

# Alessandro Podestà

## CURRICULUM VITAE

Last update: 11/05/2026

*Alessandro PODESTA'*

Born: 2 October 1973, Milano, Italy

**Current position (since January 2015):** Associate professor,  
Dept. of Physics “Aldo Pontremoli”, University of Milan,  
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**Personal web page:**

### Working experience, education and training

From 2015	Associate professor at Dept. of Physics “Aldo Pontremoli”, University of Milan.
2006 – 2015	Assistant professor at Dept. of Physics “Aldo Pontremoli”, University of Milan.
2003 – 2006	Researcher at INFN-CNR, Milano, Italy.
2001 – 2003	Post-Doc at Dept. of Physics “Aldo Pontremoli”, University of Milan.
2001	PhD in Physics/Materials Science, University of Milan.
1998	MSc degree in Physics, University of Milan.

### Other titles

AP obtained the National Academic Qualification (ASN) for Full Professor in Experimental Physics of Matter (02/B1, validity 06/02/2023 - 06/02/2033) and Applied Physics (02/D1, validity 11/01/2023 - 11/01/2033) (call 2021-2023, art. 16, comma 1, Legge 240/10).

## Teaching activity

### **Institutional teaching assignments**

- 2006-2010 “Fisica Generale I (F45-22, F5X-107)”, BSc degree in Chemistry at UNIMI (2006/2007: 1 CFU, 8 h; 2007/2008: 1 CFU, 8 h; 2008/2009: 7 CFU, 56 h; 2009/2010: 3 CFU, 24 h).
- 2013-2015 “Fisica (G26-21)” BSc degree in Agrotecnologie per l’Ambiente e il Territorio at UNIMI (64 h, 6 CFU).
- 2015-2021 “Fisica (G28-40)” BSc degree in Scienze e Tecnologie Agrarie at UNIMI (64 h, 6 CFU).
- From 2006 “Caratterizzazione di nanostrutture e film sottili (FBP-86)”, MSc degree in Physics at UNIMI (66-62 h, 6 CFU).
- From 2009 “Scanning Probe Microscopies”, a module (3 h) in the course “Experimental methods for systems at the nanoscale (R17-11)” for the PhD in Physics at UNIMI.
- From 2021 “Measurements of nanoscale interactions in biological systems and data analysis (FBT-14)” MSc degree in Quantitative Biology (erogated in english language) at UNIMI (64 h, 6 CFU).

### **Other teaching assignments**

- 2002-2003 A series of lectures on scanning probe microscopy for the Advanced Course in Nanotechnology funded by the European Social Fund, held at the Dept. of Physics of UNIMI.
- 2005 Author of the invited chapter “Scanning Probe Microscopies” in: Characterization Procedures of Nanomaterials, pp. 53-96, for the Nanobiotechnology Online Postgraduate Course, Technische Universitat Kaiserslautern (2004).
- 2007-2008 Introductory and specialized programming modules in Matlab for “Scuola di Specializzazione in Fisica Sanitaria” and the course “Metodi Computazionali per la Fisica” of the BSc in Physics at UNIMI.
- 2008-2015 Co-organizer of the specialized courses of the doctoral school in Medical Nanotechnology of the European School of Molecular Medicine (SEMM).
- 2008-2012 Member of the Teaching Staff of the PhD program in Medical Nanotechnology at the European School of Molecular Medicine (SEMM). Teacher of the courses “Scanning Probe Microscopies” and “Advanced Scanning Probe Microscopies” within this program.
- 2012-2024 He was a member of the Teaching Board of the Doctoral School in Physics, Astrophysics, and Applied Physics at the University of Milan. Since 2024, he is a member of the Extended Teaching Board.

## Supervision of BSc, MSc and PhD thesis projects

### Supervision of 33 BSc theses in Physics at UNIMI

1. 2006. Simone Zavattari. "Produzione e caratterizzazione di nanostrutture di metalli nobili".
2. 2007. Gabriele Losacco. "Implementazione e sviluppo di protocolli di caratterizzazione tribologica di superfici mediante microscopia a forza atomica".
3. 2007. Cristian Ghisleri. "Sviluppo di protocolli quantitativi per la misurazione di forze da interazione mediante il microscopio a forza atomica".
4. 2009. Luca Puricelli. "Caratterizzazione di proprietà di interfaccia su scala nanometrica mediante microscopia a forza atomica in modalità dinamica".
5. 2012. Riccardo Simonetta. "Caratterizzazione di proprietà elastiche di film sottili mediante microscopia a forza atomica".
6. 2012. Federico Fanalista. "Caratterizzazione delle proprietà elastiche di singole cellule mediante microscopia a forza atomica".
7. 2013. Jacopo Nicolò Toffanetti. "Studio dell'interazione tra liquidi ionici e doppi strati lipidici supportati mediante microscopia a forza atomica".
8. 2013. Davide Piotti. "Studio dell'interazione di liquidi ionici con singole cellule e modelli di membrana cellulare mediante microscopia a forza atomica".
9. 2014. Stefania Asperti. "Studio dell'interazione di liquidi ionici con doppi strati lipidici mediante microscopia a forza atomica".
10. 2014. Nicola Bartolomei. "An alternative readout mechanism for micro resonators - evaluation of bluray-based readout".
11. 2014. Francesco Puppi. "Caratterizzazione meccanica di matrici extracellulari mediante microscopia a forza atomica".
12. 2015. Pietro Brighi. "Caratterizzazione mediante microscopia a forza atomica di proprietà meccaniche di nanocompositi polimero/metallo ottenuti da impiantazione supersonica di cluster".
13. 2016. Camilla Ugolini. "Caratterizzazione del ruolo della struttura nanometrica di una superficie sul fenotipo di cellule neuronali".
14. 2016. Alessandro De Vita. "Studio dell'interazione tra liquidi ionici e membrane lipidiche supportate tramite microscopia a forza atomica".
15. 2016. Alessandro Troglia. "Sviluppo di nuovi approcci per la metallizzazione di superfici polimeriche finalizzata alla realizzazione di microsonde conduttive".
16. 2016. Bianca Scaparra. "Studio di interazioni elettrostatiche di doppio strato in zirconia nanostrutturata".
17. 2016. Costanza Paternoster. "Studio del punto isoelettrico in zirconia nanostrutturata mediante microscopia a forza atomica".
18. 2017. Lorenzo Marfori. "Studio dell'interazione tra liquidi ionici e doppi strati fosfolipidici mediante microscopia a forza atomica".
19. 2017. Paolo Wetzel. "Calibrazione di sonde per microscopia a forza atomica mediante il metodo del rumore termico".
20. 2017. Matteo Bonanomi. "Studio del processo di orientazione ottica di spin in semiconduttori del quarto gruppo".
21. 2018. Laura Ceriani. "Studio delle proprietà fisiche del glicocalice cellulare mediante microscopia a forza atomica".
22. 2018. Andrea Abbenda. "Ottimizzazione della tecnica Kelvin Probe Force Microscopy per lo studio del potenziale di contatto di film sottili metallici nanostrutturati".
23. 2019. Axel Librali. "Misure di impedenza in regime di corrente alternata mediante il microscopio a forza atomica".
24. 2019. Nicodemo Osnato. "Caratterizzazione di film sottili di liquidi ionici su substrati grafitici mediante Microscopia a Forza Atomica".
25. 2021. Lorenzo Dal Fabbro. "Characterization and simulation of the elastic response of spatially confined polymeric materials".
26. 2022. Marta Pozzi Simulation of light transport through biological tissues in the SWIR spectral region". Tesi svolta presso Université de Genève (relatore esterno: Prof. Luigi Bonacina).
27. 2023. Pietro Follia. "Conductive AFM on Germanium quantum dots and MoS2 pn-junctions".
28. 2023. Giulia Moretti. "Studio e caratterizzazione mediante microscopia a forza atomica delle proprietà meccaniche del tessuto peritoneale umano in condizione metastatica".
29. 2023. Davide Magistrelli. "Sviluppo di un protocollo per la caratterizzazione di proprietà viscoelastiche di film sottili mediante microscopia a forza atomica"

30. 2024. Bianca Andolfato. "Studio della rigidità del nucleo cellulare mediante microscopia a forza atomica".
31. 2025. Carlo Guazzoni. "Simulazione agli elementi finiti della deformazione statica e dinamica di sonde per microscopia a forza atomica".
32. 2025. Chiara Giunta. "Patterning di matrice extracellulare deposta da cellule in coltura e studio delle sue proprietà meccaniche".
33. 2025. Andrea Piccioni. "Development of an Atomic Force Microscopy-based system for performing mechano-stimulation measurements on plant tissues with fluorescence response".

