

# GIOVANNI MARIA VANACORE



## PERSONAL DETAILS

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Nationality: Italian

Date and place of birth: November 27th 1983, Milano (Italy)

Work address: Department of Materials Science, University of Milano-Bicocca, Via Cozzi  
55, 20125 Milano (Italy).

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## PROFESSIONAL EXPERIENCES

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### Assistant Professor of Physics – Department of Materials Science, University of Milano-Bicocca (Italy)

*Period:* December 2019 – present

Principal Investigator of the ‘Laboratory of Ultrafast Microscopy for Nanoscale Dynamics’ (LUMiNaD).

### Scientist – École Polytechnique Fédérale de Lausanne (Switzerland)

*Period:* February 2016 – November 2019; *Advisor:* Prof. Fabrizio Carbone.

Ultrafast electron diffraction, microscopy and spectroscopy experiments performed in the LUMES laboratory. The appointment was partially supported by the EPFL Fellowship program co-founded by Marie Skłodowska-Curie (H2020 – MSCA – COFUND 2016, GA n. 665667).

### Post-doctoral Research Scholar – California Institute of Technology (U.S.A.)

*Period:* November 2011 – January 2016; *Advisor:* Prof. Ahmed H. Zewail (Nobel Laurate in Chemistry - 1999).

The research activity was focused on the investigation of the nature of atomic-scale ultrafast phenomena in nanomaterials.

### M.Sc. internship at the French Atomic Energy Commission, CEA-Saclay (France)

*Period:* March 2007 – September 2007; *Advisor:* Dr. Nicholas Barrett.

Investigation of surface properties of correlated perovskite materials. My appointment was supported within the framework of the FP6 INCEMS European project.

## TEACHING EXPERIENCES

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### Teaching assistant - École Polytechnique Fédérale de Lausanne (Switzerland)

*Period:* March 2016 – November 2019.

“*Physique Generale II*” (code: PHYS-106(a)). Spring of 2016, 2017 and 2018. Instructor: Prof. Fabrizio Carbone.

“*Solid State Physics I*” (code: PHYS-309). Fall of 2018. Instructor: Prof. Henrik Rønnow.

“*Physique Generale I*” (code: UNIL-112). Spring of 2019. Instructor: Prof. Fabrizio Carbone.

### Teaching assistant - California Institute of Technology (U.S.A.)

*Period:* March 2015 – June 2015.

“*Dynamics and Complexity in Physical and Life Sciences*” (code: Ch 228). Spring of 2015.

Instructor: Prof. Ahmed H. Zewail.

### Teaching assistant – Politecnico di Milano (Italy)

*Period:* March 2008 – September 2011.

“*Fundamentals of Experimental Physics*” (code: 081389, 12 credits, spring of 2009).

“*Fundamentals of Thermodynamics and Acoustics*” (code: 085646, 5 credits, spring of 2011).

Instructor: Prof. Alberto Tagliaferri.

## EDUCATION

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### Ph.D. in Physics (Italian/French joint degree)

**Politecnico di Milano (Italy) - École Polytechnique X (France) - CEA-Saclay (France)**

*Period:* January 2008 – October 2011.

*Advisors:* Prof. Alberto Tagliaferri, Dr. Nicholas Barrett, Prof. Henri-Jean Drouhin.

Investigation of electronic and structural properties of semiconductor nanostructures for optoelectronics applications using spectro-microscopy techniques.

*Thesis title:* Investigation of Ge Surface Diffusion and SiGe Nanostructures by Spectro-microscopy Techniques.

*Final grade:* “avec mention très honorable”.

### M.Sc. in Physics Engineering – Politecnico di Milano (Italy)

*Period:* September 2005 – December 2007.

Major in Photonics and Nanotechnology. *Final grade:* 110/110 *magna cum laude*.

### Alta Scuola Politecnica (ASP)

**Politecnico di Milano and Politecnico di Torino (Italy)**

*Period:* September 2005 – February 2008.

Diploma in Management of Innovation.

### M.Sc. in Mathematics Engineering – Politecnico di Torino (Italy)

This degree has been obtained thanks to the successful completion of the ASP program.

