pp. 6044–6051, (2000)
51. C. Vinegoni, **M. Cazzanelli**, A. Trivelli, G. Mariotto, J. G. Lunney and J. Levy [Morphological and optical characterization of GaN prepared by pulsed laser deposition](#) Surface and Coatings Technology, **vol. 124**, no. 2-3, pp. 272–277, (2000)
52. **M. Cazzanelli**, C. Vinegoni, D. Cole, J. G. Lunney, K. P. O'Donnell, P.G. Middleton, C. Trager-Cowan, L. Pavesi [Luminescent properties of GaN thin films prepared by pulsed laser deposition](#) Materials Science and Engineering B: Solid-State Materials for Advanced Technology, **vol. 59**, no. 1-3, pp. 137–140, (1999)
53. **M. Cazzanelli**, D. Cole, J. F. Donegan and J. G. Lunney [Pulsed laser deposition of GaN thin films](#) Materials Science and Engineering B: Solid-State Materials for Advanced Technology, **vol. 59**, no. 1-3, pp. 98–103, (1999)
54. **M. Cazzanelli**, C. Vinegoni, D. Cole, J.G. Lunney, P. G. Middleton, C. Trager-Cowan, K. P. O'Donnell, and L. Pavesi [The emission spectrum of pulsed laser deposited GaN and its powder precursor](#) Materials Science and Engineering B: Solid-State Materials for Advanced Technology, **vol. 59**, no. 1-3, pp. 133–136, (1999)
55. **M. Cazzanelli**, C. Vinegoni and L. Pavesi [Temperature dependence of the photoluminescence of all-porous-silicon optical microcavities](#) Journal of Applied Physics, **vol. 85**, no. 3, pp. 1760–1764, (1999)
56. **M. Cazzanelli**, D. Cole, J. F. Donegan, J. G. Lunney, P.G. Middleton, K. P. O'Donnell, C. Vinegoni, L. Pavesi [Photoluminescence of localized excitons in pulsed-laser-deposited GaN](#) Applied Physics Letters, **vol. 73**, no. 23, pp. 3390–3392, (1998)
57. **M. Cazzanelli** and L. Pavesi [Time-resolved photoluminescence of all-porous-silicon microcavities](#) Physical Review B - Condensed Matter and Materials Physics, **vol. 56**, no. 23, pp. 15264–15271, (1997)
58. **M. Cazzanelli**, L. Pavesi, O. Bisi, P. Dubos, P. Bellutti, G. Soncini, G. Faglia, G. Sberveglieri, [On the route towards efficient light emitting diodes based on porous silicon](#) Diffusion and Defect Data Pt.B: Solid State Phenomena, **vol. 54**, pp. 27–36, (1997)
59. A. Misiuk, G. P. Karwasz, **M. Cazzanelli**, W. Jung, L. Pavesi [Effect of annealing under uniform stress on photoluminescence, electrical and structural properties of silicon](#) Materials Research Society Symposium - Proceedings, **vol. 469**, pp. 245–250, (1997)
60. L. Pavesi, **M. Cazzanelli** and O. Bisi [Enhancement of the spontaneous emission rates in all porous silicon optical microcavities](#) Materials Research Society Symposium - Proceedings, **vol. 452**, pp. 717–722, (1997)
61. L. Pavesi, C. Mazzoleni, R. Guardini, **M. Cazzanelli**, V. Pellegrini and A. Tredicucci [Porous-silicon microcavities](#) Nuovo Cimento della Società Italiana di Fisica D - Condensed Matter, Atomic, Molecular and Chemical Physics, Biophysics, **vol. 18**, no. 10, pp. 1213–1223, (1996)

## Book Chapters:

1. C. Vinegoni, **M. Cazzanelli**, and **L. Pavesi**, "Porous Silicon Microcavities" in Hari Singh Nalwa (a cura di), *Silicon based Materials and Devices vol. 2 Properties and Devices*, New York : Academic Press , 2001, p. 124-188
2. O. Boyraz, X. Sang, **M. Cazzanelli**, M. Y. Huang, "Nonlinear Optics in Silicon" in L. Pavesi and L. Vivien (a cura di), *Handbook of Silicon Photonics, Series in Optics and Optoelectronics*, Boca Raton: CRC press, Taylor & Francis, 2013, pp.197-248.

## Application Notes:

1. Georgios Arnaoutakis, **Massimo Cazzanelli**, Zakaria El Koura, and Antonio Miotello, Charge Carrier Recombination Dynamics of Semiconductor Photocatalysts. Application Note of Edinburgh Instruments Ltd. [https://www.edinst.com/wp-content/uploads/2016/07/AN\\_P35-Charge-carrier-recombination-v.2.pdf](https://www.edinst.com/wp-content/uploads/2016/07/AN_P35-Charge-carrier-recombination-v.2.pdf). DOI: 10.13140/RG.2.1.3567.7685

## Paper in journals without refereeing:

1. [La Nanofotonica in Silicio e la fotonica col nanosilicio](#) , AAVV Il Nuovo Saggiatore **vol 26**, No. 1-2 (2012).