#### **Supervision of 23 theses in Physics at UNIMI**

1. 2002. Mario Salerno. "Studio della morfologia e delle proprietà tribologiche di superfici di diamante mediante microscopia a forza atomica".
2. 2003. Valeria Cassina. "Caratterizzazione e modificazione delle proprietà elettriche di superfici mediante microscopia a forza atomica".
3. 2004. Marco Indrieri. "Caratterizzazione dei meccanismi di impacchettamento di DNA mediante microscopia a forza atomica".
4. 2008. Simone Bovio. "Caratterizzazione di strati nanometrici di liquido ionico mediante microscopia a forza atomica".
5. 2009. Antonio Borgonovo. "Fluorescence Recovery After Photobleaching For Quantitative Characterization Of Protein-Nanostructured Surface Interaction".
6. 2010. Gabriele Losacco. "Studio delle proprietà elettroniche di liquidi ionici mediante spettroscopia di fotoemissione X".
7. 2010. Barbara Van Hattem. "Photoelectrochemistry of CdS Multilayers". Tesi esterna.
8. 2010. Massimiliano Galluzzi. "Studio di proprietà morfologiche e dielettriche di film sottili di liquido ionico mediante microscopia a forza atomica".
9. 2011. Yuri Belotti. "Evaluation of self-assembled peptide nanostructures as Drug-Delivery systems". Tesi esterna.
10. 2011. Francesca Borghi. "Studio di meccanismi di adesione di proteine su superfici nanostrutturate".
11. 2012. Monica Ceresoli. "Contaminazioni metalliche in silicio: tecniche di rilevazione e di gettering". Tesi esterna.
12. 2013. Luca Puricelli. "Studio delle proprietà meccaniche di singole cellule in risposta a stimoli esterni e ad alterazioni del terreno di coltura mediante microscopia a forza atomica".
13. 2013. Alice Meroni. "Ribonucleotides incorporation alters the dna double helix structure". Tesi domiciliata presso il Dip. di Scienze Biomolecolari e Biotecnologie.
14. 2015. Giorgio Malchiodi. "Studio di proprietà morfologiche ed elettrocinetiche di ossidi metallici nanostrutturati mediante microscopia a forza atomica".
15. 2015. Federico Mazzorin. "Caratterizzazione di interazione elettrostatica di doppio strato in elettrolita acquoso mediante microscopia a forza atomica".
16. 2016. Giulia Donadoni. "Caratterizzazione delle proprietà chimico-fisiche di liposomi flessibili cationici".
17. 2016. Matteo Chighizola. "Studio di interazioni bio-meccaniche in sistemi cellulari mediante microscopia a forza atomica".
18. 2017. Stefania Asperti. "Studio del ruolo della nanostruttura superficiale del substrato nei processi meccanotrasduttivi che portano al differenziamento di cellule primarie mesenchimali".
19. 2017. Matteo Giannangeli. "Studio dell'interazione di liquidi ionici con doppi strati fosfolipidici mediante spettroscopia di forza atomica".
20. 2020. Lorenzo Marfori. "Proprietà strutturali, morfologiche ed elettrochimiche della superficie Cu(111) immersa in soluzione acida". Tesi svolta presso il Politecnico di Milano (Relatore: Prof. Gianlorenzo Bussetti).
21. 2022. Chiara Lunardi. "Characterization of magnetic interactions in biological systems by Atomic Force Microscopy" (Corso di Laurea in Quantitative Biology, UNIMI).
22. 2025. Margaux Meneghini. "Investigation by atomic force microscopy of changes in cell rigidity during Friedreich's ataxia". In progress.
23. 2026. Giulio Simonetti. "Investigation of plant tissue mechanosensing by integrated atomic force and fluorescence microscopy". In progress.

#### **Supervisor of 13 PhD theses**

1. 2006. Valeria Cassina. "Characterization of electrical properties of nanostructured interfaces by advanced atomic force microscopy".
2. 2007. G. Berlanda. "Characterization of the interaction of proteins with surfaces by Atomic Force Microscopy".

3. 2007. Marco Indrieri. "Quantitative characterization of biological systems at single molecule level by atomic force microscopy".
4. 2011. Simone Bovio. "Investigation of morphological and structural properties of ionic liquid thin layers on solid surfaces by Scanning Probe Microscopy".
5. 2011. Varun Vyas. "An atomic force microscopy-based investigation of interfacial properties of biocompatible cluster assembled thin films". PhD in Medical Nanotechnology (SEMM).
6. 2013. Massimiliano Galluzzi. "Interfacial properties of ionic liquids: electric properties of thin films and interaction with model membranes and living cells".
7. 2012. Francesca Borghi. "Investigation of protein-protein and protein-surface interactions by novel experimental approaches based on local probe characterization techniques and patterning and functionalization of nanostructured materials".
8. 2014. Luca Puricelli. "Study of cellular interactions at the interface with nanostructured materials through AFM-based techniques".
9. 2017. Matteo Chighizola. "Cell mechanics and the interaction with the microenvironment: a physical investigation of mechano-transductive events". In corso.
10. 2018. Matteo Giannangeli (Dipartimento di Chimica, UNIMI). Correlatore (Relatore: prof. A. Caselli, Dip. Di Chimica; correlatore: prof. A. Podestà).
11. 2019. Hatice Holuigue. "The influence of the microenvironment on healthy and tumoural cells". Borsa pagata su fondi EU ITN-ETN n.812772 Phys2BioMed.
12. 2019. Ewelina Lorenc. "Nano-mechanical fingerprints of extracellular matrices from healthy and tumoural tissues". Borsa pagata su fondi EU ITN-ETN n.812772 Phys2BioMed.
13. 2024. Lorenzo Dal Fabbro. "Biomembranes and ionic liquids". In progress.

#### Specialised seminars at training events

- 1) "Atomic Force Microscopy for the Characterization of Nanostructured Materials", European School of Advanced Studies in Materials Science, Collegio Borromeo, Pavia, Italy, 22 Maggio 2000.
- 2) "Investigation of nano-bio-interfaces by Atomic Probe Microscopy". Corso di Crio-Microscopia Elettronica per materiali biologici e polimerici, presso CIMA, Università degli Studi di Milano, Milano, Italy, 11 Settembre 2007.
- 3) "La microscopia a forza atomica applicata allo studio di interfacce e sistemi nanostrutturati presso il centro CIMAINA dell'Università degli Studi di Milano". CIMA, workshop: "Microscopia a Forza Atomica per materiali biologici e polimerici", Università degli Studi di Milano, Milano, Italy, 23 Ottobre 2008.
- 4) "Nanoscale characterization Techniques. Basic principles of Scanning Probe Microscopy". During 'First school of nanotechnology in the food chain', Fondazione Filarete, Milano, Italy, 29-30 August 2011.
- 5) "Atomic Force Microscopy as a quantitative tool for sizing and measuring nanoscale biological entities and interactions". EU COST Action TD1002 Summer School, Marcoule, France 29/08-02/09/2011.
- 6) "An Introduction to Atomic Force Microscopy" at 2nd COST Action TD1002 Summer School, Krakow, Poland 14-19 September 2012.
- 7) "Adsorption of proteins on nanostructured surfaces: investigating the nanoscale interaction mechanisms by atomic force microscopy" at N. Cabrera Summer School in Madrid, Spain, 21-26 July 2013.
- 8) "Characterizing nanoscale entities and interactions from AFM images" at AFMBioMed Summer School, Marseille, France 18-22 Luglio 2016.
- 9) "Characterizing nanoscale entities and interactions from AFM images" at AFMBioMed Summer School, Marseille, France 23-27 Luglio 2018.
- 10) "Introduction to AFM" at AFMBioMed Summer School, Grenoble, France 23-27 Luglio 2019.
- 11) "Measuring mechanical properties of cells and tissues by atomic force microscopy", AFMBioMed Summer School 2020, online edition 20-22/07/2020.
- 12) "Atomic Force Microscopy and Profilometry" at CHESS 2022 - Conventional and High-Energy Spectroscopies for Inorganic, Organic and Biomolecular Surfaces and Interfaces. Milano, 21-25 Febr. 2022 (online).
- 13) "Measuring mechanical properties of cells and tissues by atomic force microscopy", AFMBioMed Summer School 2022, Marseille, France, 11-15/07/2022.
- 14) "Scanning Tunneling Microscopy and Atomic Force Microscopy fundamentals" at CHESS 2024 - Conventional and High-Energy Spectroscopies for Inorganic, Organic and Biomolecular Surfaces and Interfaces. Brescia, 12-16 Febbraio 2024.

