



Luca Buccini

✉ Email address: luca.buccini@uniroma1.it

WORK EXPERIENCE

📍 *Sapienza University of Rome*

Students assistant

[19/02/2024 – 18/05/2024]

Tutor (welcome and integration service for foreign students) of “Electron microscopies and related techniques” course (PHYS-03/A)

Students assistant

[24/02/2025 – 30/05/2025]

Tutor (welcome and integration service for foreign students) of “Electron microscopies and related techniques” course (PHYS-03/A)

EDUCATION AND TRAINING

PhD in Mathematical Models for Engineering, Electromagnetism, and Nanosciences

Sapienza University of Rome, Department of Basic and Applied Sciences for Engineering (SBAI) [01/11/2022 – 31/10/2025]

“Advanced Nanocharacterization Techniques for studying chemical and physical properties”

of biological, polymeric, and semiconductor materials.

- **Atomic force microscopy** (Bimodal, Contact, Tapping, Nanomechanical and Kelvin probe measures)
- **Raman spectroscopy**
- **Tip-enhanced Raman spectroscopy**

Scanning Electron Microscopy (SEM): Basic operation, image analysis, and interpretation
Sample preparation for TEM and SEM, including fixation and coating.

M.Sc in Genomic, Industrial, and Environmental Biotechnology (LM-8)

Sapienza University of Rome, Department of Biology and Biotechnology “C. Darwin” [01/10/2020 – 17/10/2022]

Research topics: Nanotechnology, Electron Microscopy and Cell Biology

B.Sc in Biotechnology (L-2)

University of Tuscia, Department for Innovation in Biological, Agro-food and Forest systems (DIBAF) [01/10/2016 – 16/07/2020]

SCHOOLS

[03/06/2025 – 06/06/2025]

iENTRANCE to Research: The Young Scientist's Guide to The Galaxy

Ventotene, Italy

[28/01/2025 – 29/01/2025]

Demo-Workshop Nanosurf DriveAFM

Liestal, Switzerland

[12/02/2024 – 13/02/2024]

CHALLENGES 2nd Training School

CEA-Leti (Grenoble, France)

[12/06/2023 – 14/06/2023]

The VISPEC School on Vibrational Spectroscopy

University of Perugia (Perugia, Italy)

CONFERENCES AND SEMINARS

[07/07/2025 – 11/07/2025] Ca' Foscari University, Venezia, Italy

FisMat 2025

[26/05/2025 – 30/05/2025] Madrid, Spain

10th Multifrequency AFM Conference

[25/08/2024 – 30/08/2024] Copenhagen, Denmark

European Microscopy Congress 2024

[28/07/2024 – 02/08/2024] Rome, Italy

28th International Conference on Raman Spectroscopy – ICORS 2024

[21/06/2024 – 25/06/2024] Sondalo, Italy

Symposium on microscopic characterization of the solid/liquid interface

[07/11/2023 – 10/11/2023]

AIV XXVI Conference

[18/09/2023 – 22/09/2023] Rome, Italy

Nanoinnovation 2023

[12/06/2023 – 16/06/2023] Perugia, Italy

VISPEC School and Conference

[19/05/2023 – 20/05/2023] Rome, Italy

Biophysics@Rome 2023

PROJECTS

Advanced AFM nanocharacterisation of materials for energy transition

Granted by SAPIENZA University of Rome, call Avvio alla Ricerca 2024- Prot.AR12419074D377AA

Global cost: 1000 €. Role: Proposer and sole investigator

HONOURS AND AWARDS

Oxford Instruments Asylum Research Inc

1st Place: 2024 Asylum Research AFM Image Contest "The Sinkhole at Antelope Canyon" – Luca Buccini, Anacleto Proietti, Prof. Daniele Passeri and Prof. Marco Rossi – Department of Basic and Applied Sciences for Engineering, Sapienza University of Rome, Rome, Italy(https://www.linkedin.com/posts/asylum-research-an-oxford-instruments-company_afmimagecontest2024-atomicforcemicroscopy-activity-7227424108047671296-wK_L/)

CONFERENCE ORGANIZATION

[15/09/2025 – 19/10/2025]

Member Local Technical Organizing Committee of international conference Nanoinnovation 2025

(<https://www.nanoinnovation2025.eu/home/index.php/organization/committees/local-technical-organising-committee>)

[15/09/2025 – 19/09/2025]

Member of the Organization Board of the Featured Event 'YoungInnovation' at the international conference Nanoinnovation 2025

(<https://www.nanoinnovation2025.eu/home/index.php/featured-events/younginnovation>)

