

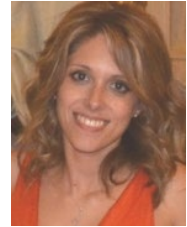
PERSONAL INFORMATION

Petti, Daniela:

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Date of birth: **April 25th 1982**

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I received my PhD in Physics from Politecnico di Milano in 2010, where I am currently Associate Professor and co-PI of the engineering Physics in Nanostructured materials and Devices (PhyND) group of the Physics Department. In 2017-2018, I was visiting researcher in the Spin Dynamic Group of the Department of Material Science and Engineering at MIT, Boston. My research activity is in the field of nanomagnetism and spintronics. In particular, it concerns the study of novel techniques for the micro- nanoscale control of magnetism and spin dynamics, for the development of new device concepts. I am author of more than 69 publications on international peer-reviewed journals, 4 invited papers, 4 patent applications and 2 book chapters. My *h-index* is 19 according to SCOPUS (September 2021, total number of citations 1243) and 20 according to Google Scholar (September 2021, total number of citations 1580). I participated in more than 30 conferences with contributed and invited talks. I am member of the scientific committee of the EMA (European Magnetism Association) e-seminars and AIMagn Colloquia, Italian Magnetism Society. I am reviewer for different journals, e.g. Nature, Nature Electronics, Physical Review Letters, Physical Review B. I give annual courses of classical Mechanics and Thermodynamics, and of “Micro- Nanofabrication techniques” at Politecnico di Milano.

EDUCATION

- 2010 *PhD in Physics*, Department of Physics, Politecnico di Milano, Italy. *Dissertation*: “Spin dependent transport across the Fe/MgO/Ge (001) heterostructure”.
Supervisor: Prof. Riccardo Bertacco.
- 2006 *M. Sc. Engineering Physics cum laude*, Politecnico di Milano, Milano, Italy. *Dissertation*: “Study of MgO/Fe (001) interface for tunnel magnetic junction”.

CURRENT POSITIONS

2016 – Present *Associate Professor*, Department of Physics, Politecnico di Milano, Milano, Italy.

PREVIOUS POSITIONS

- 2017 – 2018 *Visiting Researcher*, Material Science and Engineering Department, Massachusetts Institute of Technology, Boston, USA.
- 2016 – 2019 *Senior Assistant Professor*, Department of Physics, Politecnico di Milano, Milano, Italy.
- 2013 – 2016 *Junior Assistant Professor*, Department of Physics, Politecnico di Milano, Milano, Italy.
- 2010 – 2013 *Postdoc*, LNESS center, Politecnico di Milano, Como, Italy.
- 2011 *Visiting Researcher*, Charles University of Prague, Prague, Czech Republic.
- 2011 *Visiting Researcher*, INESC MN, Lisbon, Portugal.

FELLOWSHIPS

- 2016 *Young Researcher Fellowship*, to conduct research as visiting researcher at MIT in the academic years 2017 and 2018. *Roberto Rocca Foundation*, Italy-USA.
- 2010 – 2013 *Postdoc fellowship*, LNESS center of the Politecnico di Milano funded by Cariplo Foundation, Italy via the project SpinBioMed.
- 2006 – 2010 Scholarship funded by SAES Getters s.p.a., Politecnico di Milano, Italy.

SUPERVISION OF GRADUATE STUDENTS AND POSTDOCTORAL FELLOWS

- 2018 – Present 2 Master Students as PI of the project, one junior researcher. Department of Physics, Politecnico di Milano.
- 2017 – 2018 1 Postdoc/ 1 Master Student as PI of the project Department of Physics, Politecnico di Milano. *The Master Student won a Ph.D. Research Fellowship at ETH, Zurich in 2017.*
- 2014 – 2017 1 Postdoc / 2 PhD students/ 5 Master Students as PI of the project, Department of Physics, Politecnico di Milano, Italy. *The Postdoc won a Marie Skłodowska-Curie Individual Fellowship (Global Fellowship) in 2016. In 2015, 2 Master Students won a Ph.D. Research Fellowship at University College London and at Italian Institute of Technology, respectively.*
- 2011 – 2013 1 PhD as post-doc and 1 Master Student as Junior Assistant Professor, Department of Physics, Politecnico di Milano, Italy.
- 2013 – 2018 14 Bachelor Students, Department of Physics, Politecnico di Milano, Italy.