- 15) “Atomic Force Spectroscopy at the solid-liquid interface” at SELSIM 2026, Sondalo, Italy, 25th - 30th June 2026.
- 16) “AFM in biomedicine”, AFMBioMed Summer School 2026, Marseille, France, 06-11/07/2026.

## **Research activity**

Since 1999, Alessandro Podestà (AP) has been studying the physical properties interfaces and systems at the nanoscale using scanning probe microscopy techniques, particularly atomic force microscopy (AFM). AP contributed to the creation and development, as scientific coordinator, of the AFM laboratory of the Molecular Beams and Nanocrystalline Materials Laboratory and of the CIMAINA center at the Department of Physics of UNIMI, until 2023; since then, AP has been the scientist in charge of the scanning probe microscopy laboratory at the Department of Physics of UNIMI. AP's research is firmly rooted in Nanoscience and Nanotechnology; it is based on expertise in surface and solid-state physics, biophysics, and physical chemistry, and is characterized by a strong interdisciplinary nature. AP's research activity develops along two parallel yet closely interconnected tracks: the development of experimental techniques and protocols based on atomic force microscopy and the application of these protocols to the study of nanoscale systems and interfaces of relevance in the fields of condensed matter physics and materials science, biophysics, and nanomedicine. The expertise developed through this approach is recognized and valued nationally and internationally, as evidenced by its coordination of the European MSCA network [PhysBioMed](#) and its active participation in several funded research projects and commissioned research activities. The expertise and instrumentation of the scanning probe microscopy laboratory contribute to the offering of the UNIMI node of the European network of distributed infrastructures [NFFA.eu](#) and [NFFA-DI](#).

### **Main research activities**

- 1. Development of atomic force microscopy techniques for the study of systems and interfaces at the nanoscale**
  - a) Statistical characterization of the morphological properties of thin films and nanostructures.
  - b) Metrology of nanoscale objects (nanoparticles and nanostructures, proteins, biomolecules).
  - c) Nanotribological and nanomechanical characterization (static and vs frequency) of thin films.
  - d) Static and dynamic force spectroscopy (from single molecules to the mesoscale).
  - e) Scanning electrical impedance microscopy.
  - f) Production, functionalization, and calibration of atomic force microscopy probes.
- 2. Study of nanoscale interfaces and systems**
  - a) Study of the scaling laws governing the evolution of the surface morphology of nanostructured thin films assembled from clusters and nanoparticles.
  - b) Study of the electrostatic charge double layer at the solid-liquid interface in nanostructured materials: dependence of surface charge density and isoelectric point on nanotopography.
  - c) Study of the interfacial properties of room-temperature ionic liquids interacting with solid surfaces under spatial confinement at the nanometer scale.
- 3. Study of the structural/configurational properties of cells, biomolecules (DNA, proteins), and their complexes; study of the interaction of biological entities with their microenvironment.**
  - a) Mechanotransduction: adhesion force spectroscopy (linked to integrins) for the study of cell-microenvironment interaction.
  - b) Mechanobiology: mechanical properties of cells and tissues in relation to the microenvironment and the physiopathological state of tissues (determination of biomechanical markers of cancer and inflammatory diseases).
  - c) Physicochemical mechanisms of cytotoxicity: study of the interaction of ionic liquids and molecules with biomembrane models (phospholipid bilayers) and cells.
  - d) Study of DNA elasticity and protein aggregation states in relation to the chemical and physical properties of the microenvironment.

### **Scientific publications**

- Complete bibliography with metric:
  - Researcher ID E-6568-2010, <https://www.webofscience.com/wos/author/record/118724>
  - Scopus ID 56229110100, <https://www.scopus.com/authid/detail.uri?authorId=56229110100>.
- ORCID: <https://orcid.org/0000-0002-4169-6679>
- >120 papers published on international peer-reviewed journals;

- H-index: 36 (source: Scopus; active since 1999); 4480 total citations (source: Scopus).
- Co-author of several invited review papers, co-editor of a monographic text in two volumes (De Gruyter, DOI: [10.1515/9783110640632](https://doi.org/10.1515/9783110640632), [10.1515/9783110989380](https://doi.org/10.1515/9783110989380)).