[09/09/2024 – 13/09/2024]

Member Local Technical Organizing Committee of international conference Nanoinnovation 2024

(<https://www.nanoinnovation2024.eu/home/index.php/organization/committees/local-technical-organising-committee>)

REVIEW ACTIVITY

Journal of Microscopy

John Wiley & Sons Ltd on behalf of Royal Microscopical Society

PUBLICATIONS

[2025]

A novel scalable method for the production of rennet-treated milk-derived extracellular vesicles for improved curcumin oral delivery

Authors: Emily Schifano*, Francesco Vari*, Luca Buccini*, Mariana Karimova, Kuanysh Syman, Diana Varnadyan, Daniela Uccelletti, Simone Dinarelli, Maurizio Zuccotti, Andrea Alfieri, Simona Sennato, Francesco Mura, Marco Rossi, Luciana Dini, Stefano Tacconi. | **Journal Name:** Journal of Nanobiotechnology

[2025]

Multidisciplinary characterization of fungi and cyanobacteria involved in biodeterioration of the Tomba delle Leonesse, Tarquinia, Italy

Authors: Matilde Kratter, Marzia Beccaccioli, Francesca Benedetti, Luca Buccini, Anacleto Proietti, Gianluca Zanellato, Maria Cristina Tomassetti, Marco Rossi, Luigi Faino, Massimo Reverberi, Katell Bathany, Beatrice Boccia, Nicoletta La Rocca, Teresa Rinaldi | **Journal Name:** International Biodeterioration & Biodegradation

[2025]

Precondensed Plasmid DNA Enhances CAR-T Cell Generation via Lipid Nanoparticles

Authors: Andrea Pirrottina, Serena Renzi, Luca Digiacomo, Francesca Giulimondi, Valentina De Lorenzi, Samuele Ghignoli, Luca Pesce, Francesco Cardarelli, Francesco Mura, Giacomo Parisi, Luca Buccini, Chiara Cassone, Alessandra Zingoni, Daniela Pozzi, Giulio Caracciolo | **Journal Name:** ACS Omega

[2025]

Multiscale characterization of laser-induced defects in the production of heterojunction photovoltaic cells

Authors: Anacleto Proietti*, Luca Buccini*, Pierfrancesco Atanasio, Chiara Mancini, Giancarlo La Penna, Corrado Di Conzo, Francesco Mura, Wajahat Khan, Marco Galiazzo, Nicola Frasson, Alessandra Querci, Daniele Passeri, Marco Rossi | **Journal Name:** Materials Today Physics

[2025]

Unveiling the differences: A comprehensive multi-technique analysis of hard and soft nanoparticles

Authors: Eleonora D'Intino, Domenico Chirico, Maria Gioia Fabiano, Luca Buccini, Daniele Passeri, Fabrizio Marra, Rossella Puglisi, Federica Rinaldi, Gianfranco Mattia, Maria Carafa, Carlotta Marianecchi | **Journal Name:** International Journal of Pharmaceutics

[2025]

Bioconsolidation strategies for carbonate lithologies: Effectiveness and mechanisms in calcarenite, travertine, and marble

Authors: Francesca Benedetti, Pierfrancesco Atanasio, Luca Buccini, Matilde Kratter, Francesco Mura, Daniele Passeri, Marco Rossi, Fabio Trippetta, Teresa Rinaldi | **Journal Name:** Science of The Total Environment

[2025]

High-Resolution and Surface-Sensitive Tip-Enhanced Raman Spectroscopy Characterization of Strained-Silicon Devices through Cleanroom-Compatible Plasmonic Probes

Authors: C. Mancini, A. Proietti, G. La Penna, L. Buccini, D. Passeri, N. Gambacorti, M. Rossi | **Journal Name:** Advanced Materials Interfaces

[2025]

Combined use of Raman spectroscopy, cluster analysis, and SEM-EDS for the characterization of Roman bronze artifacts from Spoletino's cistern (Civitella D'Agliano, VT)

Authors: Martina Bernabale, Marcello Spanu, Emanuela Borgia, Luca Buccini, Francesca Irene Barbaccia, Mara Elefante, Susanna Milana, Tilde de Caro, Daniele Passeri, Marco Rossi, Caterina De Vito | **Journal Name:** Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy

[2025]

Characterization of ultramarine blue in Roman wall paintings: case study from Volsinii (Bolsena, Italy)

Authors: Martina Bernabale, Anna Candida Felici, Pierfrancesco Atanasio, Luca Buccini, Daniele Passeri, Marco Rossi, Paolo Binaco & Danilo Dini | **Journal Name:** Analytical and Bioanalytical Chemistry

