

Curriculum vitae di *Edoardo Albisetti*

Sottosettori ERC primari (max 3):

PE3_10 Nanophysics, e.g. nanoelectronics, nanophotonics, nanomagnetism, nanoelectromechanics

PE3_7 Spintronics

PE11_9 Nanomaterials engineering, e.g. nanoparticles, nanoporous materials, 1D, 2D nanomaterials

PERSONAL DETAILS

Family name, First name: Albisetti, Edoardo

Birthdate: 13 February 1987

Researcher unique identifier(s) (such as ORCID, Research ID, etc. ...):

Orcid: 0000-0002-8134-0482

ResearcherID: F-5374-2016

Google Scholar: FE50IfAAAAAJ

URL for web site:

phynd.polimi.it

www.researchgate.net/profile/Edoardo_Albisetti,

www.linkedin.com/in/edoardo-albisetti/

• Education and key qualifications

- 27/02/2014 PhD in “Physics” and in “Nanotechnology and innovative nano-structured materials”.
Department of Physics, Politecnico di Milano, Italy.
- 2010 Master of Science in Engineering Physics (110 cum laude/110)
Dipartimento di Fisica, Politecnico di Milano, Italy.

• Current position(s)

- 2023 – Currently Associate Professor, PI of PhyND research group
Department of Physics, Politecnico di Milano, Italy

• Previous position(s)

- 2019 – 2023 Assistant Professor (RTDA-RTDB).
Department of Physics, Politecnico di Milano, Italy.
- 2016 – 2019 Marie Skłodowska-Curie Post-doctoral Fellow – EU Horizon 2020.
CUNY Advanced Science Research Center, New York, USA &
Department of Physics, Politecnico di Milano, Milano, Italy.
- 2019 Visiting Researcher.
Tandon College of Engineering, NYU, New York, USA.
- 2014 Visiting Researcher.
Nanoscience Cooperative Research Center (CIC Nanogune), San Sebastian, Spain.
- 2013 Visiting Researcher.
Department of Physics, Georgia Institute of Technology, Atlanta, USA.

RESEARCH ACHIEVEMENTS AND PEER RECOGNITION

Research achievements

Total number of peer-reviewed publications: > 50; 21 as leading author (first, corresponding or last author), among which *Nature Nanotechnology* (cover article), *Nature Electronics*, *Nature Communications*, *Nature Reviews*, *Advanced Materials* (cover article). > 2000 citations, h-index 21 (Scopus, 5/26). I have been invited to publish **2 book chapters**: in “Three-dimensional magnonics, layered micro- and nano-structures”, Edited by Gianluca Gubbiotti, Publisher: *Pan Stanford Publishing* (2019). In the book “Nanofabrication” edited by Jose Maria de Teresa, Publisher: *IOP* (2020). Co-inventor in **4 patents**.

Below, 10 recent relevant publications as leading author.

V. Levati, ..., **E. Albisetti***, “Three-dimensional nanoscale control of magnetism in crystalline Yttrium Iron Garnet”, *Nature Communications* 16 (1), 9602 (2025); doi.org/10.1038/s41467-025-64630-5.

Demonstrates the direct 3D writing of the physical properties of complex magnetic oxides, achieving 3D control of functional properties.

D. Girardi, ..., **E. Albisetti***, “Three-dimensional spin-wave dynamics, localization and interference in a synthetic antiferromagnet”, *Nature Communications* 15 (1), 3057 (2024); doi.org/10.1038/s41467-024-47339-9.

Establishes a new paradigm based on synchrotron measurements for the imaging and control the dynamic magnetic properties and spin waves in 3D nanostructures.

V. Levati, ... **E. Albisetti***, “Phase Nanoengineering via Thermal Scanning Probe Lithography and Direct Laser Writing”, *Advanced Materials Technologies* 8, 2300166 (2023). doi.org/10.1002/admt.202300166. *Inside Front Cover page*.

This paper introduces the concept of "Phase Nanoengineering", demonstrating the ability to continuously tune material properties at the nanoscale via direct-writing.

E. Albisetti*, ... R. Bertacco*, “Nanopatterning reconfigurable magnetic landscapes via thermally assisted scanning probe lithography”, *Nature Nanotechnology* 11, 545–551 (2016). doi.org/10.1038/nnano.2016.25. *Cover Page article*.

The first seminal paper pioneering the use of localized thermal energy via tSPL for directly modifying material physical properties (magnetism) beyond simple topography. This is the conceptual and technical foundation for writing the physical properties of materials via localized thermal activation. This work was largely covered in the press and was the foundation of my research line and laboratory at Politecnico di Milano.

