

Luca Ottaviano PhD.
RESUME

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Short BIO (facts & figures)

Full Professor (2020) in Condensed Matter Experimental Physics. PhD in Physics 1997. Experimentalist with a broad cultural background in condensed matter physics. H=37 more than 4800 citations (source Scopus, Dec 2022). One patent, two books Edited (Springer), five invited book chapters. 173 ISI indexed paper (among them two invited reviews, two Phys. Rev. Lett and 14 PRB), more than 88 as reference author (either first or last 51%), 1 Special Issue of Thin Solid Films. 24 invited talks at international conferences and 26 invited seminars at international Institutions. Supervisor of 57 individual research project with bachelor, MS, PhD (12), and Post-Doc students. Inventor and Chair of international workshops and conferences. Appointed permanent member of several national and International Review Panels. Reviewer of the highest ranked Scientific Journals. Fully committed in the third mission, organizer of outreach events (2 researcher's Nights). Fields of interest: surface and nanophysics with multidisciplinary contaminations. Current interest: 2D materials beyond graphene. Systems investigated in the past: 2D metals on Silicon, Organic semiconductor thin films, Diluted Magnetic Semiconductors. He has received awards and professional recognitions during his career since the early stages.

Professional Experience and Educational Background:

- Since April 1st 2020 Full Professor in Experimental Condensed Matter Physics, Department of Physical and Chemical Sciences (DSFC) University of L'Aquila (Italy)
- Since April 2017 Habilitation as Full Professor in Condensed Matter Experimental Physics. (02/B1)
- May 19 2015- March 31 2020 Associate Professor in Condensed Matter Physics (Habilitation with the mark of "excellent") (DSFC) University of L'Aquila (Italy).
- September 2002- May 2015: Permanent position as researcher at the Department of Physical and Chemical Sciences (DSFC) University of L'Aquila.
- 1998-2002: INFN (National Institute for Condensed Matter Physics) Research Scientist.
- 1997-1998: Service Engineer at Physical Electronics (Minneapolis MN-USA).
- 1997 Phd In Condensed Matter Physics. Università di Perugia-Camerino-L'Aquila. Excellent marks.
- 1992 Laurea in Fisica Cum Laude 110/110.
- 1985 High School diploma (Maturità Scientifica) with full marks (60/60).

Other relevant titles and Commitments:

- Chair of the Panel C "Surface Science and Catalysis" of the Proposal Review Panel, Elettra Synchrotron.
- Member of the Nucleo Di Valutazione (evaluation board) of the University of L'Aquila
- Experienced Expert Evaluator for the European Commission in the Physics Panel
- Habilitation as Associate Professor in Applied Physics (02/B3)

Research Associations and Memberships:

- Since 03/06/2009 CNR research associate Institute SPIN (Unit of L'Aquila).
- Former INFN research associate LNGS (National Lab Gran Sasso).
- Member of the American Chemical Society (2016)
- Member of the European Science foundation College of Expert Reviewers.

Foreign Languages (CEFR level):

- English (C2), French (B2), Spanish (B1), Polish (A2), German (A2).

Scholarly and Creative activities (H index 37 (Scopus), 173 papers, more than 4800 citations, 37 first author papers, 50 last author papers):

- Book Edited 2 (Springer-Verlag)
- Book Chapters 5

- Guest Editor Conference Proceedings Issue **1 (Thin Solid films)**
- Refereed Journal articles (DOI Indexed) **126**
- Refereed Conference proceedings (DOI Indexed) **43**
- Invited talks **18**, Invited Seminars **19**, Oral presentations **26** & Posters **9** (see the attached list).

Research Interests (present):

Graphene fundamental properties, and graphene oxide for sensing applications. Molybdenite. 2D magnetic materials. Biological applications and interfaces with 2D materials.

Research Expertise:

Scanning Probe Microscopies and Spectroscopies, Use of Laboratory and Synchrotron Radiation Spectroscopies (XPS, XAS, ARPES), Raman Spectroscopy.

Research projects:

Led as coordinator:

- Principal Investigator of the Italian team of the project "hydrogen Sensors" MAECI Eleventh Call for Proposals on Scientific and Technological Cooperation (Scientific Track 2022). 48 months. 2023-24 100.000 €.
- PON, Programma Operativo Nazionale, Ricerca e Innovazione, Coordinator of three PhD projects. 242.000 €.
- GO-TUNE, Scientific Coordinator, "Use of graphene for composite materials" Consortium of two Universities and four companies, European Regional Funds, 5 M€
- Wave. Consortium of the GSSI and University of L'Aquila. Project on outreach 2016. Total budget 44 k€.
- INFN XILOPHON (2009-2010). National coordinator "X-ray lithography with a laboratory source" Total budget 50 k€
- PhD project on "use of synchrotron radiation" Agreement between Elettra and University of L'Aquila
- COFIN 2004 (prot. MIUR N.1864 del 10.11.2004), Italian Minister of research. Local coordinator, total budget 80 k€

Others:

- progetto MURST del 4-11-99 "MetalloMacro cicli ad alta delocalizzazione elettronica come materiali molecolari: sintesi, struttura, proprietà fisiche"
- COST ACTION MP0901 "Designing novel Materials for Nanodevices" Chair C. Bittencourt (Univ. Mons BE).
- COST ACTION MP0601 "Short Wavelength Laboratory Sources" Chair prof. A. Michette (King's College London, UK).

Professional service on-campus:

Research:

- Since 2018 In Charge of the **2D Lab** (100 mq ca) for the study of fundamentals and applications of 2D materials and interfaces beyond graphene, hosting two Atomic Force Microscopes, and two Scanning Tunneling Microscopes.
- 2009-2017 In Charge of the XIL for interference Lithography (100 m²), and for the Scanning Probe systems of the department.

Please refer to the section with: description of the research topics and contribution, detailed publication list, list of attended conferences and invited seminars.

