Curriculum vitae **Guido Paolicelli**

Date and place of birth :
Address :
nationality :
status :

E-mail: guido.paolicelli@unimore.it

Education

Laurea in Physics, University of Rome *"La Sapienza"*, 1992.

Positions

Researcher - Technologist, CNR
From 2005 to date CNR – Istituto Nanoscienze, Centro S3, Modena, Italy.
From 1997 to 2004 CNR-INFM Unita' di Ricerca ROMA TRE, Roma, Italy.

Fellowships

1995-1996 fellowship funded by CNR-INFM. Working at Unita' di Ricerca ROMA TRE, Roma, Italy
1994 (June-December) PhD student at ESRF (European Synchrotron Radiation Facility), Grenoble, France.
1993 (June) **- 1994** (May) fellowship, founded by CNR, at ESRF (European Synchrotron Radiation Facility), Grenoble, France.
1993 research grant, founded by Consorzio INFM, at the Dep. of Physics, University of Modena e Reggio Emilia.

Technical and Scientific appointment

From November 2014. Responsible of Laboratory Management for CNR, Istituto Nanoscienze in the framework of the project '*Industrial accreditation and participation in the Regional High Technology Network of the Emilia Romagna region'*.

From January 2006 In charge of the operation of *SUP&RMAN* laboratory (SUPerfici e Ricoprimenti per la Meccanica Avanzata e la Nanomeccanica). *SUP&RMAN* is a joint laboratory between CNR - Istituto Nanoscienze, Center S3 and Physics Department, Univ. di Modena e Reggio Emilia, devoted to fundamental and applied research in the field on Tribology and Surface Coatings for Advanced Mechanics and Nanomechanics.

1998-2004 Technical responsible of *Gruppo Progettazione Strumenti (Group for Instruments Development)* at the CNR-INFM, Unita' di Ricerca ROMA TRE, Roma, Italy

Project and Collaborations

2019-2022 proposer and participant to **MIUR-PRIN National Research Project 2019-2022** *"Understanding and Tuning Friction through nanOstructure Manipulation"* **(UTFROM)** Budget 110.000 euro

2013-2017 proposer and participant to **COST action : MP1303**, Understanding and Controlling Nano and Mesoscale Friction. Italian MC substitute member from October 2013.

2010-2012 proposer and participant to **National Research Project PRIN-2008** "*Tribology of nano-objects on solid surfaces".* Budget 62.000 euro

2008-2009 Scientist in charge of the subproject *"Coatings and surface treatments from micro to nanoscale"* within the framework of the regional project INTERMECH, Network for Advanced Mechanics of the Regione Emilia Romagna.

2002-2004 Scientist in charge of the CNR-INFM participation within the European project VOLPE, *VOLume PhotoEmission from solids*. **RTD project n. HPRI-CT-2001-50032, 5th FP**. Budget 241.000 euro

As scientist in charge of the technical activity of *Gruppo Progettazione Strumenti (Group for Instruments Development))* at CNR-INFM, Unita' di Ricerca ROMA TRE I deal with the following collaborations projects:

2000- 2004: beamline Bear (CNR-INFM) at the Italian Synchrotron Radiation Facility ELETTRA. Development and optimization of the photoemission electron analyser (Bear 1-66) realised to be mounted on the special goniometer internal to the beamline experimental station.

2001-2004: beamline ALOISA (CNR-INFM) at Synchrotron ELETTRA. Development and optimization of the photoemission electron analyser (Aloisa 1-66) realised to be mounted on the special goniometer internal to the beamline experimental station.

2000- 2001: Project PURS founded by CNR-INFM titled HPES (High energy PhotoEmission Spectroscopy). The project has realised the first high energy photoemission measurement (6 KeV) at the beamline ID 32 of the European Synchrotron Radiation Facility (ESRF) and at the beamline ALOISA of the Italian Synchrotron Radiation Facility ELETTRA by fully exploiting the existing apparatus.

1999- 2000. beamline ALOISA (CNR-INFM) at Synchrotron ELETTRA. Development and laboratory optimization of the high resolution photoemission electron analyser (Aloisa 1-150) to be mounted on the ALOISA branch-line.