E. Albisetti*, ... D. Petti*, “Optically Inspired Nanomagnonics with Nonreciprocal Spin Waves in Synthetic Antiferromagnets”, *Advanced Materials* 32, 1906439 (2020). doi.org/10.1002/adma.201906439. *Front Cover*
Demonstrates the direct-write realization of complex, functional nano magnonic devices for controlling the emission and propagation of spin waves.

E. Albisetti, ... E. Riedo*, “Thermal scanning probe lithography”, *Nature Reviews Methods Primers* 2, 32 (2022). doi.org/10.1038/s43586-022-00110-0

This Primer sets the state-of-the-art for thermal nanolithography, formalizing the method’s resolution, and versatility as a direct-write methodology.

E. Albisetti*,... E. Riedo, “Magnetic nanopatterning via thermal scanning probe lithography”, Book chapter in “Nanofabrication”, Edited by José Maria De Teresa, IOP Publishing (2020). iopscience.iop.org/book/978-0-7503-2608-7

Invited to contribute to a leading book on Nanofabrication. The chapter explains the concept of direct-write phase nanoengineering in magnetic materials.

X. Zheng, ... **E. Albisetti***, ... E. Riedo*, “Direct metal contacts on MoS₂ with vanishing Schottky barrier via thermal nanolithography”, *Nature Electronics* 2, 17–25 (2019). doi.org/10.1038/s41928-018-0191-0

Demonstrates high-quality metal contacts with vanishing Schottky barrier on MoS₂ via thermal nanolithography, enabling genuinely high-quality transport.

E. Albisetti*, ... R. Bertacco, “Nanoscale spin-wave circuits based on engineered reconfigurable spin textures”, *Communications Physics* 1, 56 (2018). doi.org/10.1038/s42005-018-0056-x

Demonstrates reconfigurable direct-write spin-wave nanodevices built from engineered magnetic landscapes.

E. Albisetti*, ... E. Riedo*, D. Petti, “Stabilization and control of topological magnetic solitons via magnetic nanopatterning of exchange bias systems”, *Applied Physics Letters* 113, 162401 (2018). doi.org/10.1063/1.5047222. Cover Page, Featured article, Top 2% Highlight.

Demonstrates the ability to manipulate the topology of magnetic textures via direct nanopatterning, showing a new route for engineering topological states.

Peer recognition

Major fellowships and grants as PI

- 2025 – Present *ERC Proof-of-concept Grant* (LANTERN, €150k) as Principal Investigator.
EU Horizon Europe Programme
- 2023 – Present *PRIN Grant* (TEEPHANY, €240k) as Principal Investigator of PoliMi unit.
Italian Ministry for the University and Research.
- 2022 – Present *FARE Grant* (NAMASTE, €300k) as Principal Investigator.
Italian Ministry for the University and Research.
- 2021 – Present *ERC Starting Grant* (B3YOND, €1.5M) as Principal Investigator.
EU Horizon 2020 Programme
- 2016 – 2019 *Marie Skłodowska-Curie Individual Fellowship* (SWING, € 300k) as Sole Beneficiary.
EU Horizon 2020 Programme
- 2012 – 2014 *“Scuola Interpolitecnica” Scholarship*
Joint scholarship between Politecnico di Milano, Torino, Bari, Italy (20 k€ budget).

Awards and honors

- 2021 Selected by the European Commission as a “Success Story from EU funded Research” for the results of my MSCA Swing fellowship.
- 2019 Selected for the 69th Lindau Nobel Laureate Meeting and invited as Masterclass Speaker by Nobel Laureate Albert Fert.
- 2018 Winner of the Nanomaterials Young Investigator Award 2018.
“For conceiving and demonstrating thermally assisted magnetic scanning probe lithography”
Nanomaterials (MDPI), Prize website: <https://goo.gl/MUnh2V>

Selected recent invited talks

I am routinely invited as speaker to conferences, workshops and schools. I gave > 50 conference contributions, among which **>35 invited contributions**. Below a selection of recent and/or relevant.

- 2026 Invited Talk** “Programmable Integrated Magnonic Meshes”, Microscopic Magnetic Systems for RF applications, Munich, Germany,
- 2025 Keynote Talk** “Three-dimensional grayscale control of magnetism and superconductivity via phase nanoengineering”, NanoFab NYC 2025, New York, US
- 2025 Invited Talk** “Three-dimensional Control and Imaging of Spin Waves in Nanostructured Thin Films”, 70th Conference on Magnetism and Magnetic Materials (MMM 2025), Palm Beach, US
- 2025 Invited Talk** “Tunable nanoscale control of magnetism via phase nanoengineering”, 10th Conference on Superconductivity and Magnetism- ICSM2025, Fethiye-Oludeniz, Turkey
- 2025 Invited Talk** “Three-dimensional control and imaging of spin waves in nanostructured thin films”, APS Global Physics Summit, Anaheim CA, US.
- 2025 Invited Talk** “Phase nanoengineering for 3D nanomagnetism and magnonics”, Nanomagnonics Workshop, IPCMS-CNRS, Strasbourg.
- 2021 Invited Lecture** “Thermal Scanning Probe Lithography”, Nanolito 2021: Summer School in Nanolithography, University of Salamanca, Salamanca, Spain.
- 2019 Invited Masterclass Talk** “Nanopatterning multidimensional spin-textures for magnonics”, 69th Lindau Nobel Meeting, Germany (2019). (Invited by Prof. Albert Fert, Nobel Prize in Physics).