[2025]

Analytical methods for nanomaterials investigation in food and food-related materials

Authors: Passeri D, Atanasio P, Proietti A, Mancini C, Cognigni F, La Penna G, Buccini L, Rossi M, Turco A.C, D'Amato M, Sorbo A, Dinarelli S, D'Ettore G, Aureli F. | **Journal Name:** Applied Food Research

[2024]

Graphene Quantum Dots from Agricultural Wastes: Green Synthesis and Advanced Applications for Energy Storage

Authors: Atanasio, P., Zampiva, R. Y. S., Buccini, L., Di Conzo, C., Proietti, A., Mura, F., Aurora, A., Marrani, A. G., Passeri, D., Rossi, M., Pasquali, M., & Scaramuzza, F. A | **Journal Name:** Molecules

[2024]

Strained Silicon Technology: Non-Destructive High-Lateral-Resolution Characterization Through Tip-Enhanced Raman Spectroscopy

Authors: La Penna G, Mancini C, Proietti A, Buccini L, Passeri D, Gambacorti N, Richy G and Rossi M | **Journal Name:** Applied Spectroscopy

[2024]

Toward the nanoscale chemical and physical probing of Milk-Derived Extracellular Vesicles using Raman and Tip-Enhanced Raman Spectroscopy.

Authors: Buccini, L.*; Proietti, A*.; La Penna, G.; Mancini, C.; Mura, F.; Tacconi, S.; Dini, L.; Rossi, M.; Passeri, D | **Journal Name:** Nanoscale

[2023]

Upscaling of Electrospinning Technology and the Application of Functionalized PVDF-HFP@TiO₂ Electrospun Nanofibers for the Rapid Photocatalytic Deactivation of Bacteria on Advanced Face Masks

Authors: Cimini, A., Borgioni, A., Passarini, E., Mancini, C., Proietti, A., Buccini, L., Stornelli, E., Schifano, E., Dinarelli, S., Mura, F., Sergi, C., Bavasso, I., Cortese, B., Passeri, D., Imperi, E., Rinaldi, T., Picano, A., & Rossi, M. | **Journal Name:** Polymers

[2023]

Wild-Type and SOD1-G93A SH-SY5Y under Oxidative Stress: EVs Characterization and Topographical Distribution of Budding Vesicles

Authors: Sbarigia C, Dinarelli S, Mura F, Buccini L, Vari F, Passeri D, Rossi M, Tacconi S, Dini L | **Journal Name:** Applied Nano

[2022]

SARS-CoV-2 and extracellular vesicles: An intricate interplay in pathogenesis, diagnosis and treatment

Authors: Sbarigia C, Vardanyan D, Buccini L, Tacconi S and Dini L. | **Journal Name:** Frontiers in Nanotechnology

[2023]

Influence of the conductive coating on combined CPEM and Raman analysis

Authors: Mura F, Dinarelli S, Mancini C, Proietti A, Buccini L, Silvestri S, Passeri D and Rossi M | **Journal Name:** Journal of Physics: Conference Series (JPCS)

POSTERS

Multiscale characterization of laser-induced defects in the production of heterojunction photovoltaic cells

FisMat 2025 (Ca' Foscari University, Venezia, Italy)

Biorestitution Potential of Carbonatogenic Bacteria on Lithotypes: SEM and AFM characterization

European Microscopy Congress 2024 (Copenhagen, Denmark)

Raman and Tip-Enhanced Raman spectroscopy characterization of milk-derived extracellular vesicles: Toward nanoscale single vesicle analysis

International Conference on Raman Spectroscopy ICORS 2024 (Rome, Italy)

From AFM to TERS: Unveiling the Nanoscale Morphological and Chemical Composition of Bovine Milk-Derived Extracellular Vesicles

Symposium on microscopic characterization of the solid/liquid interface (Sondalo, Italy)

Atomic Force Microscopy Characterization of Extracellular Vesicles and Cellular Budding

Biophysics@Rome 2023 (Rome, Italy)

LANGUAGE SKILLS

Mother tongue(s): Italian

Other language(s): English

PERSONAL DETAILS

In compliance with the Italian Legislative Decree no. 196 dated 30/06/2003, I hereby authorize the recipient of this document to use and process my personal details for recruitment and selection purposes

Il sottoscritto dichiara di essere consapevole che il presente curriculum vitae sarà pubblicato sul sito istituzionale dell'ateneo, nella Sezione "Amministrazione trasparente", nelle modalità e per la durata prevista dal d.lgs. n. 33/2013, art. 15.

Roma, 02/11/2025

Luca Buccini