Daniele Barettin

Via Fiume Bianco 47a
00144, Rome
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Italian citizen
Date and place of birth: Rome, 11/06/1970

Compulsory military service with
the Italian Red Cross.
Discharged with letter of distinction.

Married with two children.

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Education and Professional Background	
1984 – 1989	**Classical high school Diploma** at Liceo Classico Socrate, Rome, Italy. Maximum grade: 60 / 60
May 2005	**Masters Degree, Theoretical Physics** at University of Rome – La Sapienza, Rome, Italy. Grade: 106 / 110 Specialized in Statistical Mechanics, Complex Systems Physics, Numerical Simulations and modelling, Solid State Physics. Completed one-year (2004 -2005) theoretical and experimental thesis: “Two algorithms for finding ground states: a numerical comparison”, in the group of **Prof. Giorgio Parisi, Nobel Prize 2022.**
Sept 2006 – Aug 2009	**Ph.D. project** at the Mads Clausen Institute, University of Southern Denmark, Denmark and FTP QUEST program, Denmark. Project Title: "Bandgap Engineering and modeling of Quantum Dots ". Ph.D. advisors: Morten Willatzen and Benny Lassen.
Nov 2008 – Apr 2009	**Visiting researcher** in the group of Professor Gerhard Klimeck, Purdue University, Indiana, USA.
Sept 26 2009	Conclusion of Ph.D. project. Ph.D. Thesis, ""Multiphysics effects in quantum-dot structures”.
Jan 12 2010	**Ph.D. degree** in Applied Mathematical Modelling .
Oct 2009 – Aug 2010	**Post-doctoral researcher** at the Mads Clausen Institute, University of Southern Denmark, Denmark.
Sept 2010 – Aug 2012	**External consultant** for the Mads Clausen Institute, University of Southern Denmark.

From Feb 2011 to May 2015	**Post-doctoral researcher** for the OLAB -- Department of Electronic Engineering, University of Rome Tor Vergata.
October 2011	**Visiting researcher** in the group of Professor Vadim Evtikhiev, A. F. Ioffe Institute, Saint Petersburg, Russia.
November 2011- October 2012	**Winner of grant: Progetto Cariplo 2010-0525- Highly efficient organic solar cells based on surface nanostructuration of innovative hybrid materials for light-trapping:** One year Post-doctoral position University of Rome - Tor Vergata.
April – May October – November 2012 March – May 2013 June – July 2014 June – July 2015 June – July 2016	**Visiting researcher** at A. F. Ioffe Institute, Russian Academy of Science, Saint Petersburg, Russia.
April 2013 – May 2015	**Winner of grant: NewLED Nanostructured Efficient White LEDs based on short-period superlattices and quantum dots (EU - 7h Framework Programme):** Two years Post-doctoral position University of Rome - Tor Vergata.
May 2015	**Winner of grant from VILLUM FOUNDATION within Young Investigator Programme of prof. Elizaveta Semenova :** Five months visiting Post-doctoral position, Technical University of Denmark, DTU – Copenhagen, DK.
March 2016- March 2024	**Researcher (Assistant Professor)** UNICUSANO, University Niccolò Cusano, Rome Italy.
June - July 2017 June - July 2018	**Visiting Professor** at A. F. Ioffe Institute, Russian Academy of Science, Saint Petersburg, Russia.
August 2018	**Visiting Professor** at Binn Institute, Beijing, China.
June – July 2019	**Winner of ITMO Fellowship and Professorship Program,** Itmo University, Saint Petersburg, Russia.
From December 2019	**Guest Professor,** Itmo University, Saint Petersburg, Russia.

July – August 2023 **August 2024** **From March 2024**	**Visiting Professor** at Abrikosov Center for Theoretical Physics (ACTP) at Moscow Institute of Physics and Technologies (MIPT) Moscow, Russia. **Tenure Track Professor** UNICUSANO, University Niccolò Cusano, Rome Italy.