#### PUBLICATIONS ON PEER-REVIEWED INTERNATIONAL JOURNALS

1. SUPERCAPACITORS BASED ON NANOSTRUCTURED CARBON ELECTRODES GROWN BY CLUSTER BEAM DEPOSITION. L. Diederich, E. Barborini, P. Piseri, A. Podestà, P. Milani, A. Schneuwly, and R. Gallay, *Applied Physics Letters*, **75**, 2662 (1999). DOI: [10.1063/1.125111](https://doi.org/10.1063/1.125111). E-ISSN: 1077-3118.
2. CLUSTER BEAM MICROFABRICATION OF PATTERNS OF 3D NANOSTRUCTURED OBJECTS, E. Barborini, P. Piseri, A. Podestà, P. Milani, *Applied Physics Letters* **77**, 1059 (2000). DOI: [10.1063/1.1289040](https://doi.org/10.1063/1.1289040). E-ISSN: 1077-3118.
3. HIGHLY ORDERED GROWTH OF  $\alpha$ -QUATERTHIOPHENE FILMS BY SEEDED SUPERSONIC MOLECULAR BEAM DEPOSITION: A MORPHOLOGICAL STUDY. A. Podestà, T. Toccoli, P. Milani, A. Boschetti and S. Iannotta, *Surface Science* **464**, L673 (2000). DOI: [10.1016/S0039-6028\(00\)00685-3](https://doi.org/10.1016/S0039-6028(00)00685-3). ISSN: 0039-6028.
4. CLUSTER ASSEMBLING OF NANOSTRUCTURED CARBON FILMS, P. Milani, A. Podestà, P. Piseri, E. Barborini, C. Lenardi, C. Castelnovo, *Diamond and Related Materials*, **10** (2), 240 (2001). DOI: [10.1016/S0925-9635\(00\)00474-X](https://doi.org/10.1016/S0925-9635(00)00474-X). ISSN: 0925-9635.
5. CLUSTER BEAM SYNTHESIS OF NANOSTRUCTURED THIN FILMS, P. Milani, P. Piseri, E. Barborini, A. Podestà, C. Lenardi, *Journal of Vacuum Science and Technology A* **19**(4), 2025 (2001). DOI: [10.1116/1.1331289](https://doi.org/10.1116/1.1331289). E-ISSN: 1520-8559.
6. PRODUCTION AND CHARACTERIZATION OF HIGHLY INTENSE AND COLLIMATED CLUSTER BEAMS BY INERTIAL FOCUSING IN SUPERSONIC EXPANSIONS, P. Piseri, A. Podestà, E. Barborini, P. Milani, *Review of Scientific Instruments* **72**, 2261 (2001). DOI: [10.1063/1.1361082](https://doi.org/10.1063/1.1361082). E-ISSN: 1089-7623.
7. ACOUSTIC PHONON PROPAGATION AND ELASTIC PROPERTIES OF CLUSTER ASSEMBLED CARBON FILMS INVESTIGATED BY BRILLOUIN LIGHT SCATTERING, C.S. Casari, A. Li Bassi and C.E. Bottani, E. Barborini, P. Piseri, A. Podestà and P. Milani, *Physical Review B* **64**, 085417 (2001). DOI: [10.1103/PhysRevB.64.085417](https://doi.org/10.1103/PhysRevB.64.085417). e-ISSN: 1550-235X.
8. FRACTAL ANALYSIS OF SAMPLED PROFILES: SYSTEMATIC STUDY, C. Castelnovo, A. Podestà, P. Piseri, P. Milani, *Physical Review E* **65**, 021601 (2002). DOI: [10.1103/PhysRevE.65.021601](https://doi.org/10.1103/PhysRevE.65.021601). e-ISSN: 1550-2376.
9. GENERATION OF THE LOW-DENSITY LIQUID PHASE OF CARBON BY NON-THERMAL MELTING OF FULLERITE, A. Cavalleri, K. Sokolowski-Tinten, D. von der Linde, I. Spagnolatti, M. Bernasconi G. Benedek, A. Podestà and P. Milani, *Europhysics Letters* **57**, 281 (2002). DOI: [10.1209/EPL/i2002-00573-x](https://doi.org/10.1209/EPL/i2002-00573-x). ISSN: 1286-4854.
10. SiC FILMS GROWTH ON Si(111) BY SUPERSONIC BEAMS OF C<sub>60</sub>, R. Verucchi, L. Aversa, G. Ciullo, A. Podestà, P. Milani and S. Iannotta, *European Physical Journal B* **26**, 509 (2002). DOI: [10.1140/epjb/e20020120](https://doi.org/10.1140/epjb/e20020120). E-ISSN: 1434-6036.
11. NANO-TRIBOLOGICAL CHARACTERIZATION OF INDUSTRIAL POLYTETRAFLUORETHYLENE-BASED COATINGS BY ATOMIC FORCE MICROSCOPY, A. Podestà, G. Fantoni, P. Milani, C. Guida, S. Volponi, *Thin Solid Films* **419**, 154 (2002). DOI: [10.1016/S0040-6090\(02\)00778-2](https://doi.org/10.1016/S0040-6090(02)00778-2). ISSN: 0040-6090.
12. NANOFRICTION BEHAVIOR OF CLUSTER-ASSEMBLED CARBON FILMS, A. Podestà, G. Fantoni, P. Milani, M. Ragazzi, D. Donadio, L. Colombo, *Journal of Nanoscience and Nanotechnology* **2**(6), 637 (2002). DOI: [10.1166/jnn.2002.149](https://doi.org/10.1166/jnn.2002.149). e-ISSN: 1533-4899.
13. DYNAMIC LIGHT SCATTERING FROM ACOUSTIC MODES IN SINGLE-WALLED CARBON NANOTUBES, C.E. Bottani, A. Li Bassi, M.G. Beghi, A. Podestà, P. Milani, A. Zakhidov, R. Baughman, D.A. Walters and R.E. Smalley, *Physical Review B* **67**, 155407 (2003). DOI: [10.1103/PhysRevB.67.155407](https://doi.org/10.1103/PhysRevB.67.155407). e-ISSN: 1550-235X.
14. INELASTIC LIGHT SCATTERING FROM MAGNETICALLY ALIGNED SINGLE-WALLED CARBON NANOTUBES AND ESTIMATE OF THEIR TWO-DIMENSIONAL YOUNG'S MODULUS, A. Li Bassi, M.G. Beghi, C.S. Casari, C.E. Bottani, A. Podestà, P. Milani, A. Zakhidov, R. Baughman, D.A. Walters, R.E. Smalley, *Diamond and Related Materials* **12**, 806 (2003). DOI: [10.1016/S0925-9635\(02\)00227-3](https://doi.org/10.1016/S0925-9635(02)00227-3). ISSN: 0925-9635.
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116. FERRITIN AT DIFFERENT IRON LOADING: FROM BIOLOGICAL TO NANOTECHNOLOGICAL APPLICATIONS, C. Ricci, G. Abbandonato, M. Giannangeli, A. Podestà, A. Caselli, E. Del Favero, A. Moroni, *Int. J. Biol. Macromolecules* **276**, 133812 (2024). DOI: [10.1016/j.ijbiomac.2024.133812](https://doi.org/10.1016/j.ijbiomac.2024.133812).
117. INFLUENCE OF ZINC OXIDE NANOPARTICLES ON THE CARBON ACCUMULATION ON SILVER EXPOSED TO CARBON DIOXIDE HYDROGENATION REACTION CONDITIONS. P.M. Leiding, M. Panighel, V.L. Sushkevich, P. Piseri, A. Podestà, J.A. van Bokhoven, L. Artiglia. *Nanoscale*, **17**, 2608-2615 (2025). DOI: [10.1039/D4NR03766A](https://doi.org/10.1039/D4NR03766A).
118. PROTEOMIC LANDSCAPE OF DECELLULARIZED BREAST CARCINOMAS IDENTIFIES C-TYPE LECTIN DOMAIN FAMILY 3 MEMBER A AS A DRIVER OF CANCER AGGRESSIVENESS" by T. Triulzi, M. Giussani, E. Maffioli, V. Regondi, E. Lorenc, V. Arlotta, F. Bianchi, S. Pozzi, M. Varricchio, V. Cancila, C. Valenti, M. Sandri, A. Podestà, L. Sfondrini, G. Vozzi, G. Tedeschi, S. Pupa, E. Tagliabue, *Breast Cancer* **11**, 51 (2025). DOI: [10.1038/s41523-025-00769-0](https://doi.org/10.1038/s41523-025-00769-0).
119. INDENTING MULTI-CELLULAR SPHEROIDS WITH VARIOUS CANTILEVER TIP GEOMETRY, K. Gnanachandran, E. Lorenc, A. Podestà, M. Lekka. *European Biophysics J.* DOI: [10.1007/s00249-026-01838-3](https://doi.org/10.1007/s00249-026-01838-3). *bioRxiv* DOI: [10.1101/2025.07.05.663257](https://doi.org/10.1101/2025.07.05.663257).
120. VALIDATION OF CONTACT MECHANICS MODELS FOR ATOMIC FORCE MICROSCOPY VIA FINITE ELEMENTS ANALYSIS. L. Dal Fabbro, H. Holuigue, M. Chighizola, A. Podestà. *Nanoscale* (2026). DOI: [10.1039/D5NR05344G](https://doi.org/10.1039/D5NR05344G). *arXiv: 2406.17157*.
121. LIPID SATURATION AND CHOLESTEROL DRIVE THE MECHANICAL RESPONSE OF LIPID BILAYER TO IONIC LIQUID: AN ATOMIC FORCE MICROSCOPY STUDY. A. Yedelkina, B. Rodriguez, A. Podestà, A. Benedetto, *Langmuir* **42**, 8405-8415 (2026). DOI: [10.1021/acs.langmuir.5c06231](https://doi.org/10.1021/acs.langmuir.5c06231).

