

Caterina Vozzi – Curriculum Vitae

PERSONAL INFORMATION

Date of birth: ORCID: 0000-0002-0212-0191
Place of birth: Milano (Italy) Research ID: B-5035-2008
Nationality: Italian Web site: www.udyni.eu

PRESENT POSITION

Since 2019 **Research Director**, Institute of Photonics and Nanotechnologies (IFN) of the Italian National Research Council (CNR) in Milano, Italy

PAST EXPERIENCES

2010 – 2019 **Senior Researcher**, Institute of Photonics and Nanotechnologies (IFN) of the Italian National Research Council (CNR) in Milano, Italy
2010 **Visiting scientist** in the group of Prof. P. Corkum at the Steacie Institute for Molecular Sciences of the National Research Council (NRC) of Canada in Ottawa, Canada.
2009 – 2010 **Researcher**, Institute of Photonics and Nanotechnologies (IFN) of the Italian National Research Council (CNR) in Milano, Italy
2006 – 2017 **Adjunct Professor** of Physics, Politecnico di Milano (Italy)
2005 – 2009 **Post Doctoral Researcher** at Istituto Nazionale per la Fisica della Materia (INFM) of the Italian National Research Council (CNR) in Milano, Italy.
2000 – 2001 **Stage** at the Institute for Health and Consumer Protection of the European Commission Joint Research Centre in Ispra, Italy.

EDUCATION

January 2005 **Ph.D. in Physics** from Università degli Studi di Milano (Italy)
March 2001 **Master degree in Physics** from Università degli Studi di Milano (110/110 cum laude)

FELLOWSHIPS AND AWARDS

2019 **Mildred Dresselhaus Guest Professorship**
2018 **ERC Proof of Concept** Grant “FESTA - Flexible Euv SpecTrometer for Attosecond science” (contract number 813103)
2013 Italian Abilitation for Full Professor in Experimental Physics of Matter
2012 - 2017 **ERC Starting Research** Grant “UDynI - Ultrafast Dynamic Imaging of complex molecules” (contract number 307964)
2004 - 2008 Postdoctoral fellowship from the Istituto Nazionale per la Fisica della Materia (INFM) of the Italian National Research Council (CNR)
2001 - 2004 Ph.D. grant at the Physics Department of Università degli Studi di Milano.

SUPERVISION OF GRADUATE STUDENTS AND POSTDOCTORAL FELLOWS

Since 2013 I have been the scientific responsible for the activities of 8 Post Docs and 3 tenure track researchers at CNR-IFN, Italy
Since 2005 I supervised 7 PhD students and 16 master thesis students at Politecnico di Milano, Italy

TEACHING

2006 – 2017 I have been course coordinator and lecturer for physics courses (Mechanics and Electromagnetism) at Politecnico di Milano (Italy)
2002 – 2018 Teaching Assistant for courses and laboratories in physics and advanced optics, Politecnico di Milano (Italy)

PROFESSIONAL ACTIVITIES

Since 2019 Faculty Advisor of the OSA Student Chapter of Politecnico di Milano
Since 2018 Associate Editor for OSA Continuum
Since 2018 Section Editor for Journal of Physics B (IoP)
2015 co-author of the Technical Design Reports for two high repetition rate attosecond beamlines for the ELI-ALPS facility (Szeged, Hungary)
Since 2013 Topical Editor in “Nonlinear and Ultrafast Optics” for Journal of Optics (IoP)

Organisation of scientific meetings

- 2020 Chair of the Gordon Research Conference on Multiphoton Processes
- 2018 Vice-Chair of the Gordon Research Conference on Multiphoton Processes
- 2017 member of the steering committee of the “Ultrafast Optics” Conference 2017
- since 2016 member of the steering committee of the “Attoseconds Physics Conference” (ATTO)
- 2016 - 2019 member of the “Ultrafast Optical Technologies” Subcommittee for the CLEO Europe/EQUEC Conferences
- Since 2013 member of the steering committee of the “High-Intensity and High-field Phenomena” (HILAS) OSA Topical Meeting
- 2010 - 2012 member of the “High-Field Physics and Attoscience” Subcommittee (QELS 7) for the CLEO Conferences

Institutional responsibilities

- since 2019 member of the Scientific Advisory Board of the Physical Sciences and Technologies of Matter Department of CNR
- since 2016 member of the Scientific Advisory Board of the Institute for Photonics and Nanotechnologies CNR-IFN (Italy)
- since 2016 member of the “CNR Open Science Task Force”, Consiglio Nazionale delle Ricerche (Italy)

Commissions of trust

- since 2018 Member of the peer review committee “Diluted matter” for Soleil Synchrotron facility
- 2017 Reviewer for the CNR “Short Term Mobility” funding program
- 2017 - 2019 Reviewer for the CNR “Progetti Bilaterali” funding program
- since 2012 Reviewer for several national and international funding agencies, including CEA Eurotalents (France), Romanian National Authority for Scientific Research and Innovation – UEFISCDI, NSERC Discovery Grants (Canada), MIUR, Helmholtz (Germany), DFG (Germany), Israel Science Foundation.
- 2012 Member of the panel for the evaluation of assessment of institutions performing R&D activities in Romania (evaluation of the institute National Institute for Research - Development of Isotopic and Molecular Technology – ITIM Cluj-Napoca)
- Since 2005 Referee for several publishers in Physics, Optics and Multidisciplinary Science, among which Science, Nature, Nature Photonics, Nature Physics, Nature Communications Physical Review X, Physical Review Letters, Light: Science and Applications, Optica, The Journal of Physical Chemistry, ChemPhysChem.