Coordinator of International Projects	**Local coordinator - scientific manager:** Athena (Advanced Technology Higher Education Network Alliance) EUN – European Universities Network, November 2020 - October 2023.

Coordinator of research groups	**Coordinator and scientific manager:** Computational nano-optoelectronics laboratory - Niccolò Cusano University, Rome

Teaching Activities	
Sept – Dec 2007	Teaching instructor M.Sc. course: "Mechanical Vibrations" at University of Southern Denmark, Faculty of Engineering
March – May 2008	Teaching instructor Bachelor course: "Thermodynamics" at University of Southern Denmark, Faculty of Engineering.
March2016-June 2020	General Physics (Mechanics – Thermodynamics) UNICUSANO, University Niccolò Cusano, Rome Italy.
From October 2015	Solid State Electronics, UNICUSANO, University Niccolò Cusano, Rome Italy.

Scholarships and other academic activities	
From Sept 2006	Member of MESO (Mesoscopic Structures, Dynamic and Optics) - Research Training Program for Nanotechnology and Functional Materials - University of Southern Denmark.
August 2007 Scholarship	International Summer School "Sensing and manipulating at the frontier of optics: from the meso- to the nanoscale", University of Southern Denmark, Sonderborg, Denmark.
August 2007 Scholarship	61st European Study Group for Industry in Mathematics +DCAMM Research School, University of Southern Denmark, Sonderborg, Denmark.
November 2007 Workshop	Invited as participant to the workshop: "Physics-Based Mathematical Models of Low-Dimensional Semiconductor Nanostructures: Analysis and Computation", International Research Station, Banff, Canada.
From November 2011	Member of the Mediterranean Institute of Fundamental Physics

Referee Service	
	Physical Review Letters Physical Review A, B, Applied Physica E. Optical and Quantum Electronics, Journal of Circuits, Systems, and Computers, Nanoscale, Materials Journal of Applied Physics, Applied Physics A, Transactions on Electron Devices Journal of Computational Electronics, Energies, Crystals Materials Science in Semiconductor Processing, Optics and Laser Technology, Applied Sciences, Solid State Sciences, Photonics, Sensors, Materials, Nanomaterials, Scientific Reports.

Language Skills		
	Italian – Native	**English** – Excellent (Certificate of Advanced English – Cambridge University) **Russian** – Excellent **Danish** - Basic

IT Skills	
Generic	Extensive computer experience: Operating Systems (Windows, Unix, Linux), Office package.
Specific	Programming Languages (C, Fortran, Matlab, Bash), Data analysis (Awk, Gnuplot), extensive experience with COMSOL platform and TiberCAD.

Personal interests	
	Scientific consultant and expert on-air for scientific broadcasts on Italian national channels. Theater. Two-year experience assistant director in a professional Italian troupe. Sports. Competitive Swimmer : several attendances at the Italian national senior championships, two victories at the regional Southern Denmark senior championships. Writing. Several short stories published in Italian magazines.