Teaching:

- 2021-2022 90 hours Course of **General Physics I** (Mechanics and thermodynamics) to the students of the first year of the first level degree in *Ingegneria dell'Informazione*. 120 students
- 2021-2022 60 hours Course of **Advanced Physics Laboratory** to the students of the first year of the second level degree in *Physics*. 9 students
- 2020-2021 60 hours Course of **General Physics I** (Mechanics) to the students of the first year of the first level degree in *Ingegneria dell'Informazione*. 120 students
- 2020-2021 60 hours Course of **General Physics II** (Electromagnetism) to the students of the second year of the first level degree in *Ingegneria Civile*. 100 students
- 2019-2020 60 hours Course of **General Physics II** (Electromagnetism) to the students of the second year of the first level degree in *Ingegneria dell'Informazione*. 100 students
- 2019-2020 20 hours Course of **Experimental Methods in Physics** to the students of the second year of the second level degree in *Physics (Taught in English)*
- 2018-2019 60 hours Course of **General Physics II** (Electromagnetism) to the students of the second year of the first level degree in *Ingegneria dell'Informazione*. 80 students
- 2018-2019 20 hours Course of **Experimental Methods in Physics** to the students of the second year of the second level degree in *Physics (Taught in English)*
- 2017-2018 90 hours Course of **General Physics II** (Electromagnetism) to the students of the second year of the first level degree in *Ingegneria dell'Informazione*. 80 students.
- 2016-2017 90 hours Course of **General Physics II** (Electromagnetism) to the students of the second year of the first level degree in *Ingegneria dell'Informazione*. 80 students.
- 2015-2016 60 hours Course of **General Physics II** (Electromagnetism) to the students of the second year of the first level degree in *Ingegneria*. 100 students.
- 2015-2016 60 hours Course of Physics of the Nanostructures to the students of the second year of the second level degree in *Physics*. 4 students.
- Since 2013 Member of the teaching body of the PhD course in Physics.
- Since 2003 Professor in Physics of the Nanostructures (Second Level degree in Physics).
- 2011-2012 Member of the scientific committee and of the teaching body of the 2nd level master degree in "intellectual property and technology transfer".
- 2006-2007-2008 18 Hours teaching load at the first level Master in "Nano-tecnologie per l'innovazione"
- 2003-2009 training classes in the course of "Meccanica dei Sistemi" (Diploma in Physics).
- 2003-2008 training classes in the course of "General Physics II" (Diploma in Mathematics).

Student Supervising (8 Post Doc, 12 PhD, 10 MS, 14 Bachelor, 11 Old type Degree)

Please refer to the attached list of supervised students.

Service:

- 2021 Appointed by the Rector of the University as member of the Nucleo di Valutazione.
- 2019-21 Appointed by the Director of the Department as Departmental member representative in the University Research Advisory Board
- 2019-21 Chair of the "Commissione Ricerca" of the Department of Physical and Chemical Sciences, and representative member for the area of experimental condensed matter physics.
- 2018-21 Member of the Steering Boards of the Teaching Courses in Physics for the Area of Condensed Matter Physics.
- 2018-21 Member of the University Patent Board (D.R. 1216/18)
- 2018 Official research contact point of the University of L'Aquila with the company LFoundry
- 2017-21 Substitute Member of the "Spin-off" University board.

- 2016 Founder of the Association “Backstage Univaq”
- Since 2015 Member and Co-founder of the Association “Alumni” of the University of L’Aquila.
- 2015-21 Member of the University Board for Outreach Initiatives to schools.
- Since 2015, Member of the Board of Directors of the University Publisher “L’ Una”
- 2014-2015 Chair of the organizing committee for the University of L’Aquila of “Sharper” European Project HORIZON 2020 MCSA “researcher’s Night”
- 2003-2017 ERASMUS Departmental Coordinator. In charge with several International Bilateral Agreements. ERASMUS Mundus departmental contact for the Programmes Phoenix, GATE, and TOSCA.

Professional service off-campus:

Editorial Boards:

Member of the Editorial board of "Sensors" ISSN 1424-822 IF **2.475**.

Associate Editor Journal of materials science IF **4.01**

Scientific Committees:

- COST ACTION MP0901 "Designing novel Materials for Nanodevices" Chair C. Bittencourt (Univ. Mons BE). Member of the Scientific Committee.
- COST ACTION MP0601 "Short Wavelength Laboratory Sources" Chair prof. A. Michette (King's College London, UK).

Short term research stays in other institutions:

- National Physical Laboratory (TEDDINGTON LONDON UK) 04/2009 05/2009.
- National Physical Laboratory (TEDDINGTON LONDON UK) 04/2008 06/2006.
- Physics Department University Knoxville Tennessee (USA) 09/1999 12/1999.
- CERN 9/1991-12-1991 Collaboration ICARUS (INFN).

Reviewer and Evaluator:

Besides being appointed for ordinary evaluation commitments as regular referee of international scientific journals, and external reviewer of PhD thesis in institutions other than his, two main high profile commitments characterize the International professional service "off-campus" of the Fellow:

- 1) He is **Chairman of the Panel C "Surface Science and Catalysis" of the board of expert evaluators of proposals submitted to Elettra**. As Chair he manages remotely the evaluation of an average of 80 proposal (for beam-time allocation) per semester and coordinates, beside being reviewer himself, the review process of eight peers selected for their internationally acknowledged level of experience and expertise on the use of synchrotron radiation facility. The Panel of Chairs (composed of seven members, coordinating about 60 reviewers) meets any semester at Elettra (Trieste IT) for the final shortlist of Proposals to be granted for beam-time. Chairs are appointed by the Chief of the Elettra S.p.A. prof. Alfonso Franciosi. The commitment is pro-bono.
- 2) Since 2008 he is an **experienced expert evaluator for the European Commission** for the evaluation of research projects (for example FET Open), and individual Marie Curie Fellowships. The Commitment is upon honorarium, it is either carried out remotely or on-site at Covent Garden Brussels, and implies an internationally acknowledged scientific reputation, work efficiency, and excellent interpersonal skills. He has been appointed as Evaluator, Rapporteur for drafting the consensus reports, and Monitor for the evaluation ex-poste of projects. So far he has been appointed to 10 Evaluation task for Horizon 2020, and 11 for the FP7 scheme. His profile is in the international data base of the expert evaluators of the European Commission and he has been recommended and appointed to evaluate so far other 14 schemes for National Projects of EU member States and Associated countries.