### B.Sc. in Physics Engineering – Politecnico di Milano (Italy)

*Period:* September 2002 – July 2005.

Major in laser physics and condensed matter physics. *Final grade:* 110/110 *magna cum laude*.

### Scientific High School Diploma – Angri, Salerno (Italy)

*Period:* September 1997 – July 2002.

*Final grade:* 100/100.

## SCIENTIFIC RESULTS

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- Author and co-author of 31 scientific publications and 1 book chapter.
- Hirsch (h)-index: 13 (from Scopus).
- Reviewer activity for the following journals: *Physical Review X*, *New Journal of Physics*, *Nano Letters*, *Structural Dynamics*, *Ultramicroscopy*, *Advances in Physics: X*, *Physica Status Solidi (Rapid Research Letters)*.

## TECHNICAL SKILLS

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- Ultrafast Electron Diffraction (UED), Ultrafast Electron Microscopy (UEM) and Ultrafast Electron Energy-Loss Spectroscopy (Femto-EELS).
- Femtosecond Lasers and Non-linear Optics.
- Transmission electron microscopy (TEM), Scanning electron microscopy (SEM) and Scanning Auger Microscopy (SAM).
- Angle-resolved Photoemission (ARPES) and Photo-electron emission microscopy (PEEM).
- Scanning probe microscopies (AFM and STM).
- Optical microscopy and Raman spectroscopy.
- *Softwares and Programming Languages:* Matlab, Mathematica, Solidworks, SimIon, Comsol, OpenFOAM, Abinit, C/C++, LabView.

## LANGUAGES

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- **Italian:** native language.
- **English:** fluent, working language.
- **French:** fluent, working language.

## FELLOWSHIPS, GRANTS AND AWARDS

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- Accepted grant proposal as co-PI entitled "*Project Heidi: Stimulated Nuclear Excitation by Electron Capture*". Founding source: Google Inc (final award of 400000 USD). (November 2018)
- Italian National Academic Qualification as Associate Professor in Experimental Physics of Matter (FIS 02/B1). Obtained on March 30th 2018.
- Accepted grant for the EPFL's international postdoctoral fellowship programme co-founded by Marie Skłodowska-Curie (March 2016, H2020 – MSCA – COFUND 2016, GA n. 665667).
- Accepted grant within the ACHN-2015 funding scheme of the Agence Nationale pour la Recherche (ANR), France. Awarded in February 2016 (400000 Euro), application withdrawn after winning.
- Award for the "*Best oral presentation at the XCVII Conference of the Italian Physical Society*" (L'Aquila, Italy) in the Condensed Matter Physics session. (September 2011)
- Accepted experiment proposal at the SOLEIL Synchrotron (Paris, France), entitled "Electronic Structure of Ge nanostructures by Resonant k space-PEEM" (experiment n. 20100485). (July 2010)
- Accepted experiment proposal at the ESRF Synchrotron (Grenoble, France), entitled "Nano-diffraction mapping and predictive modelling of the strain in single artificial SiGe nanostructures" (experiment n. SI-1873). (July 2009)
- Medal of Excellence as "*Best M.Sc. Graduate Student in Physics Engineering in 2006-2007*" at Politecnico di Milano (Italy).
- Ph.D. Fellowship of the Italian Ministry of Education, University and Research. (January 2008 – February 2011).

## SEMINARS AND TALKS AT INTERNATIONAL CONFERENCES

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- Invited talk at the 3rd International Workshop on "Electron Beam Spectroscopy for Nanophotonics", Paris (France). (Sept. 2019)
- Invited talk at the 14th Femtochemistry Conference – Dynamics of the Complexity in Chemistry, Biology and Physics, Shanghai (China). (August 2019)
- Invited talk at the International Conference on Quantum Imaging and Electron Beam Shaping (QSORT Conference-2019), Erlangen (Germany). (July 2019)
- Contributed talk at the WE-Heraeus-Seminar on "Ultrafast Quantum Phenomena in the Near Field" at the Physikzentrum Bad Honnef (Germany). (March 2019)
- Invited seminar at the New Jersey Institute of Technology (NJIT), Newark (New Jersey, USA). The seminar was part of the interview process for Assistant Professor position in Physics. (February 2019)
- Invited talk at the 9th Annual meeting of the NCCR-MUST 2019, Grindelwald (Switzerland). (Jan. 2019).
- Invited talk at the 256th meeting of the American Chemical Society (ACS) within the session "Ultrafast Molecular Sciences by Femtosecond Photons & Electrons: Symposium in honor of Ahmed Zewail", Boston (USA). (August 2018)