Publications	
Journal Publication	1. B. Lassen, D. Barettin, M. Willatzen, and L.C. Lew Yan Voon, *Piezoelectric models for semiconductors quantum dots*, Microelectronics Journal, 39 (11), 1226 (2008). 2. D. Barettin, J. Houmark, B. Lassen, M. Willatzen, T. R. Nielsen, J. Mork, and A.-P. Jauho, *Analysis of optical properties of strained semiconductor quantum dots for electromagnetically induced transparency*, Phys. Rev. B 80, 235304 (2009). 3. D. Barettin, S. Madsen, B. Lassen, and M. Willatzen, *Comparison of wurtzite atomistic and piezoelectric continuum strain models: Implications for optical properties*, Superlattices and Microstructures 47, 134 (2010). 4. B. Lassen, M. Willatzen, and D. Barettin, *Band-mixing and strain effects in InAs/GaAs quantum ring*, Superlattices and Microstructures, 47, 103 (2010). 5. D. Barettin and P. Sibani, *Entropic algorithms and the lid method as exploration tools for complex landscapes*, Phys. Rev. E 84, 036706 (2011). 6. D. Barettin, S. Madsen, B. Lassen, and M. Willatzen, *Computational Methods for Electromechanical Fields in Nanostructures*, Commun. Comput. Phys., 11, pp 797-830 (2012). 7. D. Barettin, A. Di Carlo, R. De Angelis, M. Casalboni, P. Prosposito, *Effect of dielectric Bragg grating nanostucturing on dye sensitezed solar cells*. Optics Express 20 (106), A888-A897 (2012). 8. D. Barettin, A. V. Platonov, A. Pecchia, V. N. Kats, George E. Cirlin, I. P. Soshnikov, A. D. Bouravleuv, L. Besombes, H. Mariette, M. Auf der Maur, and A. Di Carlo, *Model of a GaAs quantum dot embedded in a polymorph AlGaAs nanowire,* Selected Topics in Quantum Electronics, IEEE Journal of 19 (5), 1901209 (2013). 9. D. Barettin and P. Sibani, *Optimization by Record Dynamics,* Computer Physics Communications 185 (3), 730–735 (2014). 10. D. Barettin, R. De Angelis, P. Prosposito, M. Auf der Maur, M. Casalboni, and A. Pecchia, *Model of a realistic InP surface quantum dot extrapolated from atomic force microscopy results,* Nanotechnology 25 (19), 195201 (2014). 11. D. Barettin, R. De Angelis, P. Prosposito, M. Auf der Maur, M. Casalboni, and A. Pecchia, *Inter-dot strain field effect on the optoelectronic properties of realistic InP lateral quantum-dot molecules,* Journal of Applied Physics 117, 9 (2015). 12. D. Barettin, M Auf der Maur, A. Di Carlo, A. Pecchia, A.F Tsatsulnikov, A. V. Sakharov, W.V. Lundin, A.E. Nikolaev, S.O. Usov, N. Cherkashin, M.J. Hÿtch, S. Y. Karpov, *Influence of electromechanical coupling on optical*

properties of InGaN quantum-dot based light-emitting diodes Nanotechnology, 28,1 (2017).

13. D. Barettin, M Auf der Maur, A. Di Carlo, A. Pecchia, A.F Tsatsulnikov, A. V. Sakharov, W.V. Lundin, A.E. Nikolaev, M. Korytov, N. Cherkashin, M.J. Hÿtch, S. Y. Karpov, *Carrier transport and emission efficiency in InGaN quantum-dot based light-emitting diodes*, *Nanotechnology, 28, 275201, (2017).*

14. D.V. Lebedev, M.M. Kulagina, S.I. Troshkov, A.S. Vlasov, V.Y. Davydov, A..N. Smirnov, A.A. Bogdanov, J. L. Merz, J. Kapaldo, A. Gocalinska, G. Juska, S.T. Moroni, E. Pelucchi, D. Barettin, S. Rouvimov, A.M. Mintairov, *Excitonic lasing of strain-free InP (As) quantum dots in AlInAs microdisk,* Applied Physics Letters, 110, 12 (2017).

15. Aleksandra Furasova, Pavel Voroshilov, Enrico Lamanna, Alexey Mozharov, Anton Tsypkin, Ivan Mukhin, Daniele Barettin, Konstantin Ladutenko, Anvar Zakhidov, Aldo Di Carlo, Sergey Makarov, *Engineering the Charge Transport Properties of Resonant Silicon Nanoparticles in Perovskite Solar Cells,* Energy Technology 1900877 (2020).

16. Mikhail A. Masharin, Alexander S. Berestennikov, Daniele Barettin, Pavel M. Voroshilov, Konstantin S. Ladutenko, Aldo Di Carlo, and Sergey V. Makarov, *Giant Enhancement of Radiative Recombination in Perovskite Light-Emitting Diodes with Plasmonic Core-Shell Nanoparticles,* Nanomaterials 11, 45 (2021).