More in details:

- Horizon Europe Expert evaluator (Action MSCA IF-2022) Oct 2022.
- Horizon Europe Expert evaluator (Action MSCA IF-2022) Oct 2021.
- Progress monitor Expert for FET-Open projects in 2020 and 2021
- Since 2018 Honoured Chair of the Panel C "Surface Science and Catalysis" of the Proposal Review Panel PRP Elettra (Synchrotron Trieste IT).
- Expert evaluator of the EUREKA- Eurostars proposals, Innovation Fund Denmark 2021
- SOMOPRO Programme 2020 (South Moravian Region of the Czech Republic).
- SOMOPRO Programme 2020 (South Moravian Region of the Czech Republic).
- Horizon2020 Expert evaluator (Action MSCA IF-2019) Oct 2020.
- Expert evaluator of the EUREKA- Eurostars proposals, Innovation Fund Denmark
- Appointed Evaluator of the Research and Innovation Foundation's Cyprus (RIF) RESTART 2016 – 2020
- Expert evaluator of the scheme "leading fellows" University of Leiden
- 2019 Reviewer of post-doc projects of the government of Catalonia.
- 2019 Reviewer of National projects of the Slovenian Ministry of the Research.
- 2019 External Expert of the COST Association in the remote evaluation of proposals for the Open Call 2019-1
- 2019 Appointed expert evaluator of the Innovation Fund Denmark <https://innovationsfonden.dk/en>

- Since 2018 Member of the HFRI scientific board (Hellenic Republic Ministry of Education)
 - Since 2017 CERIC-ERIC expert evaluator of experiments proposal
 - 2018 “la Caixa” Foundation member of the Research Team of Reviewers
 - Since 2015 Expert evaluator of the EUREKA- Eurostars proposals, for technology Transfer.
 - Expert Evaluator of the Swiss National Foundation ("Science and Technology Co-operation Programme Switzerland-Russia" 2015)
 - Expert Evaluator of the Danish Council for Independent Research (DFF-Mobilex grant 2015)
 - Horizon2020 Expert evaluator (Action MSCA IF-2019) Oct 2021
 - Horizon2020 Expert evaluator (Action MSCA IF-2019) Oct 2020
 - Horizon2020 appointed **Progress Monitor** (Action FET-OPEN) Feb 2020.
 - Horizon2020 Expert evaluator (Action MSCA IF-2019) Oct 2019.
 - Horizon2020 **Progress Monitor** (Action FET-OPEN) Feb 2019.
 - Horizon2020 **Progress Monitor** (Action FET-OPEN) Feb 2018.
 - Horizon2020 Expert evaluator (Action MSCA IF-2018) 2018.
 - Horizon2020 Expert evaluator (Action MSCA IF-2016) 2016.
 - Horizon2020 Expert evaluator (Action FETOPEN) call of June-July 2016.
 - Horizon2020 Expert evaluator (Action FETOPEF) call of September 2015.
 - Horizon2020 Expert evaluator (Action MSCA IF-2015) call of September 2015.
 - Horizon2020 Expert evaluator (Action MSCA IF-2014) call of September 2014.
 - European Science Foundation member of the panel of reviewers of the Graphene Call (Competitive Call for Consortium Extension) April 2014.
 - FP7 expert evaluator (11 Calls in the area People, 3 Calls in the area Capacities).
 - 2008 Expert evaluator for MIUR (Italian Ministry of Education) VQR 2004-2010 Area Gev 02.
 - Member of the pool of Experts of the REPRISE (Register of Expert Peer Reviewers for Italian Scientific Evaluation) Areas: fundamental research, industrial research.
 - Since 2009 Expert evaluator of the SOMOPRO Programme (South Moravian Region of the Czech Republic).
 - 2008-2010 Evaluator of post-doc projects for RBUCE (Consortium of Universities in Paris).
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- 2020 Member of the selection committee for a Researcher Position (rtd A) in Condensed Matter Physics, under the Decree D.R. n. 942/2020 02.10.2020 Università dell’Aquila (IT).
 - 2022 Member of the selection committee for a Researcher Position (rtd B) in Condensed Matter Physics, under the Decree D.R. n. 942/2020 02.10.2020 Università del Salento (IT).
 - 2022 Member of the selection committee for a Researcher Position (rtd A) in Condensed Matter Physics, under the Decree D.R. n. 942/2020 02.10.2020 Università Roma la Sapienza(IT).
 - 2020 Member of the selection committee for a Researcher Position (rtd B) in Condensed Matter Physics, under the Decree D.R. n. 942/2020 02.10.2020 Università dell’Aquila (IT).
 - 2020 Member of the selection committee for PhD candidates in “Modelli matematici per l’ingegneria, elettromagnetismo e nano-scienze” under the Decree D.R. n. 1939/2020 Università La Sapienza Roma
 - 2020 Member of the *viva* committee of the PhD in “Sciences and Technology, theoretical and Experimental Physics” (School of Advanced Studies, University of Camerino (MC)).
 - 2020 Member of the selection committee for an Associate Professor Position in Condensed Matter Physics, under the Decree D.R. n. 123 19.02.2020 Università del Salento (IT).
 - 2019 substitute Member of the selection committee for an Associate Professor Position in Condensed Matter Physics, under the Decree D.R n. 3010/2019 del 08.10.2019 Univ. La Sapienz Rome (IT).
 - 2019 member of the PhD in Physics and Nano-Sciences *viva* committee (University of Lecce Italy)
 - 2018 member of the PhD in Nanotechnology and Materials Science *viva* committee (Politecnico di Torino, Italy)
 - 2016-2017 Reviewer and member of the PhD in Physics *viva* committee (Univ. of Naples, Caserta, Dublin (IR), Bologna, Torino, Modena, Trieste).
 - 2011 Reviewer and member of the PhD in Physics *viva* committee (Univ. of Naples).
 - Book Proposal Reviewer for World Scientific Publisher.
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- Reviewer of Nature Communications, Advanced Functional Materials, Physical Review Letters, Nanoscale, Nanoscale Advances, 2D Materials, Scientific Reports, Carbon, ACS Paragon Plus, Physical Review B, Physica Review Applied, Applied Physics Letters, Journal of Applied Physics, Journal of Physics Condensed Matter, Surface Science, Thin Solid Films, J. Physics D, Nanotechnology, JPCC.