1997- 2000. Project PRA ELPHOS founded by INFM (Resp. Prof. Parmigiani). Development, installation and test of a Time Of Flight (TOF) electron analyser optimesed to detect very low energy electrons (< 5 eV).

Technology transfert

As scientist in charge of the technical activity of *Gruppo Progettazione Strumenti (Group for Instruments Development))* at CNR-INFM, Unita' di Ricerca ROMA TRE I deal with the following applied research contract:

1999-2000, Customer : Sincrotrone Trieste S.c.p.a. Realization of a prototype of Photon Beam Position Monitor (PBPM) with energy selection. Development, installation and test at the Italian Synchrotron Radiation Facility ELETTRA. Budget 35.000 euro.

1999, Customer : Sincrotrone Trieste S.c.p.a. Realization of a prototype of an electron energy analyser to perform Threshold Photoemission Spectroscopy from solids. Budget 15.000 euro.

1997-2000, Customer : HVP S.r.l., Parma. Development of an Hemispherical Deflector Analyser , mean radius 150 mm, parallel detector (16 lines). This project has involved: computer ray tracing, mechanical design, production test, preparation of control software and and final delivery test. Budget 80.000 euro.

Publications

Author of 1 book chapter, more than 35 papers in international refereed journals and about 10 papers in conference proceedings. For a complete list of last 10 year activity see the detailed list at the end .

Conference organization

National Congress November **2000**:
Ricerca scientifica ed innovazione della strumentazione: Sviluppi e Prospettive .
Funded by INFM, UdR Roma Tre and Dip. di Fisica "E.Amaldi", Università Roma Tre.

National congress November **1999**:
Ricerca scientifica ed innovazione della strumentazione: Sviluppi e Tendenze .
Funded by INFM, UdR Roma Tre and Dip. di Fisica "E.Amaldi", Università Roma Tre.

Teaching activity

Lectures

2008 Universita' di Modena e Reggio Emilia, Dip. Di Fisica, training activity within the project "Training System S.p.A. - Module A.3". **Series of lectures**: Materials analysis techniques: mass spectrometry, RAMAN and IR spectroscopy.
2005-2006 Università di Modena e Reggio Emilia, Dip. di Ingegneria dei Materiali ed Ambiente. Assistant to *Physics A/Laboratory*.
2005 Università di Modena e Reggio Emilia, Dip. di Ingegneria dei Materiali ed Ambiente and Dip. Ingegneria Meccanica. *Introduction lectures on Physics*.
2004-2005 Università di Modena e Reggio Emilia, Dip. di Ingegneria dei Materiali ed Ambiente. Assistant to *Physics A/Laboratory*.
6-14 Maggio 1998 Luso, Portogallo - Summer School of the European Synchrotron Radiation Society : *Application of Synchrotron Radiation in Material Science and Physics.*
Lectures and exercises on "Electron Optics Simulation" .

Tutoring

2010-2012 External Tutor of a PhD Thesis at the Doctoral School in Physics, Università di Modena e Reggio Emilia. PhD student: Dr. Manoj Tripathi. Thesis "Micro and Nano Tribological Studies by Atomic Force Microscope".
2008-2010 External Tutor of a PhD Thesis at the Doctoral School in Physics, Università di Modena e Reggio Emilia. Doctoral student: Dr. Massimo Rovatti . Thesis "Dynamics and controlled manipulation of nanoclusters on surfaces".
2002-2004 Post-doctoral fellowship funded by CNR-INFM . Post Doc Student Dr. F. Offi.
2002-2003 Supervisor of the activity of Dr. A. Fondacaro.as technical collaborator, CNR-INFM.
1999-2002 Post graduate fellowship funded by CNR-INFM . Student Dr. A. Fondacaro.
2000 External Tutor, Bachelor's degree in Material Science, Universita' della Calabria, Cosenza, Italy. Student Dr. T. Barone,.
1997 - 1999 Post graduate fellowship funded by CNR-INFM granted to Dr. F. Formica.