17. D. Barettin, M. Auf der Maur, A. Pecchia, Y. Zhang, M. Willatzen, and Z. Lin Wang, *Piezoelectric tunability with Topological Insulator Transition in a GaN/InN/GaN Quantum Well*, Journal of Physics Material 4, 3 (2021).

18. A. M. Mintairov, A. V. Ankundinov, N. A. Kalyuzhnyy, D. V. Lebedev, S. A. Mintairov, N. V. Pavlov, A. I. Galimov, M. V. Rakhlin, R. A. Salii, A. A. Toropov, A. S. Vlasov, D. Barettin, M. Auf der Maur, and S. A. Blundell, *Piezo-electric fields and state-filling photo-luminescence in natural InP/GaInP2 Wigner molecule structures*, Appl. Phys. Lett. 118, 121101 (2021).

19. Sara Pettinato, Daniele Barettin, Vadim Sedov, Victor Ralchenko and Stefano Salvatori, Fabry-Perot *Pressure Sensors Based on Polycrystalline Diamond Membranes,* Materials, 14, 1780 (2021).

20. D. Barettin, A. Pecchia, M. Auf der Maur, A. Di Carlo, B. Lassen, and M. Willatzen, *Electromechanical field effects in InAs/GaAs quantum dots based on continuum k ·p and atomistic tight-binding methods*, Computational Materials Science 197 110678 (2021).

21. M. C. Teodorani and D. Barettin, *Optimization of InGaN quantum-dot based light-emitting diodes by means of cellular automata algorithms*, Optical and Quantum Electronics 54, 398 (2022).

22. A. Orsini, D. Barettin, F. Ercoli, M. C. Rossi, S. Pettinato, S. Salvatori, A. Mezzi, R. Polini, A. Bellucci, M. Mastellone, M. Girolami, V. Valentini, S. Orlando, and D. M. Trucchi, *Charge Transport Mechanisms of Black Diamond at Cryogenic Temperatures*, Nanomaterials 12, 2253 (2022).

23. A. Furasova, P. Voroshilov, D. Sapori, K. Ladutenko, D. Barettin, A. Zakhidov, A. Di Carlo, C. Simovski, and Sergey Makarov, *Nanophotonics for Perovskite Solar Cells*, Advanced Photonics Research 3, 2100326 (2022).

24. A. A. Obraztsova, D. Barettin, A. D. Furasova, P. M. Voroshilov, M. Auf der Maur, A. Orsini, and S. V. Makarov, *Light-Trapping Electrode for the Efficiency Enhancement of Bifacial Perovskite Solar Cells,* Nanomaterials 12, 3210 (2022).

25. A. A. Obraztsovaa, A. D. Furasova, D. Barettin, and S. V. Makarov, *Highly Efficient Bifacial MAPbI3 Perovskite Solar Cells Improved by a Light-Trapping Electrode,* Bulletin of the Russian Academy of Sciences: Physics, Vol. 86, Suppl. 1, pp. S152–S155 (2022).

26. D. Barettin, A. V. Sakharov, A. F. Tsatsulnikov, A. E. Nikolaev, and N. Cherkashin, *Electromechanically Coupled III-N Quantum Dots,* Nanomaterials 13, 241 (2023).

27. A. Orsini, D. Barettin, S. Pettinato, S. Salvatori, R. Polini, M. C. Rossi, A. Bellucci, E. Bolli, M. Girolami, M. Mastellone, S. Orlando, V. Serpente, V. Valentini, and D. M. Trucchi, *Frenkel-Poole Mechanism Unveils Black Diamond as Quasi-Epsilon-Near-Zero Surface,* Nanomaterials 13, 240 (2023).

28. D. Barettin, I. V. Shtrom, R. R. Reznik, S. V. Mikushev, G. E. Cirlin, M. Auf der Maur, and N. Akopian, *Direct Band Gap AlGaAs Wurtzite Nanowires,* Nano Letters 23, 3, 895–901 (2023).