- Guest Editor for Thin Solid Films (proceedings of the FNMA09 conference).

Conferences Chairs, organization, and member of the Scientific Committee:

- 2021 June Chair of the session “Advanced Materials for nanobiotechnology” at the 1st International virtual conference New Times (New Trends in Materials Science and Engineering)
- 2019 Sept. Chair and Convener of the session on “2D Materials” at the 105th SIF (Società Italiana della Fisica) Conference GSSI L’Aquila
- 2019 Sept. Member of the Scientific Committee of the XLVIII National Congress on Magnetic Resonance L’Aquila, September 11-13 2019
- 2019 May. Session Chair at the conference Nanomed, Paestum Salerno.
- 2019 May. Chair of the session Thu-M1 of the **EMRS** (Symposium U) 2 Dimensional Materials: Hybrid composites incorporating low dimension materials for sensors and clean energy applications.
- Member of the Technical-Scientific Committee of the International Conference Nano-Innovation September 2016 Rome (IT); Chair of the Technical Session IV.C “2D materials: sensing and nano-bio applications”
- Member of the scientific Committee of CIMTEC 2016 Montecatini (IT) Symposium F (on Graphene).
- Hybrid nanomaterials for functional applications, Nanotech France 2016 /European Graphene Forum 2016 Joint events. member of the International Scientific Committee.
- Founder of the GraphX Conferences series on Graphene (GraphITA 2015, GraphEL 2012, and GraphESP 2014, GraphITA 2011).
- Member of the Scientific Committee of the COST action MP901 “NanoTP”
- Member of the Scientific Committee of GraphEsp2014 Lanzarote (ES), Third conference of the GraphX series.
- Member of the Scientific Committee of GraphHEL Mikonos (GR), Second conference of the GraphX series.
- Member of the scientific Committee of CIMTEC 2012 Montecatini (IT) Focused Session A-13 (on Graphene).
- Inventor, Chair, and organizer of GraphITA (May 15-18 2011 L’Aquila (IT)). Opening Lecture **Sir. K. Novoselov Nobel Prize** in Physics 2010.
- Chair and Organizer of the FNMA09 conference (27-20 September 2009 Sulmona (IT))
- SGS2004, SGS2002, and SGS2000 International Seminar on Semiconductor Gas Sensors Ustron (PL) member of the international advisory board.

Research and teaching stay off-campus (as visiting scientist):

- 2019 Gdansk, Erasmus Teaching Staff Mobility with 6 hours course.
- National Physical Laboratory (TEDDINGTON LONDON UK) 04/2009 05/2009.
- National Physical Laboratory (TEDDINGTON LONDON UK) 04/2008 06/2006.
- Physics Department University Knoxville Tennessee (USA) 09/1999 12/1999.
- CERN 9/1991-12-1991 Undergraduate staff member of ICARUS collaboration.

OTHER

Outreach:

- 2019 Invited Speaker of the Thursday Morning Science, University Students Outreach association.
- Chair of the Event “50 anni di Fisica a L’Aquila” 14-15 October 2016 L’Aquila Italy
- November 2015 Coordinator of the event lecture “Cinque Giovani Maestri” for the Inaugural Event of the Academic Year with the President of the Italian Republic. Interview by Radio Tre.
- 2014-2015 Coordinator for the University of L’Aquila of the European Researchers’ Night “Sharper”
- 2015 Sept 26 Radio Interview by Radio Tre. Program “Radio Tre Scienza”.
- 2013 Dec 18 One-page interview on graphene by “il Centro”.
- 2012 April 06 Radio Interview by Radio Tre. Program “Radio Tre Scienza”.
- 2010 Oct 07 Sole24Ore Presentation of the Graphita Conference.
- 2009 YouTube Presentation of the Physics Department <http://www.youtube.com/watch?v=yXIKRktV0eA> (2300 views)

Awards and professional recognition:

- 2014 ranked first for the quality of the research at the University of L’Aquila.
- 2013 “Premio Cultura dell’Eccellenza” awarded by AGICA (Agenzia Giornalistica Cultura in Abruzzo) for the Culture of Excellence in Abruzzo.
- 2011 Shortlisted for a position as Associate Professor at the University of Exeter (UK)
- 2001 Ranked first in the selection for a position as researcher at NNL, National Nanotechnology laboratory, University of Lecce.
- 1993 “Premio Reiss Romoli” award for excellence in University studies.
- 1985 “Premio Reiss Romoli” award for excellence in High School studies.

Educational and Professional Specializations:

- 1999, School on Synchrotron Radiation (ITCP) Trieste (IT).
- 1997/1998, Practical Training Stage on XPS and Scanning Auger Microscopy systems (Physical Electronics) Eden Prairie (MN-USA).
- 1997, Training on UHV AFM/STM and UHV VT-STM (Omicron) Frankfurt (DE). 1996, School on Scanning Probe Microscopy (CNR) Bologna (IT).
- 1995, ISASST1 First International School on Applied Surface Science Techniques (ITCP) Trento (IT).
- 1993/94/95, National School on Condensed Matter Physics (Villa Gualino) Torino (IT).

