



## PERSONAL INFORMATION

## Curriculum Vitae

Pasqualantonio Pingue

Scuola Normale Superiore, NEST, Piazza San Silvestro 12, 56127 PISA



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## WORK EXPERIENCE

FROM JANUARY 2009 UP TO  
NOW

Chief Operating Officer at Laboratorio NEST – Scuola Normale Superiore

<http://www.laboratorionest.it>

- Lab manager
- Responsible of the technical staff
- Responsible of the nanofabrication and characterization facility
- Responsible of the health and safety management of the lab
- Research on scanning probe microscopy and his application in characterization at nanoscale, nanofabrication, polymer science, graphene.

**Sector:** Nanoscience and Nanotechnology

FROM SEPTEMBER 1999 TO  
DECEMBER 2008

Physics Technologist at Laboratorio NEST – Scuola Normale Superiore

- Responsible of the technical staff
- Responsible of the nanofabrication and characterization facility
- Research on scanning probe microscopy and nanofabrication
- Responsible of the health and safety management of the lab
- Research on low-temperature electronic magneto-transport in 2DEG and hybrid semiconductor-superconductor devices.

**Sector:** Condensed Matter, Nanoscience and Nanotechnology

FROM MAY 1996 TO  
DECEMBER 1996

INFM Grant at Scuola Normale Superiore

- Post-graduation contract on the following topic: “Nanofabrication by Atomic Force Microscopy”

**Sector:** scanning probe microscopy, nanofabrication

## EDUCATION AND TRAINING

FROM JANUARY 1997 TO  
SEPTEMBER 1999

PhD courses in Physics: no final discussion of the thesis “SPM-based nanolithography”.

Scuola Normale Superiore, Pisa, Italy

- Solid state Physics
- Many-bodies physics
- Physics of semiconductors
- Astrophysics
- Scanning probe microscopy
- E-beam lithography
- Nanofabrication by EBL and SPM techniques
- Low-temperature magneto-electronic transport measurements



FROM OCTOBER 1987 TO  
APRIL 1996

## Curriculum Vitae

Laurea degree (bachelor + master degree) in Physics  
(vote 110/110)

*"The Atomic Force Microscope as a tool to fabricate Nb/InAs semiconductor-superconductor-semiconductor hybrid device: proximity effect and low-temperature electronic transport characterization"*

University of Pisa, Italy

- Solid state Physics
- Physics of semiconductors
- Molecular Physics
- Superconductivity
- Electromagnetisms
- Theoretical physics
- Structure of the matter

### PERSONAL SKILLS

MOTHER TONGUE(S) Italian

OTHER LANGUAGE(S)

	UNDERSTANDING		SPEAKING		WRITING
	LISTENING	READING	SPOKEN INTERACTION	SPOKEN PRODUCTION	
English	B2	B2	B2	B2	C1
French	A1	B1	A1	A1	A1

Levels: A1/2: Basic user - B1/2: Independent user - C1/2 Proficient user

### COMMUNICATION SKILLS

- good communication skills gained through my experience as lab manager both in terms of personnel responsible, and as a tutor for instruments training to our students and researchers, and by hosting and guiding scientific guests in our research lab.

### ORGANISATIONAL / MANAGERIAL SKILLS

- leadership in technical staff of the laboratory (currently direct responsible of a team of 7 technicians), organizing from technical and logistic point of view the activity of more than 140 researchers.

### JOB-RELATED SKILLS

- Good knowledge of safety policies in laboratories: I'm currently also in charge as one of the components of the Health & Safety management group of Scuola Normale Superiore.

### COMPUTER SKILLS

- very good command of Microsoft Office™ tools (Word, Power Point, Excel)
- very good knowledge of imaging software for SPM files (Gwyddion®, WsXM®, Nanoscope Analysis®)
- good command of data analysis tools (Origin®)

### OTHER SKILLS

- Analog and digital Photography

### DRIVING LICENCE

- A/B-type drive licences for cars and motorcycles



## ADDITIONAL INFORMATION

## PROJECTS

I was involved in various national and international projects in the last few years. Among those, I was the responsible of Italy-Canada FIRB project in conjunction with Ottawa University, the responsible of a BRIC project with INAIL on safety of nanomaterials. Currently I'm the person in charge as technical-scientific responsible for a regional funded project (Tuscany) related to scientific collaboration and technology transfer with industry named "Centro di Competenza NEST sulle nanotecnologie della Scuola Normale Superiore". See [www.ccnest.it](http://www.ccnest.it) for further information. Actually, I have also the role of vice-coordinator in the Scuola Normale Superiore of the national competence centre named "ARTES 4.0", involved in the activity and collaboration with companies on the topics of Industry 4.0.