## REVIEW PAPERS AND BOOK CHAPTERS

1. SUPERSONIC CLUSTER BEAM SYNTHESIS OF NANOSTRUCTURED MATERIALS, P. Milani, P. Piseri, E. Barborini, L. Diederich, A. Podestà, S. Iannotta, METASTABLE, MECHANICALLY ALLOYED AND NANOCRYSTALLINE MATERIALS, pts 1&2, Book Series: *Materials Science Forum* **343-3**, 519-524 (2000). DOI: [10.4028/www.scientific.net/MSF.343-346.519](https://doi.org/10.4028/www.scientific.net/MSF.343-346.519). ISSN: 1662-9752.
2. CLUSTER ASSEMBLING OF NANOSTRUCTURED CARBON, P. Milani, P. Piseri, E. Barborini, C. Lenardi, C. Castelnovo, A. Podestà, in *Nanostructured Carbon for Advanced Applications*, NATO Science Series, II Mathematics, Physics and Chemistry - Vol **24**, 53-70, Kluwer Academic Publishers, Dordrecht / Boston / London, (2001). ISBN 978-94-010-0858-7. Invited paper.
3. CLUSTER-ASSEMBLED NANOSTRUCTURED CARBON, P. Milani, A. Podestà, E. Barborini, in the *Encyclopedia of Nanoscience and Nanotechnology*, edited by H.S. Nalwa, American Scientific Publishers (2004), vol. 2, 1-26. ISBN: 1-58883-001-2, 1-58883-159-0. Invited paper.
4. SCANNING PROBE MICROSCOPES, A. Podestà, in: *Characterization Procedures of Nanomaterials, Nanobiotechnology Online Postgraduate Course*, pp. 53-96, Technische Universität Kaiserslautern (2004). Invited contribution.
5. ELECTRONIC PROPERTIES AND APPLICATIONS OF CLUSTER-ASSEMBLED CARBON FILMS, G. Bongiorno, A. Podestà, L. Ravagnan, P. Piseri, P. Milani, C. Lenardi, S. Miglio, M. Bruzzi, C. Ducati, *Journal of Material Science: Materials in Electronics*, **17**, 427 (2006). DOI: [10.1007/s10854-006-8089-4](https://doi.org/10.1007/s10854-006-8089-4). E-ISSN: 1573-482X. Invited paper.
6. SURFACE ANALYSIS USING DYNAMIC AFM, A. Podestà, in *Encyclopedia of Tribology*, section "Surface topography analysis", pp. 3411-3418. Q. Jane Wang and Yip-Wah Chung editors, ISBN: 978-0-387-92896-8 (Print) 978-0-387-92897-5 (Online), Springer 2013. DOI: [10.1007/978-0-387-92897-5\\_324](https://doi.org/10.1007/978-0-387-92897-5_324). Invited chapter.
7. CLUSTER-ASSEMBLED CARBON THIN FILMS, Luca Giacomo Bettini, Massimiliano Galluzzi, A. Podestà, P. Piseri, P. Milani, to *Springer Handbook of Surface Science* 2017, in press. Invited chapter (Hot Topic). DOI: [10.1007/978-3-030-46906-1](https://doi.org/10.1007/978-3-030-46906-1).

8. CLUSTER-ASSEMBLED MATERIALS: FROM FABRICATION TO FUNCTION, F Borghi, A Podestà, M Di Vece, C Piazzoni, and P Milani, in *Encyclopedia of Interfacial Chemistry: Surface Science and Electrochemistry*, vol. 3, 417-427. Elsevier 2018. Invited chapter. (also in *Reference Module in Chemistry, Molecular Sciences and Chemical Engineering* 2017, DOI: [10.1016/B978-0-12-409547-2.12935-X](https://doi.org/10.1016/B978-0-12-409547-2.12935-X)).
9. IONIC LIQUIDS UNDER NANOSCALE CONFINEMENT. F. Borghi, A. Podestà. *Adv. Phys. X.* **5**, 1736949 (2020). *Invited review*. DOI: [10.1080/23746149.2020.1736949](https://doi.org/10.1080/23746149.2020.1736949).
10. BLISTERING AT THE SOLID-LIQUID INTERFACE: THE GRAPHITE CASE-STUDY. G. Bussetti, R. Yivlialin, F. Ciccacci, L. Duò, A. Podestà. Bussetti, G., Yivlialin, R., Ciccacci, F., Duò, L., Podestà, A. (2024). In: Wandelt, K., Bussetti, G. (eds.), *Encyclopedia of Solid-Liquid Interfaces*, pp 380-390. Elsevier. ISBN: 9780323856690. Invited chapter. DOI: [10.1016/B978-0-323-85669-0.00063-5](https://doi.org/10.1016/B978-0-323-85669-0.00063-5).
11. MECHANICS OF CELLS AND TISSUES IN DISEASES. Edited by: M. Lekka, D. Navajas, M. Radmacher, A. Podestà. Berlin, Boston: De Gruyter, 2023. Vol. 1: Biomedical Methods (DOI: [10.1515/9783110640632](https://doi.org/10.1515/9783110640632)). Vol. 2: Biomedical Applications (DOI: [10.1515/9783110989380](https://doi.org/10.1515/9783110989380)). Invited book.

## Organization, management and coordination (participation) of national and international research centers or groups

Since 2023, AP is the scientific leader of the scanning probe microscopy research group at the Department of Physics at UNIMI.

From 1998 to 2023, AP has been a member of the Molecular Beams and Nanocrystalline Materials Laboratory and, subsequently, of the Interdisciplinary Center for Nanostructured Materials and Interfaces (CIMAINA) at UNIMI. AP helped founding, developed and led the CIMAINA AFM laboratory until 2023.

From 2019 to 2022, AP was the coordinator of the European research and training MSCA-ITN network [Phys2BioMed](#).

AP has participated in several national and international research groups, with responsibility for organizing and coordinating specific research activities, within the framework of the following funded projects:

- |           |  |
|-----------|--|
| 2002-2006 | EU FP5 GROWTH, G5RD-CT-2002-00705 (Unione Europea), 15/05/2002 - 14/05/2006, “Nanostructured coatings via environmentally friendly deposition techniques for demanding tribological applications - NANOCOAT”. <b>Task leader in Work Package</b> (nanoscale morphological and tribological characterization).  |
| 2005-2010 | EU FP6-NMP3 Integrated Project n. 515840 (Unione Europea), 01/09/2005 - 28/02/2010, “Fullerene-based Opportunities for Robust Engineering: Making Optimised Surfaces for Tribology - FOREMOST”. <b>Task leader in Work Package</b> (nanoscale morphological and tribological characterization).  |
| 2010-2011 | International Joint Project - 2009/R2 e-GAP2 n. 36498 (Royal Society UK) “Room-temperature ionic liquid thin films on crystal surfaces”. <b>Task leader in Work Package</b> (Morphological and nanomechanical analysis of ionic liquids).  |
| 2010-2014 | EU BMBS Action COST TD1002 (Unione Europea), 13/12/2010 - 12/12/2014, “European network on applications of Atomic Force Microscopy to NanoMedicine and Life Sciences (AFM4NanoMed&Bio)”. <b>Substitute member in Management Committee; leader of scientific dissemination and communication activities.</b>  |
| 2012-2014 | Accordo di collaborazione Regione Autonoma della Sardegna - Regione Lombardia del 16/01/2010, progetto n. 26599138, “Elettronica Deformabile per Applicazioni Biomediche - ELDABI”. <b>Task leader in Work Package</b> (Morphological and nanomechanical analysis of nanocomposite elastomers).  |
| 2016-2021 | EU ERC 2015 Adv.Grants n. 695078 (Unione Europea), 01/09/2016 - 31/08/2021, “Non-invasive manipulation of gating in ion channels - noMAGIC”, coordinato da prof.ssa A. Moroni, UNIMI. <b>Task leader in Work Package</b> (Nanoscale characterization of biomembranes and proteins by atomic force microscopy).   |
| 2018-2022 | EU H2020-FETOPEN-01-2016-2017 n. 801126 (Unione Europea), “Novel precision technological platforms to promote non-invasive early diagnosis, eradication and prevention of cancer relapse: proof of concept in the bladder carcinoma - EDIT”. <b>Task leader in Work Package</b> (Nanomechanical analysis of murine tissues using atomic force microscopy). |

2021-2026	H2020-INFRAIA-03-2020 n. 101007417 (Unione Europea), “NEP, Nanoscience Foundries and Fine Analysis - Europe Pilot”. <b>Task leader in Work Package</b> (atomic force microscopy techniques applied to the study of nanoscale systems).
2023 - 2026	PNRR n. IR0000015 - CUP B53C22004310006, “NFFA-DI - Nano Foundries and Fine Analysis Digital Infrastructure”. <b>Responsible for AFM characterization activities for the UNIMI-Physics node.</b>

#### Competitive funding obtained as project coordinator or research unit leader

2006-2010	EU FP6-MOBILITY-1.1 n. 35589 (Unione Europea), 01/11/2006 - 31/10/2010, Marie Curie Research Training Network, “Characterisations of wear mechanisms and surface functionalities with regard to lifetime prediction and quality criteria - from micro to the nano range - WEMESURF”. <b>Co-leader of research unit (UNIMI).</b>
2008-2011	Fondazione Cariplo - Materials Science #2007.5758, 01/05/2008 - 31/01/2011, “Studio dell’interazione di liquidi ionici con superfici di materiali nanostrutturati”. <b>Coordinator of the project.</b>
2009-2012	EU FP7-NMP-2008-CSA-2 n. 233473 (Unione Europea), 01/03/2009 - 31/10/2011, “Nanosciences Live in Science Centres and Museums (NanoToTouch)”. <b>Leader of research unit (UNIMI).</b>
2019-2022	EU MSCA-ITN-2018 n.812772 (Unione Europea), “Biomechanics in health and disease: advanced physical tools for innovative early diagnosis - Phys2BioMed”. <b>Coordinator of the project.</b>
2023-2025	International Exchanges (IES) 2022 Round 3, n. 223128 (Royal Society, UK), “Advanced microscopy techniques for cancer-associated microbiome markers in breast cancer”. <b>Leader of research unit (UNIMI).</b>
2023-2025	PRIN 2022 n. 2022KRWA7Y (Ministero dell’Università e della Ricerca), “Impact of chromatin organization on nuclear stiffness and cell migration”. <b>Leader of research unit (UNIMI).</b>