TEACHING ACTIVITIES

- 2018– Present Course Co-responsible: Fundamentals of Micro- and Nano-fabrication, Politecnico di Milano (for PhD and Master Students).
- 2013 – Present Course Responsible: General Physics, Politecnico di Milano.

ORGANISATION OF SCIENTIFIC MEETINGS

- 2020 – Present *Member of the scientific committee* of the Early-Carrer Seminars and Plenary Lecture, European Magnetism Association.
- 2019 – Present *Member of the scientific committee* of the AIMagn Colloquia, Italian Magnetism Society.
- 2015 *Session Chair*, Applied magnetism of organic compounds and Biomedical applications, 20th International Conference on Magnetism, Barcelona, Spain.
- 2012 *Member of the local organization committee*, Conference on Superconductivity and Functional Oxides (SuperFox2012), Como, Italy.
- 2011 *Session Chair*, Magnetic particles for hyperthermia, drug delivery and separation, 56th Conference on Magnetism and Magnetic Material (MMM), Scottsdale, USA.

INSTITUTIONAL RESPONSIBILITIES

- 2013 – Present Member of the Fellowship Selection Committee at the Department of Physics, Politecnico di Milano, Italy.
- 2013 – Present Member of the Master Thesis Examination Committee, Politecnico di Milano, Italy.
- 2016 – Present Member of the selective committee for the public selection of personnel for PoliFab, the micro- and nano-technology center of Politecnico di Milano, Italy.

REVIEWING ACTIVITIES

- 2019 – 2020 Guest Editor of the Special Issue “Spintronic and Magnetic Platforms for Biosensing” of the journal Sensor (MDPI - ISSN 1424-8220).
- 2012 – Present Reviewer for Nature, Nature Electronics, Physical Review Letters, Physical Review B, Journal of Physics: Condensed Matter, New Journal of Physics and others.

MEMBERSHIPS OF SCIENTIFIC SOCIETIES

2013 – Present Associated Member, Italian Magnetism Society AIMagn, Italy.

2011 – 2013 Associated Member, Italian Physics Society (SIF), Italy.

MAJOR COLLABORATIONS

2018 – Present D. Ielmini, *Study of spin-orbit torque in magnetic tunnelling junctions*. Politecnico di Milano.

2017 – Present S. Bonetti, *Study of ferromagnetic, antiferromagnetic and ferroelectric systems with THz radiation*. Stockholm University, Stockholm.

2017 – Present G. Beach, *Study of the spin dynamics in magneto-ionic systems*. MIT, Boston.

2017 – Present J. Raabe, S. Finizio, S. Wintz, *Studying spin waves via Scanning Transmission X-Ray Microscopy*. Paul Scherrer Institute, Switzerland. [3 papers]

2015 – Present S. Tacchi, R. Silvani, M. Madami, G. Carlotti, *Imaging of spin waves via Brillouin Light Scattering Microscopy*. Istituto Officina dei Materiali del CNR (CNR-IOM) and Università di Perugia. [5 papers]

2014 – Present M. Savoini, *Study of ultrafast demagnetization in epitaxial ferromagnetic systems*. ETH, Zurich. [1 paper]

2013 – Present E. Riedo, *Application of thermal nanolithography to magnetism*. New York University, New York. [8 papers]

2013 – Present M. Sampietro, *Development of low-noise electronic integrated instrumentation for the measurement of currents, voltages, impedances*. Politecnico di Milano, Italy. [7 papers]