## CONFERENCES

I presented my research related to SPM, NEST Laboratory research activities and nanosafety on various Italian and international conferences. In the following a list of the latest ones:

- "Korea-Italy Bilateral Symposium On Occupational Health & Work Safety", invited talk, 13 September 2018
- "Risk management of graphene and semiconductor nanowires in R&D labs: the NANO-LAB decision-support methodology", invited talk at "Governance of emerging nano-risk in the semiconductor industry" workshop, April 2018 Bruxelles, Belgium.
- "Lithography and characterization of nanostructures by scanning electron microscopy based techniques" invited talk at NanoInnovation 2017, Rome, Italy.
- "Risk management of nanomaterials in R&D labs: the NANO-LAB decision-support methodology", at NanoInnovation 2017, Rome, Italy.
- "Risk management of nanomaterials in R&D labs: case studies using the safety approach of the Nanolab project", SRA conference 2017, Venice Italy.
- "Nanoparticles, graphene, nanowires: research and safety issues" at NanoInnovation 2016, Rome Italy;
- "Safety@NEST", invited talk at the NanoStreeM WORKSHOP 2016, Grenoble, France.
- "Ordered Rippling of Polymer Surfaces by Nanolithography: Influence of Scan Pattern and Boundary Effects", 4<sup>th</sup> European Nanomanipulation Workshop, Krakow 2013.
- "Scanning probe microscopy on suspended graphene nanostructures", invited talk at the Inaugural workshop of the Interdisciplinary Laboratories for Advanced Materials Physics (i-LAMP) 2012, Brescia, Italy.
- "Graphene@NEST: Ongoing Research Activities on Graphene and Artificial Graphene" Invited talk at GraphITA 2011, L'Aquila, Italy.

## MEMBERSHIPS

I'm currently referee for various international peer reviewed Journals:

- Nanotechnology, Journal of Applied Physics: Condensed Matter (IOP)
- NanoLetters (ACS)
- Ultramicroscopy, Microelectronic Engineering, Materials Chemistry and Physics (Elsevier);
- PLOS ONE

## REFERENCES

I'm also part of the international program committee of the MNE conferences and one of the scientific directors of Italian Material Science and Technology School for PhD students, INSTM Consortium, Italy. I'm also a member of the steering committee of the Physics Department, University of Pisa.

Prof. Fabio Beltram, former Director of Laboratorio NEST and Scuola Normale Superiore (SNS) now at Scientific Board of ANVUR, is the scientist who followed my career during the last 20 years. Prof. Cesare Ascoli, National Institute of Optics (INO) at National Research Council (CNR), is the scientist who introduced me to scanning probe microscopy.



