

# MARCO CARMINATI – SCIENTIFIC CURRICULUM VITAE

marco1.carminati@polimi.it

## Current position (since 2016):

Tenure-Track Assistant Professor of Electronics at Politecnico di Milano, Italy  
Department of Electronics, Information and Bioengineering (DEIB – [www.deib.polimi.it](http://www.deib.polimi.it))  
Associate with the Italian Institute of Nuclear Physics (INFN, Sez. Milano)  
IEEE Senior Member, Assoc. Editor of IEEE TBioCAS



**Research focus:** sensors, microfabrication, x-ray and gamma-ray radiation detectors, low-noise analog electronics and instrumentation.

## Personal data:

Born in Milano il 11.10.1981, married, two children.  
Speaks: Italian, English, Spanish, Catalan.

**Bibliometric parameters:** 50+ journal papers, 100+ international conference proceedings, 11 book chapters, 4 patents, Google Scholar (1373 citations, H-index 19), updated on Nov. 9<sup>th</sup> 2019.

**Publication:** Google Scholar [https://scholar.google.it/citations?user=B\\_uUG6cAAAAJ&hl=en&oi=ao](https://scholar.google.it/citations?user=B_uUG6cAAAAJ&hl=en&oi=ao)

**LinkedIn profile:** <http://it.linkedin.com/pub/marco-carminati/1a/553/946/en>

## EDUCATION

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### July 2000: High School Graduation (Maturità)

Scientific high school “Leonardo da Vinci” Milano, final graduation mark **100/100**.

### October 2003: Bachelor (Laurea)

He received B.Sc. in Electronic Engineering from Politecnico di Milano on 3.10.2003 with a thesis entitled: “*Design, Realization and Experimental Characterization of a High Bandwidth Preamplifier for High Sensitivity Noise Measurements*”. Average marks 29.65/30, 185/180 ECTS. Advisor *Prof. Marco Sampietro*; final mark **110/110 CUM LAUDE**.

### December 2005: Master (Laurea Specialistica)

He received M.Sc. in Electronic Engineering from Politecnico di Milano on 22.12.2005 with a thesis entitled: Average marks 28.9/30. Advisor: *Prof. Marco Sampietro*; final mark: **110/110 CUM LAUDE**.

### January 2007 – December 2009: PhD (Dottorato)

He received the PhD in Information Science from Politecnico di Milano on 1.03.2010 with a doctoral thesis entitled “*Instrumentation for electrical detection in biology and nano-electrochemistry*” (Advisor *Prof. Marco Sampietro*), final mark: **A with merit**.

### March 2007: Exam of Professional Engineering (Esame di stato)

State exam for the professional habilitation in Information Engineering (Milano) final mark **100/100**.

### February 2008 – July 2008: Visiting Student at MIT

Thanks to the award of a *Rocca Fellowship*, he spent the spring semester as visiting graduate student at **Massachusetts Institute of Technology** (Cambridge, MA, USA) in *Prof. Joel Voldman lab* (RLE - EECS Research Laboratory of Electronics) working on microfluidics and BioMEMS.

**Post-doc at DEIB Politecnico from 2010 to 2015.**

## ASSOCIATIONS

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- Member of IEEE (since 2007, I&M, SSC and CAS societies), GE-SIE (Italian Association of Electronics, since 2014), ARI (Italian Association of Ham Radio, since 2007), ISE (International Society of Electrochemistry) and AIDAA.
- Since 2014, secretary of the TC-34 “Nanotechnology in Instrumentation and Measurement” *IEEE Instrumentation & Measurement Society* (<http://tc34.ieee-ims.org/tc34-home>).