29. D. Barettin, A. V. Sakharov, A. F. Tsatsulnikov, A. E. Nikolaev, A. Pecchia, M. auf Der Maur, S. Yu. Karpov, N. Cherkashin, *Impact of Local Composition on the Emission Spectra of InGaN Quantum-Dot LEDs,* Nanomaterials 13, 8, 1367 (2023).

30. G. Prestopino, P. G. Medaglia, D. Scarpellini, S. Bietti, P. Oliva, S. Monteleone, A. Orsini, D. Barettin, F. Caselli, P. Bisegna, *Wurtzite nanowires strain control by DC electrical stimulation,* Engineering Science and Technology, an International Journal 41, 101387 (2023).

31. D. Barettin, I. V. Shtrom, R. R. Reznik, G. E. Cirlin, *Model of a GaAs Quantum Dot in a Direct Band Gap AlGaAs Wurtzite Nanowire,* Nanomaterials 13, 1, 1737 (2023).

32. D. Barettin, *State of the Art of Continuous and Atomistic Modeling of Electromechanical Properties of Semiconductor Quantum Dots,*

	Nanomaterials 13, 12, 1820 (2023). 33. G. Prestopino, A. Orsini, D. Barettin, G. Arrabito, B. Pignataro, P. G. Medaglia, *Vertically Aligned Nanowires and Quantum Dots: Promises and Results in Light Energy Harvesting,* Materials 16, 12, 4297 (2023). 34. D. Barettin and M. Willatzen, *Strain and Piezoelectric Control of Electronic and Photonic Properties of p − n Diodes*, Journal of Physics D: Applied Physics, 57, 355104 (2024).
Peer-reviewed Proceeding Publications	1. D. Barettin, B. Lassen, and M. Willatzen, *Electromechanical fields in Ga/AlN Wurtzite Quantum Dots*, J. Phys. Conf. Ser. 107, 012001 (2008). 2. B. Lassen, M. Willatzen, D. Barettin, R. V. N. Melnik, and L. C. Lew Yan Voon, *Piezoelectric effect and spontaneous polarization in GaN/AlN quantum dots*, J. Phys. Conf. Ser. 107, 012008 (2008). 3. B. Lassen, D. Barettin, M. Willatzen, *Strain in inhomogeneous InAs/GaAs quantum-dot structures.* Journal of Physics: Conference Series 367 (1), 012007 (2012). 4. E.S. Semenova, I.V. Kulkova, S. Kadkhodazadeh, D. Barettin, O. Kopylov, A. Cagliani, K. Almdal, M. Willatzen, K. Yvind, *Epitaxial growth of quantum dots on InP for device applications operating at the 1.55 μm wavelenght range*, SPIE OPTO, 899606-899606-9 (2014). 5. Orsini A., Pettinato S., Barettin D., Piccardi A., Ponticelli G.S., and Salvatori, S., *SiC and diamond membrane based pressure sensors for harsh environments,* 2021 IEEE International Workshop on Metrology for Industry 4.0 and IoT, MetroInd 4.0 and IoT 2021 – Proceedings, 161-165 (2021).
Conference Contributions	1. D. Barettin, B. Lassen, and M. Willatzen, *Electromechanical fields in GaN/AlN Wurtzite Quantum Dots*, Poster, Physics-Based Mathematical Models of Low-Dimensional Semiconductor Nanostructures: Analisys and Computation (Banff 2007). 2. B. Lassen, M. Willatzen, D. Barettin, R. V. N. Melnik, and L. C. Lew Yan Voon, *Piezoelectric effect and spontaneous polarization in GaN/AlN quantum dots*, Talk, Physics-Based Mathematical Models of Low-Dimensional Semiconductor Nanostructures: Analisys and Computation (Banff 2007). 3. L.C. Lew Yan Voon, B. Lassen, D. Barettin, and M. Willatzen, *Semiconductor quantum dots and piezoelectric models*, Talk, CLACSA XIII (Santa Maria, Colombia 2007). 4. M. Willatzen, B. Lassen, D. Barettin, and L.C. Lew Yan Voon *Piezoelectric models for semiconductors quantum dots*, Talk, APS March Meeting (New Orleans, Louisiana 2008). 5. M. Willatzen, B. Lassen, D. Barettin, and L.C. Lew Yan Voon

Piezoelectric models for semiconductors quantum dots, W28.00009, Proceeding of the American Physisc Society, New Orleans, Louisiana, USA, March 10-14 (2008).

