

PERSONAL INFORMATION

Paola Maria Tiberto



INRIM

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Replace with mobile number



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[Redacted] | Date of birth 1 [Redacted] | Nationality Italian

Enterprise	University	EPR
<input type="checkbox"/> Management Level	<input type="checkbox"/> Full professor	<input checked="" type="checkbox"/> Research Director and 1st level Technologist / First Researcher and 2nd level Technologist / Principal Investigator
<input type="checkbox"/> Mid-Management Level	<input type="checkbox"/> Associate Professor	<input type="checkbox"/> Level III Researcher and Technologist
<input type="checkbox"/> Employee / worker level	<input type="checkbox"/> Researcher	<input type="checkbox"/> Researcher and Technologist of IV, V, VI and VII level / Technical collaborator

EMPLOYMENTS

CURRENT POSITION(S)

2008 – present

First Researcher, INRIMPrincipal Investigator in nanomagnetism
Head of Advanced Materials and Life Sciences Division

- Activity: magnetization reversal in magnetic thin films
- Activity: magnetic nanostructures by nanolithographic process (bottom-up by nanosphere lithography and top-down by EBL/FIB)
- Activity: study of magnetic properties and interaction effects in magnetic nanoparticles of various sizes (micro-, nano-metric), shape (quasi-spherical or disc), composition (iron oxides, metal alloys), in powder configuration or included in host matrices (nanocomposites) by means the use of suitable experimental characterizations technique and, theoretical/computational models.
- Activity: magnetotransport properties for spintronic applications: influence of magnetic correlation
- Activity: study of the half-metallicity and the weak-itinerant magnetic properties as a function temperature (2-800 K) in Co-based Heusler alloy.
- Results: devices for magnetoelectronics
- Results: use of magnetic nanostructures for biomedicine

Business or sector: Research and Development

PREVIOUS POSITION(S)

November 1994 – 31 december
2007**Researcher, INRIM**

Researcher, INRIM

- Activity: phase transformation in amorphous alloys, bulk metallic glasses
- Activity: magnetization dynamics in materials produced by off-equilibrium techniques
- Activity: electrical and magnetic characterization in rapidly solidified materials (amorphous, microcrystalline and granular)
- Activity: study of magnetic properties and interaction effects in magnetic nanoparticles of various sizes (micro-, nano-metric), shape (quasi-spherical or disc), composition (iron oxides, metal alloys), in powder configuration or included in host matrices (nanocomposites) by means the use of suitable experimental characterizations technique and, theoretical/computational models.
- Activity: magnetotransport properties for spintronic applications: influence of magnetic correlation

▪ Results:

- Devices for magnetoelectronics
- Exploitation of magnetic nanostructures for biomedicine (hyperthermia)

Business or sector :Research and Development

EDUCATION AND ACADEMIC DEGREES

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| 1991-1994 | PhD in Experimental Physics, Politecnico di Torino

"Study of non-conventional phase transformation in ferromagnetic glasses" |
| 1984-1989 | Degree in Physics |

ACHIEVEMENTS AND AWARD

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| Grants (last 10 years) | <p>2010-2014 EU-FP7, call NMP.2010.1.2-4 "Functionalities of Bismuth-based nanostructures" (BISNANO), INRIM Unit coordinator, Magnetic and magnetotransport properties of Bi (funding 350 k€)</p> <p>2013-2017. EU-FP7, call PEOPLE-2013-ITN "Vitrified Metals Technologies and Applications in Devices and Chemistry" (VetriMetTech), INRIM Unit coordinator (associated partner)</p> <p>2014-2018. EU-H2020, call PEOPLE-2013-ITN "Smart ELECTrodeposited Alloys for environmentally sustainable applications: from advanced protective coatings to micro/nano-robotic platforms" (SELECTA), INRIM Unit coordinator (funding 300 k€)</p> <p>2016-2019 EMPIR JRP_16NRM04 – PRENORMATIVE CALL 2016 "METROLOGY FOR MAGNETIC NANOPARTICLES" (MAGNASTAND)", INRIM Unit coordinator (funding 100 k€)</p> <p>2019-2024. EU-H2020, call MSCA-ITN-2019 "Energy-Efficient Magnetoelectric Nanomaterials for Advanced Information and Healthcare Technologies (BeMagic), INRIM Unit coordinator (funding 300 k€)</p> <p>2022-2015. EU-Horizon Europe, call HORIZON-EIC-2021-PATHFINDEROPEN-01-01 "Additive Manufacturing of Amorphous Metals for Soft Magnetics" (Am2SoftMag), INRIM Unit coordinator (funding 600 k€)</p> <p>National Project</p> <p>2002-2007 Progetto MIUR-FIRB "Microsystem based on innovative magnetic materials at nanoscale", IEN-Galileo Ferraris/INRIM Unit coordinator (600 k€)</p> <p>2005-2009. Regione Piemonte, Bando ricerca scientifica 2004 "Development of a transistor based on hybrid ferromagnet-semiconductor nanostructures", Responsabile unità INRIM (300 k€)</p> <p>2013-2015. MIUR 2012 - Progetto Premiale, Nanotechnologies for electromagnetic metrology, responsible WP2 (WP budget 600 k€)</p> <p>2016-2018. MIUR 2016 - Progetto Premiale Nanotechnology for the molecular and physiological fingerprinting of brain disease (Nano4Brain), INRIM Unit coordinator (funding 300 k€)</p> <p>2023-2026. PRIN-MIUR - , INRIM Unit coordinator (funding 80 k€)</p> |
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PUBLICATIONS