## INTERNATIONAL AND NATIONAL RESEARCH PROJECTS

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- 2008-14 **EXCELL** (UE): multichannel platform for electrochemical monitoring of neural stem cells.
- “*Iso-dielectrophoretic separation and impedance measurement for intrinsic cell sorting*” (MIT-PoliMi).
- 2009-12 **BOND** (UE): development of artificial nose sensors based on molecular affinity.
- “*Magnetically Controlled Single Molecule Delivery*” (PoliMi 5‰): impedance detection of magnetic beads ( $\varnothing$  1 $\mu$ m).
- 2012-15 **MINUTE** (Fondazione Cariplo): innovative instrumentation for monitoring air quality and dust.
- 2013-16 **BBOI** (UE): development and optimization of the contactless light monitor in silicon photonics.
- 2014-16 **DRINKABLE** (Fondazione Cariplo): distributed microsensors for monitoring water quality.
- “*New electronics for single-molecule biosensing and sequencing*” (Royal Society, UK).
- 2015-16 Industrial project with Huawei: electronic control of a 4-channel TOSA.
- 2015-16 Industrial project with National Systems: impedance detection of clusters of antibodies ( $\varnothing$  0.5 $\mu$ m).
- 2016-17 **INSERT** (UE): development of MRI compatible gamma camera for MRI/SPECT multi-modal imaging.
- 2015-18 **Ardesia** (INFN): development of a X-ray spectrometer with 4-channel SDDs at 1Mpc.
- 2015-18 **Gamma** (INFN): development of SiPM-based gamma-ray spectrometers for high-energy physics.
- 2016-18 **Smart Foundry** (Regional): safety sensor to detect radioactive (gamma) sources in scrap metal.
- 2016-17 Industrial projects with XGLAB: detectors, ASICs and spectrometers.
- 2017 **Tristan** (DE): design of detection modules of large SDDs arrays for neutrino research.

## AWARDS

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- 2007 **First place** in the raking for the ammision to the PhD program (XXII cycle, government fellowship).
- 2008 Award of a **Rocca Fellowship** from Fondazione Rocca to support a semester as visiting student at MIT.
- 2009 Award of a **Seed Funding** from Fondazione Rocca for a joint MIT-Politecnico project (cell flow cytometry).
- 2011 **Gold Leaf Certificate** at IEEE PRIME 2011.
- 2011 Finalist in the innovation competition “**Inventare il Futuro**”, Università di Bologna, with the *IdroTAG* project.
- 2012 **Best Paper Award** at IEEE ICECS 2012.
- 2013 **Gold Leaf Certificate** for paper at IEEE PRIME 2013 conference.
- 2013 **Outstanding Referee Mention** AIP Editorial Board Rev. Sci. Instrum.
- 2014 **Outstanding Referee Mention** AIP Editorial Board Rev. Sci. Instrum.
- 2014 **Best Paper Award** at IEEE SSD 2014 conference.
- 2014 **Keynote Speaker** at 7<sup>th</sup> Int. Conf. Impedance Spectroscopy (IWIS 2014) [C15] and 5<sup>th</sup> IMEKO [C16].
- 2016 **Keynote Speaker** at EUROSENSORS 2016.
- 2017 Finalist of the Swtich2Product Polimi competition
- 2017 and 2018 First Prize at “Selezione di Elettronica Design Innovation Contest”.
- 2019 **Best Paper Award** (Sensory Systems Track) at IEEE ISCAS 2019, Tutorial speaker at IEEE BioCAS 2019.

## OTHER TECHNICAL ACTIVITIES

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- Reviewer for the following international journals (30+ papers): *IEEE JSSC*, *IEEE TCAS*, *IEEE TBCAS*, *IEEE TIM*, *Rev. Sci. Instrum.*, *Sensors & Actuators A*, *IEEE Sensors J.*, *Micromachines*, *Int. J. Instrum.*, *ISA Trans*.
- Member of “Technical Program Commitee” of the following international conferences: CLABIO 2012 and 2015, DUST 2014 and 2016, RC member BioCAS 2017, TPC of ICECS 2018, 2019 and 2020, FoodCAS 2020.
- **Guest Editor** for the 2018 IEEE TBCAS Special Issue: “ADVANCES AND OPEN CHALLENGES FOR INTEGRATED CIRCUITS DETECTING BIO MOLECULES” and 2019 AESS Magazine Special Issue.
- Technical translation and divulgation activity for national technical editors including Hoepli e Vertigo srl.
- Spokesperson of the post-docs of DEIB (2013-2016).

## TEACHING ACTIVITY

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Since 2006, he has been teaching assistant in several courses on Analog Electronics and Fundamentals of Electronics (over 450 hours). Since 2013/2014 he teaches the “Biochip” graduate course (50 hours) and since 2017 “Fundamental of Electronics” (100 hours) at Politecnico di Milano. He has been co-advisor of over 25 master and PhD thesis.

He lectured in the following PhD courses:

- **Nanosensors and Devices** (European School of Molecular Medicine, UniMI, 2 hours in 2011 and 2013)
- **Electrical Characterisation of Nanoscale Samples & Bio-chemical Interfaces**: Methods and Electronic Instrumentation (Politecnico di Milano, 5 hours in 2010, 2012 and 2014).
- **Polynano Summer School** (DTU, 1 hour) 2013.