Track-list of publications and conferences (from 2002)

International peer-review journals

1. N. Manini, G. Mistura, G. PAOLICELLI, E. Tosatti, A. Vanossi *'Current trends in the physics of nanoscale friction'* **Advances in Physics: X, 2, 3 (2017) 569-590**
2. M. Tripathi, F. Awaja, G. PAOLICELLI, R.Bartali, E. Iacob, S. Valeri, S. Ryu, S. Signetti, G. Speranza and N.M. Pugno *'Tribological characteristics of few-layer graphene over Ni grain and interface boundaries'* **Nanoscale 8,12 (2016) 6646-58**
3. M. Pierno, l. Bruschi, G. Mistura, G. PAOLICELLI, A. di Bona, S. Valeri, R. Guerra, A. Vanossi, and E. Tosatti, *"Frictional transition from superlubric islands to pinned monolayers'* **Nature Nanotechnol 10, 714-718 (2015)**
4. S. D'Addato, D. Pinotti, M.C. Spadaro, G. PAOLICELLI, V. Grillo, S. Valeri, L. Pasquali, L. Bergamini, Luca and S. Corni *"Influence of size, shape and core-shell interface on surface plasmon resonance in Ag and Ag@MgO nanoparticle films deposited on Si/SiOx"* **Beilstein Journal of Nanotechnology 6 (2015) 404-413**
5. G. PAOLICELLI, M. Tripathi, V. Corradini, A. Candini, and S. Valeri *"Nanoscale frictional behavior of graphene on SiO2 and Ni(111) substrates"* **Nanotechnology 26 (2015) 055703.**
6. M. Tripathi, G. PAOLICELLI, S.D'Addato and S. Valeri *"Controlled AFM detachments and movement of nano-particles: gold clusters on HOPG at different temperatures"* **Nanotechnology 23 (2012) 245706.**
7. M. Rovatti, G. PAOLICELLI, A. Vanossi and S. Valeri, *"Sliding onset of nanoclusters: a new AFM based approach"* **Meccanica (Springer Ed.) 46, 597 (2011)**
8. Bondino F., Magnano E ., Booth C.H., Offi F., Panaccione G ., Malvestuto M., PAOLICELLI G., Simonelli L., Parmigiani F., McGuire M.A., Sefat A.S., Sales B.C., Jin R., Vilmercati P., Mandrus D., Singh D.J., Mannella N. *"Electronic structure of CeFeAsO1-xFx (x=0, 0.11, and 0.12)"* **Phys. Rev. B 82, 014529 (2010)**
9. G. PAOLICELLI, M. Rovatti, A. Vanossi and S. Valeri, *"Controlling single cluster dynamics at the nanoscale"* **Appl. Phys. Lett. 95, 143121 (2009)**
10. D. J. Payne, G. PAOLICELLI, F. Offi,G. Panaccione,P. Lacovig, G. Beamson, A. Fondacaro, G. Monaco, G. Vanko, and R. G. Egdell, *"A study of core and valence levels in beta-PbO2 by hard X-ray photoemission"* **J. Electron Spectrosc. Relat. Phenom. 169, 26 (2009)**
11. G. PAOLICELLI, K. Mougin, A. Vanossi, and S. Valeri, *"Adhesion detachment and movement of gold nanoclusters induced by dynamic atomic force microscopy"* **J. Phys. Condes. Matter. 20, 354011 (2008)**
12. G. PAOLICELLI, K. Mougin, A. Vanossi, and S. Valeri, *"Controlled manipulation of thiol-functionalised gold nanoparticles on Si(100) by dynamic force microscopy"* **Journal of Physics: Conference Series 100, 052008 (2008)**
13. F. Offi, P. Torelli, M. Sacchi, P. Lacovig, A. Fondacaro, G. PAOLICELLI, S. Huotari, G. Monaco, C. S. Fadley, J. F. Mitchell, G. Stefani, and G. Panaccione, "*Bulk electronic properties of bilayered manganite La1.2Sr1.8Mn2O7 from hard-x-ray photoemission"* **Phys. Rev. B 75, 014422 (2007)**
14. L. Moreschini, C. Dallera, J. J. Joyce, J. L. Sarrao, E. D. Bauer, V. Fritsch, S. Bobev, E. Carpene, S. Huotari, G. Vankó, G. Monaco, P. Lacovig, G. Panaccione, A. Fondacaro, G.PAOLICELLI, P. Torelli, and M. Grioni, *"Comparison of bulk-sensitive spectroscopic probes of Yb valence in Kondo systems"* **Phys Rev B 75, 035113 (2007)**
15. F. Offi, W. S. M. Werner, M. Sacchi, P. Torelli, M. Cautero, G. Cautero, A. Fondacaro, S. Huotari, G. Monaco, G. PAOLICELLI, W. Smekal, G. Stefani, and G. Panaccione, *"Comparison of Hard and Soft X-Ray Photoelectron Spectra of Silicon"* **Phys. Rev. B 76, 085422 (2007)**
16. D. J. Payne, R. G. Egdell, G. PAOLICELLI, F. Offi, G. Panaccione, P. Lacovig, G. Monaco, G. Vanko, A. Walsh, G. W. Watson, J. Guo, G. Beamson, P.-A. Glans, T. Learmonth, and K.E. Smith, *"Nature of electronic state at the Fermi level -PbO2βin metallic revealed by hard X-ray photoemission spectroscopy"* **Phys. Rev. B 75, 153102 (2007)**
17. L. Pasquali, F. Terzi, C. Zanardi, R. Seeber, G. PAOLICELLI, N. Mahne, and S. Nannarone, "Bonding and orientation of 1,4-benzenedimethanethiol on Au(111) prepared from solution and from gas phase" **J. Phys. Condes. Matter 19, 305020 (2007)**
18. L. Pasquali, F. Terzi, C. Zanardi, L. Pigani, R. Seeber, G.PAOLICELLI, S. M. Suturin, N. Mahne, and S. Nannarone, *"Structure and properties of 1,4-benzenedimethanethiol films grown from solution on Au(1 1 1): An XPS and NEXAFS study"* **Surf. Sci. 601, 1419 (2007)**
19. G. Panaccione, G. Cautero, M. Cautero, A. Fondacaro, M. Grioni, C. Henriquet, G. Monaco, M. Mulazzi, F.Offi, L. Paolasini, G. PAOLICELLI, P. Pittana, M. Sacchi, G. Stefani, and P. Torelli, *"Results and perspectives in Hard X-Ray Photoemission Spectroscopy (HAXPES) from solids"* **Nuclear Instrum. and Meth. B 246, 106 (2006)**