Bibliometric parameters	<p>Number of publications: 329</p> <p>Total number of citations: 4285</p> <p>h index: 33</p>
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**Relevant publications
(last 10 years)**

1. Barrera, G., Allia, P., Tiberto, P., Magnetic Tracers for Magnetic Particle Imaging: Insight on the Roles of Frequency-Sustained Hysteresis and Interactions in Quantitative Imaging, *Phys Rev Appl.* 19 (2023), 034029
2. Thorsson, L., Unosson M., Teresa Pérez-Prado, M., Jin X., Barrera, G. P., Tiberto, et al., Selective laser melting of a Fe-Si-Cr-B-C-based complex-shaped amorphous soft-magnetic electric motor rotor with record dimensions, *Materials&Design* (2022), 215, 110483
3. Lantean, S., Roppolo I., Sangermano, M., Hayoun M, Dammak, H., Barrera, G., Tiberto P., Pirri, C. F., Bodelot L., Rizza, G., Magneto-responsive Devices with Programmable Behavior Using a Customized Commercial Stereolithographic 3D Printer, *Adv. Mat. Tech* 7 (2022) 2200288
4. Coïsson, M., Celegato, F., Barrera, G., Allia, P., Tiberto, P., Specific loss power of magnetic nanoparticles: A machine learning approach, *APL Materials*, 2022, 10(8), 081108
5. Barrera, G., Allia, P., Tiberto, P., Magnetic Nanoparticle Imaging: Insight on the Effects of Magnetic Interactions and Hysteresis of Tracers, *ACS Applied Nano Materials*, 5, 2, (2022), 2699-2714
6. Barrera, G., Allia, P., Tiberto, P., Dipolar interactions among magnetite nanoparticles for magnetic hyperthermia: A rate-equation approach, *Nanoscale*, 13, (2021), 4103.
7. Lantean, S., Barrera, G., Pirri, C. F., Tiberto, P., Sangermano, M., Roppolo, I., Rizza, G., 3D Printing of Magneto-responsive Polymeric Materials with Tunable Mechanical and Magnetic Properties by Digital Light Processing, *Advanced Materials Technologies*, 4, (2019), 1900505.
8. Campanini, M., Nasi, L., Fabbrici, S., Casoli, F., Celegato, F., Barrera, G., Chiesi, V., Bedogni, E., Magen, C., Grillo, V., Bertoni, G., Righi, L., Tiberto, P., Albertini, F., Magnetic Shape Memory Turns to Nano: Microstructure Controlled Actuation of Free-Standing Nanodisks, *Small*, 14, (2018), 1803027.
9. Barrera, G., Celegato F., Coïsson M., Manzin A., Ferrarese Lupi F., Seguini G., Boarino L., Aprile G., Perego M., Tiberto P., Magnetization switching in high-density magnetic nanodots by a fine-tune sputtering process on a large-area diblock copolymer mask, *Nanoscale*, 9, (2017), 16981-16992.
10. Coïsson M., Barrera G., Celegato F., Manzin A., Vinai F., Tiberto P., Magnetic vortex chirality determination via local hysteresis loops measurements with magnetic force microscopy, *Scientific Reports*, 6, (2016), 29904, (9 pp).
11. Manzin A., Barrera G., Celegato F., Coïsson M., Tiberto P., Influence of lattice defects on the ferromagnetic resonance behaviour of 2D magnonic crystals, *Scientific Reports*, 6:22004, (2016), 325003 (11 pp).
12. Ranzieri P., Campanini M., Fabbrici S., Nasi L., Casoli F., Cabassi R., Buffagni E., Grillo V., Magén C., Celegato F., Barrera G., Tiberto P., Albertini F., Achieving Giant Magnetically Induced Reorientation of Martensitic Variants in Magnetic Shape-Memory Ni-Mn-Ga Films by Microstructure Engineering, *Advanced Materials*, 27, (2015), 4760-4766.
13. Coïsson M., Manzin A., Barrera G., Celegato F., Enrico E., Tiberto P., Vinai F., Anisotropic magneto-resistance in $\text{Ni}_{80}\text{Fe}_{20}$ antidot arrays with different lattice configurations, *Applied Surface Science*, 316, (2014), 380-384.
14. Ferrero, R., Manzin, A., Barrera, G., Celegato, F., Coisson, M., Tiberto, P., Influence of shape, size and magnetostatic interactions on the hyperthermia properties of permalloy nanostructures, *Scientific Reports*, 9:6591, (2019), (11pp.).

15. Coisson, M., Barrera, G., Celegato, F., Tiberto, P., Rotatable magnetic anisotropy in $\text{Fe}_{78}\text{Si}_9\text{B}_{13}$ thin films displaying stripe domains, Applied Surface Science, 476, (2019), 402-411.