#### Research contracts

2007	Commissioned Research Contract UNIMI/CIMAINA-STMicroelectronics 2007, durata 12 mesi (Marzo 2007 - Febbraio 2008), “Caratterizzazione mediante microscopia a forza atomica di film calcogenuri per la realizzazione di sistemi di memoria”. Scientific coordinator.
2007	Contratto di consulenza per servizi di caratterizzazione Tethis srl - UNIMI/CIMAINA (durata 2 mesi). Scientific coordinator.
2008	Contratto di consulenza per servizi di caratterizzazione Tethis srl - UNIMI/CIMAINA (durata 12 mesi). Scientific coordinator.
2014	Commissioned Research Contract UNIMI/CIMAINA-RSE #6803, 2014 (CIG. ZAD0DE9382), “Caratterizzazione morfologica mediante Atomic Force Microscope (AFM) di coating nanostrutturati per applicazioni di antiriflesso e anti soiling” (durata 2 mesi). Scientific coordinator.
2020	Commissioned Research Contract UNIMI/CIMAINA-RSE #3047460, 2020, “Misure di spettroscopia elettronica di fotoemissione XPS e di microscopia a forza atomica AFM” (durata 12 mesi). Co-Scientific coordinator.
2021	Commissioned Research Contract UNIMI/CIMAINA-RSE #13828, 2021 (CIG n. ZB6331DE3B). “Esecuzione di misure morfologiche e meccaniche con microscopio a forza atomica (AFM) su coating e superfici con proprietà antighiaccio” (durata 6 mesi). Scientific coordinator.
2023	Commissioned Research Contract UNIMI/Istituto Nazionale dei Tumori di Milano (CIG ZE43CAOCCF). Misure nanomeccaniche di matrici extracellulari (durata 18 mesi). Scientific coordinator.

#### Scientific supervision of young researchers

1.	2010-2011 Marco Indrieri. “Caratterizzazione di rivestimenti sottili di liquido ionico su superfici di interesse applicativo mediante microscopia a forza atomica”. Post-doc Assegno di Ricerca (AR-B, AR-A) at UNIMI.
2.	2016-2020 Francesca Borghi. “Studio di interazioni cellulari e biomolecolari mediante tecniche di microscopia a scansione di sonda”. Post-doc Assegno di Ricerca (AR-B, AR-A) at UNIMI.
3.	2021-2024 Matteo Chighizola. “Misure nanomeccaniche mediante microscopia a forza atomica in cellule e tessuti”. Post-doc Assegno di Ricerca (AR-B, AR-A) at UNIMI.
4.	2023-2024 H. Holuigue. “Studio dell’influenza del microambiente su cellule sane e tumorali mediante spettroscopia di forza di adesione”. Post-doc Assegno di Ricerca (AR-B) at UNIMI.

5. 2024-2025 H. Zaka Gendi. "Studying tandem Germanium quantum dot - 2D material thin film solar cells with conductive atomic force microscopy". Role: co-supervisor. Within project MAECI: GRANTS FOR FOREIGN AND ITALIAN CITIZENS LIVING ABROAD AWARDED BY THE ITALIAN GOVERNMENT, 2023-2024.
6. 2025 Supervisor of PhD student Marketa Kyrova (Univ. di Brno, Repubblica Ceca) during Erasmus+ Traineeship (Novembre 2025).

#### Editorial activities

- Dal 2016, AP è membro dell'Editorial Board della rivista Scientific Reports (Springer Nature).
- Co-editor of a monographic book in two volumes published by De Gruyter: MECHANICS OF CELLS AND TISSUES IN DISEASES. Edited by: M. Lekka, D. Navajas, M. Radmacher, A. Podestà. Berlin, Boston: De Gruyter, 2023. Vol. 1: Biomedical Methods (DOI: [10.1515/9783110640632](https://doi.org/10.1515/9783110640632)). Vol. 2: Biomedical Applications (DOI: [10.1515/9783110989380](https://doi.org/10.1515/9783110989380)).

#### Organizational roles in scientific events

1. Co-organizer workshop: "Microscopia a Forza Atomica e Nanomanipolazione: recenti sviluppi e applicazioni", Dept. Physics, UNIMI, Milano, 24 Marzo 2003.
2. Co-chairman session "Gas Phase Nanoparticles II", congress IVC-16/ICSS-12/NANO-8/AIV-17, Venezia 28/06-02/07/2004.
3. Co-organizer e co-chairman session "Interfacial properties" within Symposium "Ionic Liquids: from knowledge to application", National Meeting of the American Chemical Society (Philadelphia, Agosto 2008).
4. Organizer seminar series "Investigation of nanostructured systems and interfaces: from scanning probe techniques to numerical simulations", Dip. di Fisica/CIMAINA, Università degli Studi di Milano, 19/01-01/02/2012.
5. Coordinator of the educational activities for EU COST Action TD1002 AFM4NanoMed&Bio, 2010-2014;
6. Co-organizer of the Workshop on Education of the EU COST Action TD1002 AFM4NanoMed&Bio, April 2013, Camogli (Genova, Italy).
7. Co-organizer of the Training School 2013 of the COST Action TD0906: "AFM in Biology. A focus on marine biology", 16-19/04/2013 Genova, Italy.
8. Chairman of session "Biolmaging" of congress "AFM BioMed", Cracovia, Polonia, 4-8 Settembre 2017.
9. Co-organizer workshop: "Drive AFM: Innovations and Future Trends in AFM Applications", at Dept. of Biosciences UNIMI, Milano, 20 Giugno 2023.
10. Co-organizer workshop "Biological physics at the nano and mesoscale: from molecules to living cells", FisMat2025, Università Ca' Foscari di Venezia, 7-11 July 2025.

## Scientific collaborations

- Coordinator of the European MSCA-ITN network Phys2BioMed ([www.phys2biomed.eu](http://www.phys2biomed.eu)). Collaborations among members are still active.
- Carsten Schulte, University of Strathclyde, Glasgow (UK). Meccanobiology, mechanotransduction.
- Alex Costa, Dept. Biosciences, UNIMI; F. Orsini, Dept. Physics, UNIMI. Plant mechanosensing.
- L. Bussetti, Politecnico of Milan. Nanomaterials for electrochemical applications.
- M. Gariboldi, L. Varinelli, IRCCS Ist. Nazionale dei Tumori, Milan - Mechanobiology in cancer.
- V. Broccoli, A. Di Pizio, San Raffaele Hospital - Mechanobiology in Friedreich Atassia.
- A. Bachi, IFOM. - Mechanobiology in cancer
- I. Mela, Dept Chem. Eng. and Biotechnol., Univ. Cambridge. - Correlative AFM for the study of bacterial infection in cancer
- M. Bianchi, A. Agresti, Uni Vita-Salute San Raffaele Hospital, Milan - Chromatin remodeling and cellular mechanics.
- A. Moroni, Dept. Biosciences, UNIMI. Biomembranes and membrane ion channels..
- V. Rondelli, Dept. Medical Biotechnol. and Translational Med., UNIMI. Biophysical properties of biomembranes.
- Tomas Plichta, M. Kirova Uni BRNO, Chekia. Bacterial cells mechanobiology.
- A. Benedetto, University College Dublin (UK). Biomembranes and ionic liquids.
- A. Caselli, Dept. Chemistry, UNIMI. Ionic liquids and lipid membranes.
- M. Lekka, IFJPAN, Krakow. Mechanobiology of cells and tissues.
- M. Alfano, San Raffaele Hospital. Mechanobiology in cancer.