Past collaborations

2016 – 2019 M. Foiani, D. Parazzoli *Development of magnetic chips for non-invasive and controlled mechanical stimulation of target cells plasticity*. IFOM, Milano. [1 paper]

2014 – 2017 F. Benfenati. *Development of a spintronic platform for the in-vitro study of neuronal activity*. IIT, Genova. [2 papers]

2011 – 2013 X. Marti, *Design and fabrication of antiferromagnetic spintronic devices*. Academy of Sciences Czech Republic. [1 paper]

2010 – 2016 P. Vavassori, *Visualization of magnetic micro and nanostructures via Magneto-Optic Kerr Effect microscopy*. NanoGUNE, San Sebastian, Spain. [4 papers]

2007 – 2016 S. Picozzi, *DFT calculations in artificial multiferroics*, CNR-SPIN, Chieti, Italy. [4 papers]

Running Research Grants

I am currently coordinator of the POLIMI research unit in the project MAGNISENSE - Sensor and method for characterizing the property of magnetic ink applied to security documents (EUROSTARS- EU and MIUR, 675 k€ overall budget).

Past Research Grants as Main Proposer

Between **2014-2019**, I have been **PI** of two projects regarding the application of magnetism to the nanomedicine: “Ultrasensitive Magnetic Array for recording of Neuronal Activity –UMANA” (PI, Cariplo Foundation 375 k€ overall budget) and “ATR and ATM-mediated control of chromosome integrity and cell plasticity” (PI of the research unit of Politecnico di Milano MIUR, Italian Ministry of Education, Universities and Research, 487 k€ overall budget).

Between **2017-2018**, two proposals I **co-proposed** for the study of spin waves at synchrotron facilities (PolLux SLS Beamline) have been selected for extra-funding from the European Commission, Horizon 2020 research and innovation programme under grant agreement n.° 730872, project CALIPSOplus (1.4 k€ overall budget): “Excitation and propagation of spin-waves within nanopatterned magnetic domain walls” and its “Continuation proposal”.

Past Research Grants as Participant

Between **2011-2017**, I have been Co-Participant of more than **six projects**, among this I contributed to the project “Magnetic Information Storage in Antiferromagnet Spintronic Devices –MagISter” (Cariplo Foundation) **with the main idea**. Two projects aimed to study magneto-electric effects: “Oxides at the nanoscale: multifunctionality and applications” (MIUR); “Electrical Control of Magnetization-EcoMag” (Fondazione Cariplo) 2011 Three projects were focused on the application of nanomagnetism and spintronics to nanomedicine: “Early Stage Cancer diagnosis via Highly sensitive Lab-On-chip multitarget systems - ESCHILO” (Regione Lombardia – Cariplo Foundation); “Forces, mechanisms and pathways involved in the ATR-mediated control of nuclear plasticity in response to mechanical stress”. CEN Foundation; “Innovative platform based on analytical systems for the rapid detection of bacterial and viral contamination in agrifood applications- LOCSENS” (MIUR- Regione Lombardia).

TRACK RECORD

Publications

I am author of **69 papers** (4 invited) and my *h-index* is 19 according to SCOPUS (September 2021, total number of citations 1243) and 20 according to Google Scholar (September 2021, total number of citations 1580). Among these, I have **21** publications as main author (first, corresponding or last author) and **10** publications in top journals (Nat. Electron., Nat. Nanotechnol., Adv. Mater., Nat. Commun., ACS Nano, Commun. Phys., Small..). I have been invited to write a “*News and Views*” paper for Nature Electronics (D. Petti, “Building a half-adder based on spin waves”, Nat. Electron. 3, 736–737(2020)). I wrote two book chapters: “Patterned spin-textures for magnonics” (in “Three-dimensional magnonics, layered micro- and nano-structures” *Jenny Stanford Publishing*), “Magnetic nanopatterning by thermal scanning probe lithography” in Nanolithography (IOP Publishing). I have been invited to write the “Magnonics Roadmap”, IOP Publishing, which is currently under review.