## PUBLICATIONS

## Curriculum Vitae

- **P. Pingue**, M. Lazzarino, F. Beltram, C. Cecconi, P. Baschieri, C. Frediani, C. Ascoli, *Fabrication of hybrid super-conductor-semiconductor nanostructures by integrated ultraviolet-atomic force microscope lithography*, J. Vac. Sci. Technol. B 15(4), 1398 (1997);
- A. Badolato, F. Giazotto, M. Lazzarino, **P. Pingue**, F. Beltram, C. Lucheroni, R. Fazio, *Evidence of two-electron tunneling interference in Nb/InAs junctions*, Phys. Rev. B 62(14), 9831 (2000);
- F. Giazotto, M. Cecchini, **P. Pingue**, F. Beltram, M. Lazzarino, D. Orani, S. Rubini, A. Franciosi, *Reflectionless tunneling in planar Nb/GaAs hybrid junctions*, Appl. Phys. Lett., Appl. Phys. Lett. 78 (12), 1772 (2001);
- F. Giazotto, **P. Pingue**, F. Beltram, M. Lazzarino, D. Orani, S. Rubini, A. Franciosi, *Resonant Transport in Nb/GaAs/AlGaAs Heterostructures: Realization of the de Gennes-Saint-James Model*, Phys. Rev. Lett. 87, 216808 (2001);
- M. Lazzarino, S. Heun, B. Ressel, and K. C. Prince, **P. Pingue** and C. Ascoli, *Local anodic oxidation studied by spectroscopic microscopy*, Appl. Phys. Lett. 81, 2842 (2002);
- M. Lazzarino, S. Heun, B. Ressel, K.C. Prince, **P. Pingue** and C. Ascoli, *AFM anodization studied by spectromicroscopy*, Nuclear Instruments and Methods in Physics Research B 200, 46 (2003);
- L. Bonci, G. Fiori, M. Macucci, G. Iannaccone, S. Roddaro, **P. Pingue**, V. Piazza, M. Cecchini, F. Beltram, *Analysis of shot-noise suppression in disordered quantum wires*, Physica E 19, 107 (2003);
- F. Giazotto, **P. Pingue** and F. Beltram, *Coherent transport in Nb/d-doped-GaAs hybrid microstructures*, Modern Physic Letters B, vol. 17, No. 17, 1-17 (2003);
- Bizzarri, R., Arcangeli C., Ferrari A., Nifosi R., Pellegrini V., **Pingue P.**, Tozzini V., Giacca M., Tyagi M., Beltram F. *"Engineered Green Fluorescence Proteins for Proteomics and Biomolecular Electronic Applications"* Macromol. Symp., (2004);
- **P. Pingue**, V. Piazza, F. Beltram, I. Farrer, D. A. Ritchie, and M. Pepper, *Coulomb blockade directional coupler*, Appl. Phys. Lett. 86, 052102 (2005);
- G. Scappucci, L. Di Gaspare, F. Evangelisti, E. Giovine, A. Notargiacomo, R. Leoni, V. Piazza, **P. Pingue** and F. Beltram, *Low field magnetotransport in strained Si/SiGe cavities*, Phys. Rev. B 71, 245311 (2005);
- **P. Pingue**, V. Piazza, P. Baschieri, C. Ascoli, C. Menozzi, A. Alessandrini and P. Facci, *Demonstration of an electrostatic-shielded cantilever*, Appl. Phys. Lett. 88, 043510 (2006);
- M. D'Acunto, S. Napolitano, **P. Pingue**, P. Giusti and P. Rolla, *Fast formation of ripples induced by AFM. A new method for patterning polymers on nanoscale*, Materials Letters, 61 (2007) 3305-3309;
- Napolitano, S., Prevosto, D., Lucchesi, M., **Pingue, P.**, D'Acunto, M., Rolla, P., *Influence of a Reduced Mobility Layer on the Structural Relaxation Dynamics of Aluminum Capped Ultrathin Films of Poly(ethylene terephthalate)*, Langmuir; 2007; 23(4); 2103-2109;
- S. Roddaro, **P. Pingue**, V. Piazza, V. Pellegrini, and F. Beltram, *The Optical Visibility of Graphene: Interference Colors of Ultrathin Graphite on SiO<sub>2</sub>*, Nano Lett., 7 (9), 2707 -2710, (2007);
- D. Prevosto, S. Napolitano, **P. Pingue**, S. Capaccioli and M. Lucchesi, *Investigation of structural relaxation and surface modification of ultrathin films of poly(ethylene terephthalate)*, European Physical Journal - SPECIAL TOPICS, 141(1), 193 (2007);
- A. Candini, F. Carillo, G. Biasiol, **P. Pingue**, M. Affronte and L. Sorba, *Magnetic field sensitivity of In<sub>0.75</sub>Ga<sub>0.25</sub>As Hall nanoprobes*, Materials Science and Engineering: B Volume 147, Issues 2-3, 15 February 2008, Pages 148-151;
- Cecchini M., Signori F., **Pingue P.**, Bronco S., Ciardelli F., Beltram F., *High-Resolution Poly(ethylene terephthalate) (PET) Hot Embossing at Low Temperature: Thermal, Mechanical, and Optical Analysis of Nanopatterned Films*, Langmuir 24, 21, pages 12581-12586;
- C. Menozzi, L. Calabri, P. Facci, **P. Pingue**, F. Dinelli and P. Baschieri, *Focused ion beam as tool for atomic force microscope (AFM) probes sculpturing*, J. Phys.: Conf. Ser. 126 012070 (2008);