## Awards for research activity

- 2001 Award for "Young Scientific Authors" and "Innovative Content" for the poster "A Morphological Study of Nanostructured Carbon Films Grown by Supersonic Cluster Beam Deposition," INFMeeting, Rome, June 18-22, 2001.
- 2002 Scholarship to participate in the Advanced Training Course in Nanoscience "New Research Opportunities in Biomolecular Physics and Nanobiotechnology" at the NEST-INFN Center, Scuola Normale Superiore di Pisa, September 2002, including participation in the American Physical Society Congress: "Opportunities in Biology for Physicists," Boston, September 27-29, 2002.
- 2006 "L. Tartufari" Prize for Physics awarded by the Accademia Nazionale dei Lincei, 2006 to members of the Molecular Beams and Nanocrystalline Materials Laboratory (LGM) of the Dept of Physics, UNIMI (co-beneficiary).
- 2010 Award (ex aequo) for the best poster, International Meeting on AFM in Life Sciences and Medicine (AFMBIOMED), May 12-15, 2010, Red Island, Croatia.

## Oral contributions to international congresses

### Invited talks

- 1) "Morphological and tribological characterization of nanostructured materials with the atomic force microscope", Italian User Meeting di Digital Instruments/Veeco, Roma, Italy, 22 Maggio 2001.
- 2) "AFM as a tool to characterize and manipulate the surface of nanostructured materials". Workshop: "Microscopia a Forza Atomica e Nanomanipolazione: recenti sviluppi e applicazioni", Dip. di Fisica, Università degli Studi di Milano, Milano, Italy, 24 Marzo 2003.
- 3) "Misure di attrito su scala sub-micrometrica e modificazione superficiale con il microscopio a forza atomica". Workshop: "Proprietà tribologiche di superfici e ricoprimenti", presso centro INFN-S3 di Modena, Italy, 19 Settembre 2003.
- 4) "Atomic Force Microscopy: a powerful tool for the study of biological systems at the single-molecule level", Dip. di Scienze Biomolecolari e Biotecnologie, Università degli Studi di Milano, Milano, Italy, 25 Nov. 2005.
- 5) "Studying conformational properties and elasticity of DNA on charged surfaces by AFM". Italian User Meeting of Veeco Instruments, Milano, Italy, 15 Maggio 2007.
- 6) "Micro and nano -scale characterization of friction at interfaces", presso STMicroelectronics, Agrate Brianza (MI), Italy. 27 Marzo 2007.
- 7) "Cluster-assembled nanostructured materials with tailored morphology and wettability". Dipartimento di Fisica, Università degli Studi di Padova, Padova, Italy, 04/02/2010.
- 8) "One year of scientific research and communication in the public place. The OpenNanoLab @ "Leonardo da Vinci" museum in Milano, Italy". EuroNanoForum 2011, NanoToTouch project Workshop, Budapest, May 31st 2011.

- 9) "Investigation of nanoscale interfacial properties of thin films by Atomic Force Microscopy. A case study: Ionic Liquids nanostructures supported on solid surfaces". Dip. di Matematica e Fisica, Università Cattolica del Sacro Cuore, Brescia, Italy, 4/11/2011.
- 10) "Investigation of nanoscale interfacial properties of thin films by Atomic Force Microscopy. A case study: Ionic Liquids nanostructures supported on solid surfaces". Workshop Bruker, Università degli Studi di Milano, Milano, Italy, 22/11/2011.
- 11) "Electrical characterization of supported ionic liquid nanostructures and future directions". Workshop "A Day with Ionic Liquids", Dip. di Fisica, Università degli Studi di Milano, 24/01/2012.
- 12) "Interfacial properties of ionic liquids investigated by atomic force microscopy", StSPM-2013 workshop, ISMN-CNR Bologna, Italy, 12-13/12/2013.
- 13) "Morphological properties of cluster-assembled nanostructured TiO<sub>2</sub> films", Cluster Surface Interaction (CSI) 2014, Gazzada, Italy, 2-4/06/2014.
- 14) "Combined topographic and mechanical imaging of live cells and biomaterials by AFM using colloidal probes", 1<sup>o</sup> Bruker AFMeeting 2015, Milano 24-25/02/2015.
- 15) "Nanomechanical and Topographical Imaging of Living Cells, ECMs and Tissues: a Promising Tool for the Early Diagnostics of Cancer and Inflammatory Diseases", NanotechItaly2015, 25-27/11/2015.
- 16) "The interaction of room-temperature ionic liquids with cells and model biological membranes: Investigating the basic mechanisms of ILs cytotoxicity", AFMBioMed 2017, Krakow, Poland, 10-15/09/2017.
- 17) "Nanomechanical and topographical imaging of living cells, ECMs and tissues: a promising tool for the early diagnosis of cancer and inflammatory diseases". SSFM COLLOQUIA 2018. Dipartimento di Fisica, Università degli Studi di Milano, 20 Settembre 2018, Milano, Italy.
- 18) "The interaction of room-temperature ionic liquids (ILs) with cells and model biological membranes: investigating the basic mechanisms of ILs cytotoxicity". Asylum AFM Workshop, CNR Congress Center, February 7th, 2019, Bologna, Italy.
- 19) "Studying mechanical and adhesive interactions in biological systems with the atomic force microscope". Università degli Studi Roma Tre, 05/07/2022 (online).
- 20) "Nanoscale investigation of systems and interfaces by atomic force microscopy". Congresso di Dipartimento della Sezione di Struttura della Materia, Febbraio 2023, Dip. di Fisica, UNIMI.
- 21) "Studying Mechanical and Adhesive Properties of Cells and Tissues in Health and Disease by Atomic Force Microscopy". Conway Lecture & Seminar Series (CLASS), UCD Conway Institute. 28/11/2023.
- 22) "The mechanical and adhesive properties of cells and tissues in health and diseases investigated by atomic force microscopy". XXVII Congresso Nazionale SIBPA, Genova, 16-20 Giugno 2024.
- 23) "Nanoscale investigation of systems and interfaces by atomic force microscopy". NanoLab Talk, Politecnico di Milano, Department of Energy, Cesnef, 02 July 2024.
- 24) "Atomic Force Microscopy to study mechanical and adhesive properties of cells and their microenvironment". Joint ImAge-D/DeLiVeRy Consortium Meeting, Krakow, Poland, March 31 - April 4, 2025.
- 25) "Validation of contact mechanics models and data analysis approaches for nanoindentation measurements of soft samples", AFMBioMed 2025, Barcelona, Spain, 8-11/04/2025.
- 26) "Validation of contact mechanics models and data analysis approaches for nanoindentation measurements of soft and biological samples". NanoInnovation 2025, Roma, 14-18 Settembre 2025.
- 27) "Magnetic actuation of ferritin-functionalized micro-cantilevers". XIII Workshop on Applications of Scanning Probe Microscopy STM/AFM 2025, Zakopane, November 26-30, 2025, Polonia.
- 28) "Magnetic actuation of ferritin-functionalized micro-cantilevers: investigating the feasibility of magnetic ion channel gating". Conway Institute, University College Dublin, 9 Dicembre 2025. Dublino, Irlanda.
- 29) "Investigating the mechanical and adhesive properties of cells and tissues in health and disease using the atomic force microscope". iSPM 2026. May 26<sup>th</sup> - 29<sup>th</sup> 2026, Genoa, Italy.

#### Contributed talks

- 1) "Topographic and chemical nanoscale modification of PHEMA hydrogels for tissue engineering applications". IVC-16/ICSS-12/NANO-8/AIV-17, Venice, Italy, 28/06-02/07/2004.
- 2) "Quantitative Nanofriction characterization of corrugated surfaces by Atomic Force Microscopy". IVC-16/ICSS-12/NANO-8/AIV-17, Venice, Italy, 28/06-02/07/2004.
- 3) "Quantitative nanofriction characterization of corrugated surfaces by Atomic Force Microscopy". Ecos-24 - European conference on surface science, Paris, France, 4-8 Settembre 2006.
- 4) "Controlling the flexibility of DNA on surfaces using polyamines". Ecos-24 - European conference on surface science, Paris, France, 4-8 Settembre 2006.