Technical areas of expertise:

Ultra-High-Vacuum UHV technology, photoelectron spectroscopy using standard and **synchrotron radiation** sources, Scanning Auger Electron Spectroscopy and Microscopy (AES), Atomic Force Microscopy (AFM), Magnetic Force Microscopy, Atomic Force Lithography, Variable Temperature Scanning Tunneling Microscopy and Spectroscopy (STM/STS), Spin Polarized STM, EXAFS, XAS, growth of thin organic and inorganic films on semiconductor surfaces. Chemical exfoliation, mechanical exfoliation, and fabrication of hybrid 2D heterostructures.

Luca Ottaviano RESEARCH

Research Profile brief history

Currently He is an internationally acknowledged leader in the study of fundamental physical (structural and electronic) properties of two-dimensional materials (Graphene, Transition Metal Dichalcogenides, and Cr-Halides). He is able to lead, and participate to, institutional, national, and international, multidisciplinary projects for applications of these materials in Materials Science, Gas sensing, and nano-bio technology. In the field of 2D materials he pioneered since 2008 the research in his institution, has started, chaired and organized the first Italian international Conference on Graphene and 2D materials (GraphITA 2011), he has edited two books for Springer, and he is (for graphene and 2D materials) expert evaluator for the European Commission and appointed member of the European Science foundation College of Expert Reviewers. He has published in this field 2 invited reviews papers and 35 research articles in International ISI indexed journals authoring 27 of them as first or senior (last author). He has given six invited talks, and 12 invited seminars. His interest on 2D materials dates back to 2008 and sparked from a short-term research stay at NPL (Teddington London).

Briefly In the past, he has focused his independent experimental research interest on three main topics: thin films of phthalocyanines and organic molecules, 2D metals on semiconductors, structural and electronic properties of Manganese in Germanium for spintronics applications. This coherent body of research has produced overall 115 research papers (out of which 53 led as first or last author), and has led to 30 Invited Talks and Seminars at international conferences and Institutions. During the very early stages as researcher (undergraduate) he has carried out supervised research on the structure of liquid metals studied with synchrotron radiation-based X-ray Absorption Spectroscopies (supervision of prof. A. Filipponi). This research has led to early papers two as first author and brought experience in the use of large-scale synchrotron radiation facilities. In relation to the use of synchrotron radiation sources he has participated to 15 beamtimes for a grand total of 260 shifts (2 LURE, 2 ESRF, 11 Elettra), he has personally submitted 5 proposals with an acceptance rate of 100%. The publication output, in relation to Synchrotron Radiation studies, has been of 24 scientific papers so-far.

The core of his experimental skills is: Scanning Tunneling Microscopy/Spectroscopy and X-Ray absorption and photoelectron spectroscopies using lab sources and synchrotron radiation facilities. This implies mastering technical skills, manual dexterity, and UHV technology. He is able to conceive, design, and personally run experiments, but He is now more active now in the coordination and supervision of experiments, data analysis and discussion and in individual drafting of a significant fraction (more than 50%) of his papers as a senior author.

Patents & Publication List

- 1) Italian Patent "Materiali tridimensionali a base di ossido di grafene" n.102015000038909

BOOKS:

1. **L. Ottaviano** and V. Morandi Eds., "GraphITA 2011 Selected papers from the Workshop on Fundamentals and Applications of Graphene", Springer, pp. 229, ISBN 978-3-642-20644-3
2. V. Morandi and **L. Ottaviano** Eds. "GraphITA Selected papers from the Workshop on Synthesis, Characterization and Technological Exploitation of Graphene and 2D Materials Beyond Graphene "Carbon Nanostructures Series editor Paulo Araujo, Tuscaloosa, AL,USA; Springer pp. 222, ISBN 978-3-319-58132-3, DOI 10.1007/978-3-319-58134-7

ISI Indexed papers

First Author 37

Last Author 51

1. "Synchrotron Radiation Photoemission Spectroscopy of Oxygen Modified CrCl₃ Surface" R. Gunnella, M. Ali, S. Kazim, M. Jugovac, P. Moras, **L. Ottaviano**, D. Mastrippolito and T. Klimczuk, **Phys. Chem. Chem. Phys.**, 2022, DOI: 10.1039/D2CP04586A
2. "Hydrogen Production Mechanism in Low-Temperature Methanol Decomposition Catalyzed by Ni₃Sn₄ Intermetallic Compound: A Combined Operando and Density Functional Theory Investigation" S. Mauri, G. D'Olimpio, C. Ghica, L. Braglia, C-N Kuo, M.C. Istrate, C. Marian, C-S Lue, **L. Ottaviano**, T. Klimczuk, D. Boukhvalov, A. Politano, P. Torelli, **The Journal of Physical Chemistry Letters** (2023) in press.
3. "Lithium recovery through WS₂ nanofillers-promoted solar photothermal membrane crystallization of LiCl" S. Santoro, M. Aquino, C. Rizza, J. Occhiuzzi, D. Mastrippolito, G. D'Olimpio, A. H.Avci, J. De Santis, V. Paolucci, **L.**