Membership of scientific society

- Since 2017 OSA Senior Member
- 2015 - 2018 Chair of the OSA “Short Wavelength Sources and Attosecond/High Field Physics” Technical Group Executive Committee

IMPACT OF RESEARCH

I am author of **more than 100 peer-reviewed publications** in renowned international journals (including Science, Nature Physics, Nature Photonics, Physical Review Letters and Laser & Photonics Reviews). I authored and co-authored many conference proceedings, 5 book chapters and 4 editorial papers (including Science) and I gave more than 40 invited talks to international conferences (including GRC and Faraday discussion), invited lectures and scientific colloquia in various universities and research centres.

My scientific production led to more than 6500 citation with an h-index of 34 (Source: Google Scholar).

MAJOR COLLABORATIONS

- N. Dudovich, Weizmann Institute of Science – Rehovot (Israel)
- Y. Mairesse and V. Blanchet, CELIA, Université Bordeaux – Bordeaux (France)
- K. C. Prince and C. Callegari, FERMI Elettra Sincrotrone Trieste (Italy)
- V. Tosa, Natl. Inst. R&D Isotopic and Molecular Technologies – Cluj-Napoca (Romania)
- V. Makhija and M. Spanner, Steacie Institute for Molecular Sciences (NRC) – Ottawa (Canada)
- C. Trallero Herrero, University of Connecticut (US)
- F. Légaré, Centre Énergie, Matériaux et Télécommunications (NRC) – Montreal (Canada)

S. Pabst, Harvard-Smithsonian Center for Astrophysics, Cambridge (US)
L. Nahon, Synchrotron SOLEIL, Paris (France)
K. Ueda, Tohoku University (Japan)
F. Calegari, DESY, Hamburg (Germany)

CAREER BREAKS

2017 Maternity leave (7 months)

SELECTION OF THE FIVE MOST RELEVANT PUBLICATIONS

1. C. Vozzi, F. Calegari, E. Benedetti, J.-P. Caumes, G. Sansone, S. Stagira, M. Nisoli, R. Torres, E. Heesel, N. Kajumba, J. Marangos, C. Altucci, R. Veletta "Controlling two-center interference in molecular high harmonic generation," Phys. Rev. Lett. 95, 153902 (2005) - 284 citations
2. G. Sansone, E. Benedetti, F. Calegari, C. Vozzi, L. Avaldi, R. Flammini, L. Poletto, P. Villoresi, C. Altucci, R. Velotta, S. Stagira, S. De Silvestri, M. Nisoli, "Isolated Single-Cycle Attosecond Pulses", Science 314, 443-446 (2006) - 1199 citations
3. C. Vozzi, M. Negro, F. Calegari, G. Sansone, M. Nisoli, S. De Silvestri, S. Stagira, "Generalized molecular orbital tomography", Nature Physics 7, 822 (2011) - 224 citations
4. C. Vozzi, F. Calegari, E. Benedetti, S. Gasilov, G. Sansone, G. Cerullo, M. Nisoli, S. De Silvestri, and S. Stagira, "Millijoule-level phase-stabilized few-optical-cycle infrared parametric source", Opt. Lett. 32, 2957 (2007) 148 citations
5. F. Calegari, G. Sansone, S. Stagira, C. Vozzi and M. Nisoli, "Advances in attosecond science", J. Phys. B: At. Mol. Opt. Phys. 49, 062001 (2016) - 143 citations including one in the Scientific Background on the Nobel Prize in Physics 2018

Short Description of Research Interests

(A) Strong field molecular imaging: Development of time-resolved direct imaging of molecular electronic structures based on strong field driven "self-probing" of molecules. In particular HHG tomography and laser induced electron diffraction. This activity is developed in the framework of the ERC Starting Research Grant "Udyni" - Ultrafast dynamic imaging of complex molecules

(B) Development of high-energy IR parametric source with passive carrier-envelope phase stabilization for HHG: Realization and characterization of a laser source tuneable in the mid-IR (1-3 μm) based on parametric amplification of ultrashort laser pulses. Energy up to 1.2 mJ and pulse duration of 17 fs have been demonstrated. A peculiar property of this source is the carrier-envelope phase stability which make it ideally suitable for HHG and single attosecond pulses generation.

(C) High order harmonic generation (HHG) in gaseous media: Generation of coherent radiation in the X-UV spectral region by focusing ultrashort laser pulses on gaseous media. In particular the following topic have been the subject of experimental and theoretical work: Effects of carrier-envelope phase of the driving electric field on HHG process in noble gases; Spectral properties of HHG in clusters of noble gases; HHG process in molecules and in impulsively aligned molecules.

(D) Single attosecond pulses generation and characterization: Single attosecond pulses ($1 \text{ as} = 10^{-18} \text{ s}$) can be achieved in the HHG process if some conditions are fulfilled. The harmonics are usually emitted as a train of attosecond pulses. By manipulating the polarization of the laser driving pulses it is possible to isolate a single attosecond pulse.

(E) Transient absorption and reflectivity spectroscopy in the visible and THz for the study of ultrafast dynamics in low dimensional materials. UV-MIR Pump – THz probe spectroscopy: Ti:sapphire laser is used to simultaneously pump the terahertz time-domain spectrometer and the OPA for the pump pulse tuning. The THz-TDS uses GaSe/ZnTe crystals for the generation of few-cycle THz pulses with in the bandwidth between 0.1 and 40 THz and the detection is implemented by electro-optical scheme with a second GaSe/ZnTe crystal. This activity started recently as a side-project in the UDynI lab and the first results have been recently obtained concerning the presence of large polarons dressing the pump-induced dielectric response of CsPbBr₃ NCs thin films.

Updated as of October 2020