- S. Capaccioli, C. Rotella, M. Bertoldo, M. Lucchesi, **P. Pingue**, D. Prevosto, P.A. Rolla, *Influence of Confinement and Substrate Interaction on the Crystallization Kinetics of PET Ultrathin Films*, AIP Conference Proceedings Volume 1027, pp. 1306-1308 (2008);
- M. Lucchesi, G. Privitera, M. Labardi, D. Prevosto, S. Capaccioli and **P. Pingue**, *Electrostatic force microscopy and potentiometry of realistic nanostructured systems*, J. of Appl. Phys. 105, p. 054301 (2009);
- R. Bizzarri, R. Nifosi, **P. Pingue**, V. Tozzini, F. Beltram, Nano-Sized Optical "Devices" for Applications in Proteomics and Biomolecular Electronics: Engineered Green Fluorescent Proteins in Functional Nanomaterials KE Geckeler and E Rosenberg Eds, Chapter 2, (2006);
- Mario D'Acunto e **Pasqualantonio Pingue**, Novel Polymers and Nanopatterning, "Nanotechnological applications of novel polymers" book, Mohsen Adeli Eds, Transworld Research Network, ISBN: 978-81-7895-412-7 Chapter 7, (2009);
- R. Degl'Innocenti, M. Montinaro, J. Xu, V. Piazza, **P. Pingue**, A. Tredicucci, F. Beltram, H. E. Beere, D. A. Ritchie, *Differential Near-Field Scanning Optical Microscopy with THz quantum cascade laser sources*, OPTICS EXPRESS Vol. 17, No. 26, pag. 23785 (2009);
- F. Dinelli, C. Menozzi, P. Baschieri, P. Facci and **P. Pingue**, *Scanning probe nanoimprint lithography*, Nanotechnology 21, pag. 075305 (2010);
- F. Carillo, G. Papari, D. Stornaiuolo, D. Born, D. Montemurro, **P. Pingue**, F. Beltram and F. Tafuri, *Little-Parks effect in single nanoscale YBa<sub>2</sub>Cu<sub>3</sub>O<sub>6+x</sub> rings*, Phys. Rev. B 81, 054505 (2010);
- F. Dinelli, A. Ricci, T. Sgrilli, P. Baschieri, **P. Pingue**, M. Puttaswamy, P. Kingshott, *Nanoscale Viscoelastic Behavior of the Surface of Thick Polystyrene Films as a Function of Temperature*, Macromolecules, 44(4), 987 (2011);
- **P. Pingue**, "Scanning Probe Based Nanolithography and Nanomanipulation on Graphene", Chapter on "Tip-Based Nanofabrication: Fundamentals and Applications", by Ampere A. Tseng, Springer (2011);
- S. Goler, V. Piazza, S. Roddaro, V. Pellegrini, F. Beltram, and **P. Pingue**, *Self-assembly and electron-beam-induced direct etching of suspended graphene nanostructures*, J. of Appl. Phys., 110, 064308 (2011).
- S. Goler, C. Coletti, V. Piazza, **P. Pingue**, F. Colangelo, V. Pellegrini, K. V. Emtsev, S. Forti, U. Starke, F. Beltram, S. Heun, *Revealing the atomic structure of the buffer layer between SiC(0001) and epitaxial graphene*, Carbon 51, 249 (2013).
- U. S. de Cumis, J. Xu, L. Masini, R. Degl'Innocenti, **P. Pingue**, F. Beltram, A. Tredicucci, M. S. Vitiello, P. A. Benedetti, H. E. Beere, and D. A. Ritchie, *Terahertz confocal microscopy with a quantum cascade laser source*, OPTICS EXPRESS 20, 21924 (2012).
- S. Napolitano, M. D'Acunto, P. Baschieri, E. Gnecco, and **P. Pingue**, *Ordered rippling of polymer surfaces by nanolithography: influence of scan pattern and boundary effects*, Nanotechnology 23, 475301 (2012).
- E. Cavaliere, G. Ferrini, **P. Pingue**, and L. Gavioli, *Fractal TiO<sub>2</sub> Nanostructures by Nonthermal Laser Ablation at Ambient Pressure*, J. Phys. Chem. C 117 (44), 23305 (2013).
- M. D'Acunto, F. Dinelli, **P. Pingue**, *Nanowear of Polymers*, Chapter in "Fundamentals of Friction and Wear on the Nanoscale, Nanoscience and Nanotechnology" edited by Enrico Gnecco & Ernst Meyer, Springer, pages 545-587 (2015).
- M. Travaglini, D. Nardi, C. Giannetti, V. Gusev, **P. Pingue**, V. Piazza, G. Ferrini, F. Banfi, *Interface nano-confined acoustic waves in polymeric surface phononic crystals*, Applied Physics Letters 106(2), (2015).
- E. Gnecco, P. Pedraz, P. Nita, F. Dinelli, S. Napolitano, **P. Pingue**, *Surface rippling induced by periodic instabilities on a polymer surface*, New Journal of Physics, 17(3) (2015).
- M. D'Acunto, F. Dinelli, P. Pingue, *Nanoscale rippling on polymer surfaces induced by AFM manipulation*, Beilstein Journal of Nanotechnology 6 (1), 2278-2289 (2015);