- Ottaviano**, L. Lozzi, A. Ronen, M. Bar-Sadan, D. Suk Han, A. Politano, E. Curcio, **Desalination** 546, 116186 (2023). DOI: 10.1016/j.desal.2022.116186
4. "Sustainable hydrogen production using group-10 metal chalcogenides" as low-cost effective electrocatalysts" G. D'Olimpio, S. Santoro, C-N. Kuo, **L. Ottaviano**, C. Shan Lue, D. W. Boukhvalov, and A. Politano, **Advanced Sustainable Systems** 6, 2200168 (2022). DOI: 10.1002/adsu.202200168
 5. "Intense and stable room-temperature photoluminescence from nanoporous vanadium oxide formed by in-ambient degradation of VI3 crystals " D. Mastrippolito, H. Swiatek, P. Moras, M. Jugovac, R. Gunnella, L. Lozzi, P. Benassi, T. Klimczuk, **L. Ottaviano**, **Journal of Luminescence** 251,119137 (2022). DOI: 10.1016/j.jlumin.2022.119137
 6. "Unconventional ferrimagnetism and enhanced magnetic ordering temperature in monolayer CrCl₃ by introducing O impurities and Cl vacancies" D. Mastrippolito, J. Wang, G. Profeta, and **L. Ottaviano**, **J. Phys. Mater.** 5, 014004 (2022). DOI: 10.1088/2515-7639/ac5dcd
 7. "III–VI and IV–VI van der Waals Semiconductors InSe, GaSe and GeSe: a Suitable Platform for Efficient Electrochemical Water Splitting, Photocatalysis and Chemical Sensing " D. W. Boukhvalov, G. D'Olimpio, Nappini, **L. Ottaviano**, F. Bondino, and A. Politano **Isr. J. Chem.** e202100125 (2022). DOI: 10.1002/ijch.202100125
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Luca Ottaviano (list of students mentored, topics & marks of their thesis)

Presently coordinating 1 post doc, 1 PhD, and 1 MS project.

Supervised so far a grand total of 57 individual research projects (8 post doc projects, 12 PhD, 12 MS, 14 BS, and 11 old type degree in Physics). Three out of seven PhD students have been awarded with the mark of excellence. Among the MS, BS, and old type degree 18/32 were evaluated with full marks).

Post Doc (in Physics): (8 projects)

- 2021 Gianluca D'Olimpio "Innovative two-dimensional materials for Hydrogen production"
- 2018 Mushtaq Ali "Innovative two-dimensional materials"
- 2014-15-16-17 Francesco Perrozi "Fundamental properties and applications of two-dimensional materials"
- 2013 Federico Bisti "Electronic properties of nanoscale systems"
- 2012-2011 Stefano Prezioso "Applicazioni di un laser X per litografia e fabbricazione di un laser a feedback distribuito nell'infrarosso"
- 2006-2007 Adriano Verna "Studio di strutture di pentacene su superfici vicinali di rame"

PhD (in Physics) (12 projects : 1, 11 graduates)

- XXXVI Cycle PhD (DSFC L'Aquila) Dario Mastrippolito.
- XXXIII Cycle PhD (School of advanced Studies Camerino MC) Shafaq Kazim *on going* "Novel two-dimensional ferromagnets" Co-tutelled with prof. R. Gunnella Univ Camerino.
- XXXIII Cycle Industrial PhD (DSFC L'Aquila) Stefano Palleschi (partner Lfoundry and Tel Aviv Nanotechnology center) *on going.* "Raman investigation of buried interfaces for advanced electronic applications"
- XXXIII Cycle Industrial PhD (DSFC L'Aquila) Gianluca D'Olimpio (partner Hygraner and Politeknika Gdanska Gdansk PL) *on going.* "Synthesis and applications of Graphene oxide in composite and ink materials"
- XXXIII Cycle Industrial PhD (DSFC L'Aquila) Ilaria Iacoboni (partner Elantas and Univ of Nova Gorica SL) *on going* "Production and study of graphene oxide coating for industrial applications"
- XXIX PhD Cycle (DSFC L'Aquila) Priscilla Corsi "Computational study of the role of Renshaw cells in the mammalian locomotor circuit"
- XXVI Cycle (DSFC L'Aquila) Francesco Perrozi "Graphene oxide: from fundamentals to applications" *Excellent.*
- XXVI Cycle (DSFC L'Aquila) Maurizio Donarelli "Electronic properties and potential device applications of exfoliated MoS₂" *Very good.*
- XXV Cycle Federico Bisti (Phys. Dep. L'Aquila) "Ab-initio and photoelectron spectroscopy studies of carbon-based materials" *Excellent.*
- XXIII Patrizia DeMarco (Phys. Dep. L'Aquila) "Issues in structural identification of carbon based innovative materials: from pentacene derivatives to graphene" *Very good.*
- XXI Cycle Pietro Parisse (Phys. Dep. L'Aquila) "Proprietà morfologiche, strutturali, elettroniche, e di trasporto di film sottili e cristalli singoli di molecole aromatiche: Pentacene, 6,13 Pentacenequinone, Rubrene" *Excellent.*
- XXI Cycle Carla Di Teodoro (Phys. Dep. L'Aquila) "Studio teorico-computazionale e sperimentale di proprietà elettroniche e strutturali di nanostrutture" *Very good.*

MS Degree (in physics) (12 projects)

- 2022 Luigi Camerano Spelta
- 2020 Dario Mastrippolito "Study of the exciton phonon coupling in doped MoS₂ with resonant Raman and Photoluminescence spectroscopy" " *110/110 e lode.*
- 2019 Fabio Priante "An ARPES investigation via 13C-12C isotopic substitution" *110/110 Cum Laude*
- 2018 Silvia Tosti "Studio mediante Raman di interfacce Silicio ossido" *110/110 e lode.*
- 2018 Aleksandra Bojar "Raman spectroscopy of annealed monolayer MoS₂" MS degree at Technical University Gdansk, Highest mark (5/5).
- 2017 Gianluca D'Olimpio "Studio di proprietà di fotoluminescenza di materiali bidimensionali: MoS₂" *108/110*
- 2015 Marco Fantasia. "Studio dell'accoppiamento elettrone-fonone nel grafene mediante sostituzione isotopica"
- 2012 Gloria Anemone "Composti organici innovativi per l'optoelettronica: studio sperimentale delle proprietà elettroniche." *105/110.*

- 2010 Domenico Bonanni "Self-regenerating, cost-effective, room-temperature, ultrasensitive rGO gas sensors for Environmental, Security and Military applications." 110/110 e lode.
- 2010 Francesco Perrozi "Studio di grafene ossidato mediante spettroscopia Raman e di fotoemissione" 110/110 e lode.
- 2010 Maurizio Donarelli "Uso di litografia interferenziale da raggi X per applicazioni in fotonica" 110/110.
- 2005 Pietro Parisse "Proprietà elettroniche e strutturali del Pentacene nella fase di film sottile" 110/110 e lode.