- Contributed talk at the XXI International Conference on Ultrafast Phenomena (UP2018), Hamburg (Germany). (July 2018)
- Invited talk at the conference “From Solid State to Biophysics IX: From Basic to Life Sciences”, Cavtat (Croatia). (June 2018)
- Invited talk at the International Conference on Electron Beam Shaping in Space and Time (QSORT Conference-2018), Jülich (Germany). (May 2018)
- Invited seminar at the University of California Irvine (UCI), Irvine (California, USA). The seminar was part of the interview process for Assistant Professor position in Physical Chemistry. (April 2018)
- Invited talk at the 4th International Conference on Ultrafast Structural Dynamics (ICUSD-2017), Trieste (Italy). (Dec. 2017)
- Invited talk at the 2nd International Workshop on "Electron Beam Spectroscopy for Nanophotonics", Barcelona (Spain). (Oct. 2017)
- Invited talk at the 6th International Workshop on "Epitaxial Growth and Fundamental Properties of Semiconductor Nanostructures", Como (Italy). (Sept. 2017)
- Invited talk at the International Conference on "Quantum physics in Complex Matter: Superconductivity, Magnetism and Ferroelectricity (Superstripes 2017)", Ischia (Italy). (June 2017)
- Contributed talk at the workshop on "Electron Microscopy with High Temporal Resolution (EMHTR-2017)", Strasbourg (France). (May 2017)
- Invited talk at the 2017 Materials Research Society (MRS) meeting, Phoenix (United States of America). (April 2017).
- Contributed talk at the 5th Banff Meeting on Structural Dynamics, Alberta (Canada). (Jan. 2017)
- Invited talk at the 7th Annual meeting of the NCCR-MUST 2017, Grindelwald (Switzerland). (Jan. 2017).
- Invited talk at the "4th Italian Experience in Biomedical Research: Young Minds at Work", Desenzano del Garda (Italy). (Nov. 2016)
- Invited talk at the EMN Meeting on Photonics 2016, Barcelona (Spain). (Sept. 2016)
- Invited talk at the International Conference on "Quantum in Complex Matter: Superconductivity, Magnetism and Ferroelectricity (Superstripes 2016)", Ischia (Italy). (June 2016)
- Invited talk at the conference “From Solid State to Biophysics VIII: From Basic to Life Sciences”, Cavtat (Croatia). (June 2016)
- Contributed talk at the 19th International Vacuum Congress (IVC-19), Paris (France). (Sept. 2013).
- Invited talk at the National Conference on Condensed Matter Physics - FisMat2013, Milano (Italy). (Sept. 2013)
- Contributed talk at the XCVII Conference of Italian Physical Society, L'Aquila (Italy). (Sept. 2011)
- Contributed talk at 28th European Conference on Surface Science (ECOSS-28), Wroclaw (Poland). (Sept. 2011)
- Contributed talk at the European Conference on Surface Crystallography and Dynamics 10 (ECSCD-10), Reading (UK). (Sept. 2010)
- Contributed talk at the 3rd International Conference on Nanostructures SELF-Assembly (NanoSEA) 2010, Cassis (France). (July 2010)

- Contributed talk at the 8th edition of International Workshop on Epitaxial Semiconductor on Patterned Substrates and Novel Index Surfaces (ESPS-NIS), Como (Italy). (June 2010)
- Contributed talk at the 26th edition of the European Conference on Surface Science (ECOSS-26), Parma (Italy). (Sept. 2009)