20. G. PAOLICELLI, A. Fondacaro, F. Offi, G. Stefani, G. Cautero, M. Cautero, B. Krastanov, P. Lacovig, P. Pittana, R. Sergo, R. Tommasini, P. Torelli, M. Sacchi, M. Grioni, G. Monaco and G. Panaccione "Bulk Sensitive Photoemission: first results of VOLPE project at ESRF" **Journal of Electron Spectroscopy and Related Phenomena 144 -147 (2005) 963**
21. P. Torelli, G. Cautero, M. Cautero, A. Fondacaro, M. Grioni, B. Krastanov , P. Lacovig, G. Monaco, F. Offi, G. PAOLICELLI, M. Sacchi , G. Stefani, R. Tommasini, R. Verbeni and G. Panaccione "*VOLPE: a new experimental setup for high energy photoemission using synchrotron radiation"* **Review Scientific Instruments 76 (2005) 023909**
22. M. Sacchi, F. Offi, P. Torelli, A. Fondacaro, C. Spezzani, M. Cautero, G. Cautero, S. Huotari, M. Grioni, R.Delanuay, M. Fabrizioli, G. Vanko, G. Monaco, G. PAOLICELLI, G. Stefani and G. Panaccione "*Quantifying the effective attenuation length in high-energy photoemission experiments"* **Physical Review B 71 (2005) 155117**
23. G. Panaccione, G. Cautero, M.Cautero, A.Fondacaro, M.Grioni, P.Lacovig, G. Monaco, F. Offi, G. PAOLICELLI, M. Sacchi, N. Stojic, G.Stefani, P. Torelli " *High-energy photoemission in Silver. Resolving d and sp contribution in valence band spectra"* **Journal of Physics: Condensed Matter 17 (2005) 2671-2679**
24. G. Panaccione, G. Cautero, A.Fondacaro, M.Grioni, P. Lacovig, G. Monaco, F. Offi, G. PAOLICELLI, M. Sacchi, G.Stefani, R. Tommasini, P. Torelli " *High Resolution HAXPES and status of VOLPE project"* **Nuclear Instruments and Methods in Physics Research, section A *547 (2005) 56-63***
25. C. Dallera, L. Braicovich, L. Duò, A. Palenzona, G. Panaccione, G. PAOLICELLI, B. Cowie, J. Zegehagen "*Hard X-ray photoemission spectroscopy : sensitivity to depth, chemistry and orbital character "* **Nuclear Instruments and Methods in Physics Research, section A *547 (2005) 113-123***
26. F. Offi, A.Fondacaro, G.PAOLICELLI, and G.Stefani *"Design and test of a lens system for high energy and high resolution spectrometer "* **Nuclear Instruments and Methods in Physics Research section A 550 (2005) 454-466**
27. C. Dallera, L. Duò L. Braicovich, , G. Panaccione, G. PAOLICELLI, B. Cowie, J. Zegehagen "*Looking 100 Å deep into spatially inhomogeneous dilute systems with Hard X-ray photoemission"* **Applied Physics Letters 85, 19 (2004) 4532 – 4534**
28. O.M. Artamonov, S.N. Samarin, G. PAOLICELLI, G. Stefani *"The use of the time-energy dispersion in an electron energy analyzer"* **Journal of Electron Spectroscopy and Related Phenomena, Vol. 131-132 (2003) 105-116**
29. G. PAOLICELLI, G. Cautero, A. Ruocco, R. Tommasini, A. Attili, G. Comelli, G. Ferrini, A.Fondacaro, M. Peloi, and G.Banfi, F. Parmigiani, R. Rosei, G. Stefani "A novel apparatus for laser excited time resolved photoemission spectroscopy" **Surface Review and Letters, Vol. 9, No. 1 (2002) 541-547**
30. A. Galimberti, C. J. Bocchetta, A. Gambitta, G. Paolucci, G. PAOLICELLI and G. Stefani *" A new detector for Photon Beam Position monitoring designed for syncrotron radiation beamlines"* **Nuclear Instruments And Methods A 477 (2002) 317-322**