Bachelor Degree (in Physics 14 projects):

- 2016 Fabio Priante "Effetti di substrato nella riduzione dell'ossido di grafene" 110/110 e lode.
- 2015 Gianluca D'Olimpio "Fabbricazione di strutture 3D a base di Ossido di grafene" 90/110.
- 2012 Francesco Paparella "Nanolitografia per ossidazione anodica mediante microscopia a forza atomica di disolfuro di molibdeno." 93/110.
- 2012 Daniela Di Felice "Esfoliazione e studio di cristalli bidimensionali di disolfuro di molibdeno" 93/110.
- 2011 Alessio Pozzi "Studio della composizione chimica ai bordi di Ossido di Grafene mediante spettroscopia di fotoemissione a raggi X e microscopia ottica." 110/110 e lode.
- 2011 Matteo Cialone "studio sperimentale dei bordi di ossido di grafene con tecniche di microscopia elettronica e spettroscopia a raggi X" 95/110.
- 2011 Adolfo De Sanctis "Deposition and characterization of Graphene from solid carbon sources " 110/110.
- 2010 Cesare Tresca "Proprietà elettroniche di materiali organici ferroelettrici" 100/110.
- 2008 Andrea D'Angelo "Nanolitografia per ossidazione anodica mediante microscopia a forza atomica" 107/110.
- 2006 Federico Bisti "Studio mediante spettroscopia di fotoemissione X di film sottili di biossido di stagno" 110/110 e lode.
- 2006 Maurizio Donarelli "Studio mediante microscopia e spettroscopia a scansione tunnel di leghe manganese-germanio" 110/110.
- 2004 Fortunato Piersimoni "Determinazione della funzione di lavoro di Sistemi metallici bidimensionali con risoluzione subnanometrica mediante microscopia a scansione tunnel" 110/110.
- 2002 Fabio Valentini (Course in Material Sciences) "Uso delle tecniche SP-STS e SP-STM per indagine morfologica dei domini magnetici di un multistrato Co10-Fe30" 110/110 e lode.
- 2002 Pietro Parisse "Implementazione sperimentale di microscopia e spettroscopia a scansione tunnel spin polarizzato." 106/110.

Old Type Degree in Physics (Comprising First and 2nd level degrees 11 projects):

- 2015 Stefano Palleschi "Esfoliazione identificazione ed effetti termici di post-annealing di strati singoli di MoS₂" 100/110
- 2009 Francesco Fioriti "Studio delle dinamiche di crescita di materiali organici basso fondenti: il caso del 6-13 pentacenequinone" 108/110.
- 2005 Sandro Faccani "Proprietà elettroniche strutturali di leghe metalliche bidimensionali investigate mediante spettroscopia di fotoemissione" 110/110.
- 2004 Francesco D'Amico "Caratterizzazione strutturale e elettronica di film sottili di molecole organiche di origine biologica" 110/110.
- 2003 Michela Rossi "Crescita di film ultrasottili di triossido di tungsteno: studio mediante tecniche di diffrazione e microscopie a scansione di sonda." 108/110.
- 2002 Fabio Bussolotti "Interazioni di gas con superfici cristalline di WO₃" 110/110 e lode.
- 2001 Carla Di Teodoro "Formazione e proprietà elettroniche di nanostrutture di stagno su silicio (111)" 110/110 e lode.
- 2001 Christophe Bonifacio Nacci "Trasferimento di carica in sistemi metallici bidimensionali: interpretazione microscopica degli spettri di fotoemissione" 108/110.
- 2000 Marco Crivellari "Studio al variare della temperature mediante microscopia a scansione a effetto tunnel (STM) del sistema Sn-Si(111) nell'intorno di deposizione di strato singolo." 110/110.
- 1999 Alessandro Montefusco "Studio mediante XPS dei modi di adsorbimento della naftalocianina su Si(111)7x7 e Si(100)2x1: effetti di coadsorbimento di ossigeno" 110/110 e lode.
- 1997 Franco Rispoli "Crescita e Caratterizzazione mediante XPS di strati sottili di ftalocianina depositati su substrati di Si(111)7x7 e Si(100)2x1" 110/110.

Luca Ottaviano List of participated Conferences (63) and Invited Seminars (25)

I have conceived, procured funding, organized, and managed GraphITA 2011 the first international conference on graphene and 2D materials in Italy (opening lecture sir. K.Novoselov Nobel Prize in Physics 2010). The conference has continued as a graphX series in Europe (GrapHEL 2012, GraphESP 2014), I have then Co-Chaired GraphITA 2015. I have also Chaired and organised in 2009 the FNMA conference in Sulmona (AQ, Italy). I have attended a grand total of 53 conferences so far, 3 as chair, receiving 17 invited lectures at international conferences. The invited I am proud of is the one at the EMRS Conference in Strasbourg.

Conferences (63, 3 organised, 19 as session chair or member of the steering committee, 23 invited, 24 orals, 7 posters)