6. L.C. Lew Yan Voon, B. Lassen, D. Barettin, and M. Willatzen, *Semiconductor quantum dots and piezoelectric models*, Proceeding of CLACSA XIII (Santa Maria, Colombia 2008).

7. D. Barettin, B. Lassen, M. Willatzen, R.V.N. Melnik, and L.C. Lew Yan Voon, *Three-dimensional strain distributions due to anisotropic effects in InGaAs semiconductor quantum dots*, Talk, WCCM8-ECCOMAS (Venice 2008).

8. J. Houmark, D. Barettin, B. Lassen, T. R. Nielsen, J. Mork, A.-P. Jauho, and M. Willatzen, *Analysis of quantum dot EIT based on eight-band k*p theory*, Poster, ICPS (Rio de Jeneiro, 2008).

9. B. Lassen, D. Barettin, and M. Willatzen, *Cylindrical symmetry and spurious solutions in 8 band k*p theory*, Poster, ICPS (Rio de Jeneiro, 2008).

10. D. Barettin, S. Madsen, B. Lassen, and M. Willatzen, *Comparison of wurtzite atomistic and piezoelectric continuum strain models: Implications for optical properties*, Poster, PLMN09 (Lecce 2009).

11. B. Lassen, M. Willatzen, and D. Barettin, *Band-mixing and strain effects in InAs/GaAs quantum ring*, Talk, PLMN09 (Lecce 2009).

12. D. Barettin, S. Madsen, B. Lassen, and M. Willatzen, *Comparison of atomistic and continuum quantum-dot elastic models and implications for optoelectronic properties*, Poster, ICPS (Seoul, 2010).

13. D. Barettin, A. Pecchia, G. Penazzi, M. Auf der Maur, B. Lassen, M. Willatzen, and A. di Carlo, *Comparison of continuum and atomistic methods for the analysis of InAs/GaAs quantum dots*, Talk, Nusod (Rome, 2011).

14. M. Willatzen, B. Lassen, S. Madsen, D. Barettin, *Strain and piezoelectric effects in quantum-dot structures*, Invited Talk, Nusod (Rome, 2011).

15. D. Barettin, A. Pecchia, G. Penazzi, M. Auf der Maur, B. Lassen, M. Willatzen, and A. Di Carlo, *Comparison of continuum k*p and atomistic Tight Binding methods for the analysis of InAs/GaAs quantum dots,* TMCS III (Leeds, 2012).

16. D. Barettin, A. V. Platonov, A. Pecchia, V. N. Kats, G. E. Cirlin, I. P. Soshnikov, A. D. Bouravleuv, L. Besombes, H. Mariette, M. Auf der Maur, A. di Carlo, *Modelling of GaAs quantum dot embedded in a polymorph AlGaAs nano wire,* Talk Nusod (Vancouver, 2013).

17. Daniele Barettin , Matthias Auf der Maur , Alessandro Pecchia , and Aldo di Carlo, *Realistic modeling of nanostructured quantum dots from experimental results*, 22nd Int. Symp. “Nanostructures: Physics and

Technology" (Saint Petersburg, Russia 2014).

18. M. Auf der Maur, D. Barettin, A. Pecchia and Aldo di Carlo, *Random alloy fluctuations effects on the spontaneous emission properties of a InGaN/GaN LED*, 16 th International Conference Laser Optics (Saint Petersburg, Russia 2014).