Memberships of scientific societies

Association of ERC grantees, Lindau Nobel Alumni Network, ERC in Italy, European Physical Society (EPS), American Physical Society (APS), IEEE Magnetics Society, IEEE Nanotechnology Council, Marie Curie Alumni Association.

Organisation of recent scientific meetings

I organized or co-organized several international meetings, below a selection of recent events.

- 2025 Organizer of the workshop “Quantum & magnetic materials nanostructures towards the third dimension”, Politecnico di Milano, Italy, 9th October 2025
- 2024 Co-organizer of the workshop “Spin-based computing and signal processing” (SpinCom2024), Politecnico di Milano, Italy, 28th June 2024
- 2023 Session Chair at the symposium “Latin American Workshop on Magnetism, Magnetic Materials, & their Applications” (LAW3M), Puerto Varas, Chile (October 23).
- 2023 Chair of the symposium “Novel magnetic techniques, instrumentation and metrology” at the Joint European Magnetic Symposium (JEMS23), Madrid, Spain
- 2022 Contributed to the organization of the “Italian Quantum Weeks” (April 2022) Politecnico di Milano, Milano, Italy
- 2022 Co-organizer of the “Advanced Micro and Nano Characterization of Hybrid Interfaces: a multidisciplinary approach” (7-8 November 2022) Politecnico di Milano, Milano, Italy.
- 2022 Session Chair for the “Frontiers in Nanostructured Magnetic Materials” symposium at the 16th International Conference on Nanostructured Materials (NANO22), Seville, Spain.

Commission of trust and consulting

- 2015 – Currently **Reviewer for scientific journals** including *Nature Nanotechnology*, *Nature Communications*, *Advanced Materials*, *Advanced Functional Materials*, *ACS Nano*, *Nano Letters*, *ACS Applied Materials Interfaces*, *Nanoscale*, *Light:Advanced Manufacturing*, *Small*, *Applied Physics Letters*.
- 2019 – Currently **Reviewer for funding agencies** including Icelandic Research Fund (IRF), French National Research Agency (ANR), EU Marie Skłodowska-Curie Actions (EU-MSCA), German Research Foundation (DFG), Swiss National Science Foundation (SNSF), Research Foundation, Singapore (NRF).
- 2024 – Currently **Reviewer for large infrastructure proposals** of the SoftiMAX beamline at MAX IV synchrotron, Sweden and ELECMI, Spain.
- 2021 – Currently **Institution responsibilities at PoliMi** including Member of Commissions for the admissions to Ph.D. programs, PostDocs, and Teaching Assistants. Member of Commissions for BS and MS in Engineering Physics. Member of Commissions of public tenders for purchasing equipment.
- 2023 – 2024 **External VC Consultant** for Feel Venture, deep-tech VC firm.

ADDITIONAL INFORMATION

Other contributions to the research community

- 2024 Outreach video entitled “Nanotecnologie, come creare nuovi materiali manipolando gli atomi con la luce ed il calore” on the Fondazione Leonardo website, section Social Labs (<https://shorturl.at/t8T92>)
- 2022 Interviewed for the European Physical Society Condensed Matter Division monthly newsletter. (<https://bit.ly/3zxKmUK>)
- 2021 Invited to give a talk entitled “Nanotecnologie: cosa sono e dove trovarle?” at the Rotary Club Milano Sud-Ovest Conviviale on April 19th 2021 (Online Seminar)
- 2020 Interview for the Academic Career Development e Academic CV building Workshop for Ph.D. students and postdocs (Politecnico di Milano)
- 2020 Interview and Application Note article “NanoFrazor for patterning of nanoscale spin textures” on “The Lithographer” journal by Heidelberg Instruments.
- 2019 Interview for La Repubblica (daily newspaper). “Creo materiali con proprietà fisiche nuove che non ci sono in natura” (in Italian). La Repubblica (<https://tinyurl.com/wr9auaw>).
- 2020 I participated in the framework of the “EU Corner” to the European Researchers’ Night with an oral presentation of the SWING H2020 project.
- 2018 I participated to the European Researchers’ Night with a poster presentation of the SWING H2020 project.
- 2016 I participated to the European Researchers’ Night with “The Cell Race” stand. The aim was to involve primary and secondary school students in a “fun simulation” of the research activity.