- Lorenzo Vannozzi, Leonardo Ricotti, Carlo Filippeschi, Stefania Sartini, Vito Coviello, Vincenzo Piazza, **Pasqualantonio Pingue**, Concettina La Motta, Paolo Dario, Arianna Menciasci, "Nanostructured ultrathin patches for ultrasound-modulated delivery of anti-restenotic drug", International journal of nanomedicine 11, 69 (2016);
- Giuseppe L. Celardo, Damiano Archetti, Gabriele Ferrini, Luca Gavioli, **Pasqualantonio Pingue**, Emanuele Cavaliere, "Evidence of diffusive fractal aggregation of TiO<sub>2</sub> nanoparticles by femtosecond laser ablation at ambient conditions", Materials Research Express, 1 (4), 015012 (2017);
- Franco Dinelli, **Pasqualantonio Pingue**, Nicholas D Kay and Oleg V. Kolosov, "Subsurface imaging of two-dimensional materials at the nanoscale", Nanotechnology 28, 085706 (2017);
- Francesco Colangelo, Vincenzo Piazza, Camilla Coletti, Stefano Roddaro, Fabio Beltram and **Pasqualantonio Pingue**, "Local anodic oxidation on hydrogen intercalated-graphene layers: oxide composition analysis and role of the silicon carbide substrate" Nanotechnology 28, 105709 (2017);
- Emanuele Cavaliere, Giulio BenettiGiuseppe, Luca Celardo, Damiano Archetti, **Pasqualantonio Pingue**, Gabriele Ferrini, Luca Gavioli, "Aggregation and fractal formation of Au and TiO<sub>2</sub> nanostructures obtained by fs-pulsed laser deposition: experiment and simulation", Journal of Nanoparticle Research 19, 311 (2017);
- Francesco Colangelo, Alessandro Pitanti, Vaidotas Mišeikis, Camilla Coletti, **Pasqualantonio Pingue**, Dario Pisignano, Fabio Beltram, Alessandro Tredicucci, Stefano Roddaro, "Stretching graphene using polymeric micro-muscles", 2D Mater. 5 045032 (2018).
- Fabio Boccuni, Riccardo Ferrante, Francesca Tombolini, Daniela Lega, Alessandra Antonini, Antonello Alvino, **Pasqualantonio Pingue**, Fabio Beltram, Lucia Sorba, Vincenzo Piazza, Mauro Gemmi, Andrea Porcari and Sergio Iavicoli, "Workers' Exposure to Nano-Objects with Different Dimensionalities in R&D Laboratories: Measurement Strategy and Field Studies" Int. J. Mol. Sci. 19, 349 (2018)
- Ivo Iavicoli, Luca Fontana, **Pasqualantonio Pingue**, Ana Maria Todea, Christof Asbach "Assessment of occupational exposure to engineered nanomaterials in research laboratories using personal monitors", Science of the Total Environment 62, 689–702 (2018).
- Fabian Meder, Indrek Must, Ali Sadeghi, Alessio Mondini, Carlo Filippeschi, Lucia Beccai,
- Virgilio Mattoli, **Pasqualantonio Pingue**, and Barbara Mazzolai "Energy Conversion at the Cuticle of Living Plants", Adv. Funct. Mater., 1806689 (2018).
- Francesco Colangelo, **Pasqualantonio Pingue**, Vaidotas Mišeikis, Camilla Coletti, Fabio Beltram and Stefano Roddaro, Mapping the mechanical properties of a graphene drum at the nanoscale, 2D Mater. 6 (2019) 025005.

PISA 05/06/2019

(Pasqualantonio Pingue)\*

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