Books:

A. G. PAOLICELLI, M. Rovatti and S. Valeri *Single cluster AFM manipulation: a specialized tool to explore and control nanotribology effects* in B. Bhushan (ed.) "Scanning Probe Microscopy in Nanoscience and Nanotechnology Vol.2" Springer, Berlin (2011) (Book ID 192663)

Other publications:

1. Tripathi, M., Paolicelli, G. and Valeri, S. "*Morphology and Friction Characterization of CVD Grown Graphene on Polycrystalline Nickel "* Proceedings of International Conference on Advances in Tribology and Engineering Systems (Icates 2013) Book Series: Lecture Notes in Mechanical Engineering Pages: 195-204 Edited by: Patel, HC; Deheri, G; Patel, HS; et al. Published: 2014 Print ISBN 978-81-322-1655-1
2. M. Rovatti, G. Paolicelli, A. Vanossi, S. Valeri, *"Adhesion at nanoscale: a new AFM-based approach"*. Proceedings of the 2nd European Conference on Tribology (ECOTRIB 2009) – Pisa (I), (2009) ISBN: 978-884672426-7
3. G. PAOLICELLI, M. Rovatti, A. Vanossi, S. Valeri, *"AFM-based characterization of gold clusters adhesion at nanoscale"*. Proceedings of the South East European Conference in Computational Mechanics (SEECCM 2009) – Symposium on Modelling Friction and Adhesion at the Nanoscale – Rhodes (GR), (2009) ISBN 978-960254683-3
4. L.Moreschini, C.Dallera, J.J.Joyce, J.L.Sarrao, E.D.Bauer, V.Fritsch, S.Bobev, E.Carpene, S.Huotari, G.Vankó, G.Monaco, P.Lacovig, G.Panaccione, A.Fondacaro, G.PAOLICELLI, P.Torelli, M.Grioni. *Complementary bulk-sensitive spectroscopies of Yb-based valence fluctuators* ESRF HIGHLIGHTS 2007

Conference and workshop:

1. G. PAOLICELLI – **Invited speaker – "** Exploring tribological characteristics of nano-systems with the Atomic Force Microscope: from FFM to manipulation of nano-objects**"** International Conference on Advances in Tribology and Engineering Systems (ICATES), Ahmedabad (INDIA), October 15-17, 2013
2. G. PAOLICELLI **- Oral presentation -** "*AFM friction study on single and few layer graphene on different substrates"* XCIX Congresso Nazionale Societa' Italiana di Fisica Trieste, 23-27 Settembre 2013
3. M. Tripathi, G. PAOLICELLI and S. Valeri - poster presentation - **"***AFM based friction analisys of few layer Graphene"* Conference on Friction and Energy Dissipation in Man-made and Biological Systems, Abdus Salam International Centre for Theoretical Physics (ICTP), Trieste (Italy), 5 - 8 November 2013
4. G.PAOLICELLI **- Oral presentation -** *"Fast movements of kicked nanoclusters"* Trends In Nanotribology 2011, a joint ICTP-FANAS Conference, Trieste (Italy), 12-16 September 2011
5. G.PAOLICELLI **- Oral presentation -** *"Thermal diffusion and forced movements of nanocluster on Graphite"* 2nd European nanomanipulation workshop, Tartu (Estonia), 6-8 June 2011
6. G. PAOLICELLI **-** Poster presentation - III Multifrequency AFM Conference, Madrid (Spain), 14-15 March 2011
7. G. PAOLICELLI **-** Poster presentation - FANAS Confrecence 2010 Saarbrüken(Germany) 25-28 October 2010
8. G. PAOLICELLI **- Oral presentation –** *"Depinning and Sliding of individual nanoclusters on Silicon and Graphite"* 1st European Nanomanipulation workshop Cascais, Lisbona (Portugal) 16-19 May 2010
9. G. PAOLICELLI **- Oral presentation -** *"Controlling single cluster dynamics at the nanoscale"*, Trends In Nanotribology 2009, a joint ICTP-FANAS Conference, Trieste (Italy), 19-24 October 2009
10. G. PAOLICELLI - Poster Presentation - Energy Dissipation In Nanocontacts And Molecular bonds (EDINAM 09) – Dresden (Germany)", September 2009
11. G. PAOLICELLI **- Oral presentation -** *"Investigation to gold nanoclusters friction on graphite by AFM approach"*, *26th European Conference on Surface Science (ECOSS 26) – Parma (Italy)*, 30 August 4 September 2009
12. G. PAOLICELLI **- Oral presentation-** *"AFM-based investigation to Au nanoclusters adhesion"*, Workshop on the Physics of Tribology - Bad Honnef (D)", March 2009
13. G. PAOLICELLI **- Oral presentation -** *"Adhesion and mobility of gold clusters on graphite explored by dynamic AFM"*, 25th European Conference on Surface Science (ECOSS 25) – Liverpool (UK)", July 27 August 1 2008
14. G. PAOLICELLI **-** Poster presentation – International Conference on Nanoscience and Technology ICN+T 2007 – Stockholm (Sweden) 2-6 July 2007
15. G. PAOLICELLI - **Oral presentation** - "*Bulk Sensitive Photoemission: first results of VOLPE project at ESRF* " International Conference on Vacuum Ultraviolet Radiation Physics, VUV XIV, Cairns (Australia), July 2004
16. G. PAOLICELLI - **Oral presentation** - "*Bulk Sensitive Photoemission: first results of VOLPE project at ESRF*" XIII Convegno della Società Italiana di Luce di Sincrotrone SILS Camerino (Italia) July 2004
17. G. PAOLICELLI – Poster presentation - Congresso Nazionale di Fisica della Materia INFM Genova (Italy), June 2004
18. G. PAOLICELLI – Poster presentation - 1st Workshop on Hard X-ray Photoelectron Spectroscopy (HAXPES) ESRF, Grenoble, France, September 11–12, 2003
19. G. PAOLICELLI **–** Poster presentation - International Conference on Synchrotron Radiation Instrumentation, SRI VIII San Francisco, (USA) August 2003
20. G. PAOLICELLI **–** Poster presentation - Congresso Nazionale di Fisica della Materia, Genova (Italy) June 2003
21. G. PAOLICELLI **–** Poster presentation - Congresso Nazionale di Fisica della Materia, Bari (Italy) June 2002