Patents

- R. Bertacco, **D. Petti**, E. Albisetti, G. Ferrari, M. Giacometti, “Dispositivo e metodo per la quantificazione di componenti corpuscolate e non corpuscolate del sangue”. Politecnico di Milano. Italian Patent #102017000082112 (2017).
- E. Albisetti, R. Bertacco, **D. Petti**, E. Riedo (2015) “Method and equipment for magnetic nanopatterning of substrates” US application n. 14938939.
- R. Bertacco, M. Cantoni, **D. Petti**, C. Rinaldi, M. Leone (2011). “Dispositivo rilevatore ottico spintronico” (spin-optoelectronic device for light polarization detection). MI2011A000211, Politecnico di Milano.
- R. Bertacco, M. Donolato, M. Gobbi, M. Cantoni, **D. Petti**, S. Brivio, P. Vavassori (2009), “Manipulation of magnetic particles in conduits for the propagation of domain walls.” PCT/EP2010/000879, nanoGune Consolider.

Recent Invited Talks

I gave more than 30 scientific conference contributions among which the following recent invited talks:

- “Nanoscale engineered spin textures for magnonics”, Trends in Magnetism (TMAG2021), September 2021.
- “Non-reciprocal spin wave nano-optics”, AIMag Colloquium, Bologna 2019.
- “Nanomagnonics with engineered reconfigurable spin-textures”, INSP, Paris, 2019
- “Spin textures patterned via thermally assisted magnetic scanning probe lithography for magnonics”, spintronic session of the SPIE Optics and photonics 2018.
- “Crafting reconfigurable spin textures via thermally-assisted scanning probe lithography”, Spin Dynamics Group Meeting, MIT Boston 2017.
- “Magnetoresistive Platform For Recording Neuronal Activity”. Workshop on Magnetism in Medicine, Firenze Italy, February 2017.
- “Nanopatterning reconfigurable magnetic landscapes via thermally assisted scanning probe lithography” MDM Laboratory, IMM-CNR, Agrate Brianza (MB) Italy, March 2016.

-“Spintronics with metal antiferromagnets”, Spintronics meeting in Lanna, Prague, March 2012.

Awards and Recognitions

- 2020 The paper E. Albisetti, S. Tacchi, ... **D. Petti** Advanced Materials, (2020) has been selected as front cover page article in Advanced Material Volume 32 Issue 9.
- 2018 The paper E. Albisetti, A. Calò, ... **D. Petti**, Applied Physics Letters 113, 162401 (2018) has been selected as cover page article and featured article in Applied Physics Letters Volume 113, Issue 16.
- 2017 The paper P. P. Sharma, G. Gervasoni ... **D. Petti**, AIP Advances, 7(5), 56706 (2017) and the invited paper E. Albisetti, **D. Petti**, et al., AIP Advances, 7(5), 55601 (2017) have been selected in the Highlights of Volume 7, Issue 5.
- 2016 Awarded by the Roberto Rocca Foundation in recognition of her research achievements and promise with a fellowship of \$43500.
- 2016 The paper by E. Albisetti, **D. Petti** et al., Nat. Nanotech. 2016, *Nature Nanotechnology*, 11 (6), 545, has been selected for the cover of the issue of June 2016.
- 2014 Best paper award (co-author) of the session “Sensors, Circuits and Instrumentation Systems” of the “IEEE 11th Multi-Conference on Systems, Signals & Devices” held on February 2014 in Castelldefels (Barcelona).
- 2014 The paper by G. Radaelli, **D. Petti** et al., Nat Comm., 5, 3404 has been selected for the Elettra Top-Stories Highlights.
- 2011 Award for the best presentation of the Biophysics and Medical Physics session of the Italian Physics Society Conference, SIF 2011 held in L’Aquila on September 2011.