Book chapters and monographs

1. Coisson M., Barrera, G., Celegato, F., Tiberto, P., "Nanomaterials characterization through magnetic field dependent AFM" in Recent developments in atomic force microscopy and Raman spectroscopy for materials characterization, Ed. Chandra Shakher Pathak, Samin Kumar and Pawan Kumar, Intech Open 2021.

ADDITIONAL INFORMATION

Institutional responsibilities

2014-2018 Member of the Scientific Council, INRIM, Torino.
 2019- Present head of the Division "Advanced Materials and life sciences" and member of the INRIM Directive Board
 2008 – 2019 Responsible of the scientific sector "Nanomagnetism"

International Commission of trust

2018 Scientific Evaluation PhD Thesis Irati Galvano, Universidad Autonoma de Barcelona, Spain
 2019 Assistance Professor, TU Wien
 2022 Scientific evaluation PhD Thesis Laura Cervera Gabalda, Universidad Publica de Navarra
 2023 Scientific Evaluation PhD Thesis Sofia Martins, Universidad Autonoma de Barcelona, Spain

Member of scientific societies

2012- IEEE, Magnetic society Senior member
 2011- Italian Magnetism association
 2015- European Magnetism association
 2022- IEEE, Women in engineering

Mentorship of students/young researchers/fellows

2005-2022 Around 10 PhD thesis; around 30 Master thesis

Organisation of conferences/scientific meetings

Chair ISMANAM 2013 Conference, Torino luglio 2013 (International Symposium on mechanically alloyed and nanocrystalline amorphous materials)
 Symposium Chair "Soft and Hard magnetic materials" ISMANAM 2015 Conference, Paris July 2015 (International Symposium on mechanically alloyed and nanocrystalline amorphous materials)
 Chair EMSA 2016 Conference , Torino July 2016 (European Conference Magnetic Sensors and Actuators)
 Conference Chair IEEE - Advances in Magnetism, La Thuile Febbraio 2018.
 Director of Aimagn school "Advanced magnetic materials and devices for biomedical applications", Torino, May 2018
 Director of Aimagn School " Information processing in spin-based systems" , Politecnico di Milano, June 2023
 Symposium chair "Additive manufacturing in Magnetic materials", Advances in Magnetism 2021
 Symposium chair "Additive manufacturing in Magnetic materials", Advances in Magnetism 2023
 Chair Workshop IEEE-EUROCON 2023 The versatility of magnetism: an overview on recent research in spintronics, energy and biomedicine
 Chair Programme Committee Conference MAGNET2019, Messina Febbraio 2019
 Chair Publication Committee JEMS 2012 Conference (Joint European Magnetic Symposia)
 Chair Program Committee JEMS 2023 Conference (Joint European Magnetic Symposia)

2021-2025 AiMagn President (www.aimagn.org Associazione italiana di magnetismo)

Major invited presentations **More than 20 invited talks presented to the major conference on magnetism (Ismanam 2019, MMM, Intermag). Among them:**

Workshop "New materials for a better life", Faculty of science and Tecnology, UPV/EHU Bilbao, June 2012
Arrays of Ordered Nanostructures in magnetic thin films by self-assembling of Polystyrene nanospheres

Ismanam 2012, Mosca, Luglio 2012
Ordered arrays of nanostructures: fabrication and magnetic properties.

Italian-Australian Bilateral Workshop on "nanostructured materials for magnetic and spintronic devices", Canberra, October 2012

Ismanam 2014, Cancun, Luglio 2014
Ordered arrays of nanostructures: fabrication and magnetic properties.

INTERMAG 2014, Dresda, Maggio 2014
Inkjet printing of magnetic materials

ISMANAM 2015, Parigi, Luglio 2015
Magnetic Nanodisks by Nanosphere Lithography for Hyperthermia

International Baltic Conference on Magnetism: Focus on Biomedical aspects, Kaliningrad 2015
Magnetic Nanodisks by Nanosphere Lithography for biomedical applications.

International Baltic Conference on Magnetism: Focus on Biomedical aspects, Kaliningrad 2017
Magnetic Nanostructure for biomedicine.

ISMANAM 2019, Chennai, India, June 2019
Magnetic properties of FePd electrodeposited thin films

8th Forum on New Materials, CIMTEC 2018 Perugia, Symposium FG "Magnetic Materials for energy"

Thermec 2021, May 2021, TU-Graz, online
Magnetic materials for bio-applications

MMM Conference 2020, Virtual Conference
2D and 3D magnetic nanostructures for bio-applications

Intermag 2023, Sendai, Japan 12-15 May
Magnetic particle imaging: effect of frequency

Editorial and Reviewing activities

2015-2022	Editorial Board "Materials Chemistry and Physics"
2022-	Editorial Board "Scientific Reports"
2011-	Reviewer activity Springer-Nature, AIP, APS, ACS and Elsevier Journals

"According to law 679/2016 of the Regulation of the European Parliament of 27th April 2016, I hereby express my consent to process and use my data provided in this CV "

Torino, 8 luglio 2023