- 5) "Quantitative nanofriction characterization of corrugated surfaces by Atomic Force Microscopy". 2nd Vienna International Conference on Micro- and Nano-Technology - VienNano07, Vienna, Austria, 14-16 Marzo 2007.
- 6) "Investigation of interfacial properties of supported [Bmim][NTf2] layers by Scanning Probe Microscopy". Symposium "Ionic Liquids: from knowledge to application", National Meeting of the American Chemical Society, Philadelphia, USA, 17-21 Agosto 2008.
- 7) "Study of nanoscale interactions on biocompatible cluster-assembled TiOx films", Workshop SPM-FUNC 2009, CNR-INFM, Modena, Italy, 10-12/12/2009.
- 8) "Investigation of interfacial properties of supported [Bmim][NTf2] layers by Scanning Probe Microscopy", TransAlpNano 2010, Como, Italy, 3-5 June 2010.
- 9) "The solid-like, dielectric behaviour of interfacial imidazolium-based ionic liquids supported on solid surfaces", EUPOC 2013 - POLYMERS & IONIC LIQUIDS, GARGNANO, ITALY, 1-5 Sept. 2013.
- 10) "Nanomechanical and topographical imaging of living cells by Atomic Force Microscopy with colloidal probes", AFMBioMed 2014, San Diego, USA, 14-17/12/2014.
- 11) "Nanostructured cluster-assembled titania thin films with controlled interfacial properties", Workshop "Condensed Matter Highlights", Dipartimento di Fisica, Università degli Studi di Milano, 24/09/2015.
- 12) "Studying the cell-microenvironment interactions by adhesive force spectroscopy with colloidal nanostructured probes", AFMBioMed 2019, Munster, Germany, 2-6/09/2019.
- 13) "Nanoscale investigation of systems and interfaces by atomic force microscopy". 4th Workshop "Condensed Matter Highlights", Dip di Fisica Aldo Pontremoli, Università degli Studi di Milano, Febbraio 2023.
- 14) "Nanoscale investigation of systems and interfaces by atomic force microscopy". 5th Workshop "Condensed Matter Highlights", Dip di Fisica Aldo Pontremoli, Università degli Studi di Milano, Febbraio 2025.

#### Evaluation activities in competitive selection processes

1. AP has reviewed research project proposals on behalf of the following funding agencies and research institutions: American Chemical Society - PRF, CNISM (Italy), MIUR-FIRB (Italy), MIUR-RLM (Italy), Università Italo-Francese (UIF), ANR - Agence Nationale de la Recherche (France), Sapienza University of Rome.
2. 2015-2021. Evaluation and selection of PhD candidates on behalf of the Luxembourg National Research Fund (FNR-AFR).
3. Since 2025. Member of the evaluation committee for the "INTER Mobility" funding program of the Luxembourg National Research Fund (FNR).
4. AP was a member of the evaluation committee for the selection of candidates for the position of Fixed-Term Researcher (Type B) at the Politecnico di Milano, announced by Directorial Decree no. 14/03/2016. 1159 of the notice published in the Official Journal of April 1, 2016, No. 26.
5. AP was chair of the evaluation committee for the selection of candidates for the position of Level I Technologist - Category EP - Economic Position EP3 (fixed-term) advertised at the Department of Physics of the University of Milan with Decision No. 16764/2018 of November 20, 2018 (code 19561).
6. AP was a member of the evaluation committee for the selection of candidates for the position of Type A Fixed-Term Researcher advertised at the Polytechnic University of Milan with Decree No. 4781 of July 9, 2020 (procedure code 2020\_RTDA\_DENG\_4).
7. AP was a member of the evaluation committee for the selection of candidates for the position of Fixed-Term Researcher of Type A at the Department of Physics of the University of Padua announced by Rectorial Decree no. 2508 of 23 July 2020, the notice of which was published in the Official Journal no. 59 of 31 July 2020 (selection procedure 2020RUA04).

## Management, organizational, service and third mission activities

### Institutional commitments

- 2008-2012 Member of the Teaching Board of the PhD program in Medical Nanotechnology at the European School of Molecular Medicine (SEMM).
- 2012-2014 Member of the evaluation and selection committees for the PhD program in Physics, Astrophysics, and Applied Physics at the University of Milan (XXV cycle) and for the PhD program in Medical Nanotechnology (European School of Molecular Medicine - SEMM, XXV and XXVII cycles).
- 2012-2024 Member of the Teaching Board of the PhD School in Physics, Astrophysics, and Applied Physics at the University of Milan. Since 2024, member of the Extended Teaching Board.
- 2018-2023 Member of the Working Group supporting the Director of the Department of Physics at the University of Milan for the allocation of teaching funds.

### Editorial and review activities

1. AP is reviewer for several international scientific journals (ACSNano, Advances in Physics X, Nature Communications, Scientific Reports; PlosONE, Langmuir, J. Phys. Chem. C, Applied Materials Interfaces, J. Applied Physics, J. Nanoparticle Research, J. Molecular Recognition, Acta Biomaterialia, UltraMicroscopy, Diamond and Related Materials, J Microscopy, Thin Solid Films, Sensors and Actuators A, Macromolecular Symposia, J Phys. D, J. BioMechanics, J. Mech. Behav. Biomed. Mat., J. Membrane Biology, Soft Matter, Small, Nanoscale Research Letters, Physical Biology, Meccanica).
2. Since 2016, AP has been a member of the Editorial Board of the journal Scientific Reports (Springer Nature).
3. AP was co-Editor of a two-volume monographic text published by De Gruyter: MECHANICS OF CELLS AND TISSUES IN DISEASES. Edited by: M. Lekka, D. Navajas, M. Radmacher, A. Podestà. Berlin, Boston: De Gruyter, 2023. Vol. 1: Biomedical Methods (DOI: [10.1515/9783110640632](https://doi.org/10.1515/9783110640632)). Vol. 2: Biomedical Applications (DOI: [10.1515/9783110989380](https://doi.org/10.1515/9783110989380)).
4. AP is member of the board of European project evaluators for MSCA calls.
5. AP has served as a reviewer for several doctoral theses of candidates from Italian universities (Politecnico di Milano, University of Padua, University of Modena and Reggio Emilia, University of Milan-Bicocca, Sapienza University of Rome, University of Rome 3) and foreign universities (IFJPN of Krakow, Poland; University of Barcelona, Spain).

### Third mission activities

AP is very active in scientific communication activities (see the Italian version of this CV for a comprehensive list).

Scientific communication activities have led to several publications in periodicals and magazines, as reported below.

1. INCONTRARE LA NANOSCENZA: UN LABORATORIO DI RICERCA ALL'INTERNO DI UN MUSEO, L.G. Bettini, S. Calcagnini, M. Xanthoudaki, P. Piseri, A. Podestà, Giornale di Fisica (SIF) 54, 157-169 (2013). DOI: [10.1393/gdf/i2013-10179-9](https://doi.org/10.1393/gdf/i2013-10179-9). E-ISSN: 1827-6156.
2. NANORICERCHE DA MUSEO, di M. Xanthoudaki e A. Podestà, pubblicato su Nova24, inserto di innovazione tecnologica de "il Sole 24 ORE", in data 04/03/2010, pag. 8.
3. LA RICERCA IN VETRINA, di A. Podestà e P. Piseri, Sistema Università, Notiziario trimestrale dell'Università degli Studi di Milano, Anno VIII, n. 31, pag. 7 (Marzo 2010).
4. AL MUSEO LA RICERCA DAL VIVO SULLE NANOTECNOLOGIE, P. Piseri e A. Podestà, pubblicato online su Scienzainrete nel Marzo 2010, URL: <http://www.scienzainrete.it/contenuto/articolo/Al-Museo-la-ricerca-dal-vivo-sulle-nanotecnologie> .
5. THE RISE OF NANOMECHANICAL BIOMARKERS: HOW CELL AND TISSUE MECHANICS CAN HELP MEDICINE? M. Eroles, C. Valotteau, A. Podestà, F. Rico. Project Repository Journal 19, 92-95 (2024). DOI: [10.54050/PRJ1921219](https://doi.org/10.54050/PRJ1921219).