19. M Auf der Maur, D Barettin, A Pecchia, F Sacconi, A Di Carlo, *Effect of alloy fluctuations in InGaN/GaN quantum wells on optical emission strength*, Numerical Simulation of Optoelectronic Devices, 2014.

20. Daniele Barettin, Matthias Auf der Maur, Alessandro Pecchia, Walter Rodrigues, Andrei F Tsatsulnikov, Alexei V Sakharov, Wsevolod V Lundin, AE Nikolaev, Nikolay Cherkashin, Martin J Hÿtch, Sergey Yu Karpov, Aldo di Carlo, *Realistic model of a InGaN quantum-dots active region in a LED structure*, 23rd Int. Symp. "Nanostructures: Physics and Technology" (Saint Petersburg, Russia 2015).

21. Daniele Barettin, Matthias Auf der Maur, Alessandro Pecchia, Walter Rodrigues, Andrei F Tsatsulnikov, Alexei V Sakharov, Wsevolod V Lundin, AE Nikolaev, Nikolay Cherkashin, Martin J Hÿtch, Sergey Yu Karpov, Aldo di Carlo, *Realistic model of LED structure with InGaN quantum-dots active region*, IEEE 15th International Conference on Nanotechnology (IEEE-NANO) (Rome 2015).

22. D. Barettin, N. Cherkashin, M. Auf der Maur, A.V. Sakharov, A. E. Nikoalev, A.F. Tsatsunikov, A. Pecchia, and A. di Carlo, *Modeling a new geometry for blue-green LEDs: a quantum-dot sandwich,* 24th Int. Symp. "Nanostructures: Physics and Technology" (Saint Petersburg, Russia 2016).

23. D. Barettin, M. Auf der Maur, A. Pecchia, A.F. Tsatsuknikov, A.V. Sakharov, W.V. Lundin, A.E. Nikolaev, M. Korytov, N. Cherkashin, M.J. Hytch, and S. Yu. Karpov, Carrier transport and emission efficiency in InGaN quantum-dot based LEDs, 25th Int. Symp. "Nanostructures: Physics and Technology" (Saint Petersburg, Russia 2017).

24. Daniele Barettin (Invited Talk) *Realistic modeling of quantum-dot heterostructures: theory and applications*, TERAMETANANO-2, Terahertz Emission, Metamaterials and Nanophotonics (Venice 2017).

25. D. Barettin, M. Willatzen, S. Kadkhodazedeh, A. Pecchia, M. Auf der Mauer, and E. S. Semenova, *A valence force field – Monte Carlo algorithm for quantum-dot growth modeling,* Nusod (Copenhagen 2017).

26. Daniele Barettin (Invited Talk) 1st International Workshop on Crystal-Phase Structures in Nanowires, Lyngb, Copenhagen, Denmark (Copenhagen 2019).

27. Daniele Barettin (Invited Talk) School on Advanced Light-Emitting and Optical Materials (SLALOM), Itmo University, Saint Petersburg, Russia (Saint Petersburg 2020).

	28. Daniele Barettin (Invited Talk) 6th International Conference on Physics of 2D materials based electronics and optoelectronics, Nanophotonics Modelling for Perovskite Solar Cells (Yerevan, Armenia, 2022). 29. Daniele Barettin (Invited Talk) 7th International Conference on Physics of 2D materials based electronics and optoelectronics, Three degrees of quantum confinement in Wurtzite InGaAs/AlGaAs nanostructures (Tirana, Albania, 2023). 30. Daniele Barettin (Invited Talk) The International Summer Conference on Theoretical Physics, Wurtzite GaAs and InAs quantum dots in direct band gap AlGaAs wurtzite nanowires (Moscow, Russia, 2023) 31. Daniele Barettin (Invited Talk) International Conference in Quantum Light & Nanophysics, Three degrees of quantum confinement in Wurtzite InGaAs/AlGaAs nanostructures (Abu Dhabi - United Arab Emirates, 2024).