- July 2021 European_Japanese Workshop 2D organic and inorganic materials: Basic science to applications **Invited Talk. (virtual conference)**
- 2021 June Chair of the session “Advanced Materials for nanobiotechnology” at the 1st International virtual conference New Times (New Trends in Materials Science and Engineering)
- Sept 2020, Symposium FE of CIMTEC 2020 Montecatini (IT) **Invited Talk.**
- Nov 2019, Napoli (IT) **CA2D** Carrier Doping in 2Dimensional Materials **Invited Talk.**
- June 2019, Paestum (Salerno Italy) Nanomed International Conference **Invited Talk.**
- May 2019, NICE France **EMRS** Symposium U **Invited Talk and Chair of a Session.**
- Sept 2018, Italy India bilateral Workshop Camerino **Invited Talk.**
- Sept 2017, Nanotech Italy **Chair** of the session on graphene and 2D materials.
- May 2017, Phosphorene and 2D companions Rome CNR (Oral).
- Feb 2017, TRNM Levi (FN) (**Invited Talk**).
- Sept 2016, Nano-innovation Roma (IT) **Chair of a thematic session.**
- June 2016, CIMTEC, Perugia (IT) Member of the international advisory board.
- May 2016, GM2016 Paestum (**Invited**).
- September 2015, GraphITA, Bologna (IT) (**CHAired and ORGANIZED**).120 attendees
- February 2014, GraphESP Lanzarote (ES) (Oral) and Member of the Sci. Comm.
- September 2012, GrapHEL 2012 Mikonos (GR) (2 Oral).
- June 2012, CIMTEC 2012 Montecatini (IT) (Oral).
- December 2011, Carbomat Catania (IT) (Oral).
- September 2011, SSP2010 Krakow (PL) (**Invited**).
- May 2011, GraphITA 2011 L’Aquila (IT), (**CHAired and ORGANIZED**).140 attendees 60 K€ budget
- November 2010, Int. Workshop on Extreme EUV Sources, Dublin (IR) (Oral).
- September 2010, Nano2010 Rome (IT) (2 Oral).
- July 2010, ENEA workshop on Graphene, Portici (IT) (Oral).
- May 2010, FUNMARC Bologna (IT) (Oral).
- October 2009, SIF (Italian Society of Physics) Bari (IT) (**Invited Talk.**).
- Sept 2009, FNMA09 Sulmona (IT), (**CHAired and ORGANIZED**).
- September 2008, SGS 2008 Ustron (PL) Sci. Comm. And (**Invited Talk.**).
- July 2008, NanoSEA Frascati (IT) (Oral).
- September 2007, SSP2007 Ustron (PL) Sci. Comm. And (**Invited Talk.**).
- June 2007, E-MRS Strasbourg (FR) (**Invited Talk.**).
- September 2006, IBMM Taormina (IT) (Oral).
- September 2006, SGS2006 Ustron (PL) Sci. Comm. And (**Invited Talk.**).
- September 2006, E-MRS Warsaw (PL) Session Chair and (**Invited Talk.**).
- July 2006, NanoSEA Aix En Provence (FR) (**Invited Talk.**).
- September 2005, SSP2005 Ustron (PL) Sci. Comm. And (**Invited Talk.**).
- September 2004, SGS2004 - Ustron (PL) Sci. Comm. And (**Invited Talk.**).
- July 2004, SILS annual meeting Camerino (IT) (Oral).
- June 2004, IVC-16 Venice (IT), (Oral).
- June 2004, Nano2004 Wiesbaden (DE), (Oral).
- May 2004, SPM2004 Nizhni Novgorod (RU) (**Invited Talk.**).
- September 2003, ECOSS 22 Prague (CZ) (Oral).
- March 2003, SPM2001 Nizhni Novgorod (RU) (Oral).
- September 2002, SGS2002 Ustron (Poland), Sci. Comm. And (**Invited Talk.**).
- July 2002, ICSFS Marseille (FR) (Oral).
- July 2001, STM2001 Vancouver (CAN) (Oral).

- June 2001, INFMeeting Roma (IT) (3 posters).
- February 2001, SPM2001 Nizhni Novgorod (RU) (**Invited Talk.**).
- December 2000, Nanoscale Spectroscopy workshop Trieste (IT) (Oral).
- September 2000, SGS2000 Ustron (PL) Sci. Comm. And (**Invited Talk.**).
- July 2000, SPS2000 Hamburg (DE) (Poster).
- June 2000, INFMeeting Genova (IT) (Poster).
- October 1999, AVS 99 Seattle (USA) (2 Oral).
- June 1999, INFMeeting - Catania (IT) (Oral).
- Sept 1998, SGS98 Ustron (PL) (**Invited**).
- Oct 1996, AVS96 Philadelphia (USA) (Oral).
- Sept 1996, ECOSS16 - Genova (IT) (Poster).
- July 1996, ICSOS-5 Aix En Provence (FR) (Poster).
- Aug 1994, XAFS VIII Berlin (DE) (Oral).
- Sept 1993, EPS, Second Liquid Matter Conference Firenze (IT) (Poster).
- Aug 1992, LAM VIII Liquid and Amorphous Metals Wien (AT) (Poster).

Invited Seminars (26):

- Nov 2019 Univ. Nova Gorica (Slovenia) "The role of nano-confined water in the layer number engineering of MoS₂"
- May 2017 LFoundry Avezzano "The revolution of 2D materials"
- March 2017 "2D materials fundamentals and applications" Lecce ISUFI
- March 2016 "Graphene oxide and other 2D materials fundamental properties and applications" Department of Physics University of Modena (Italy).
- June 2015 "Graphene oxide fundamental properties and applications" Department of Physics University of Naples (Italy).
- May 2015 "Graphene oxide fundamental properties and applications in composite materials and interaction with living matter" Department of Chemistry University of Salerno (Italy).
- February 2015 "Applications of graphene oxide" School of Technology University of Camerino
- February 2015 "Two Dimensional Materials and Living matter" DISCAB, University of L'Aquila (Italy).
- January 2015 "Graphene Oxide from fundamentals to applications" TAU, Department of Physics University of Tel Aviv (Israel).
- December 2014, "Graphene Oxide from fundamentals to applications" ITAB & University of Chieti (IT).
- June 2014, "Graphene Oxide from fundamentals to applications" National Physical Laboratory, London (UK).
- March 2013, "Graphene Oxide from fundamentals to applications" Physics Department University of Torino (IT).
- April 2009, "Structural and Electronic properties of ion implanted Mn-Ge Alloys: a review" NPL London (UK).
- November 2008, "Structural and Electronic properties of ion implanted Mn-Ge Alloys: a review" Elettra Trieste (IT).
- June 2008, "Swelling in ion implanted Mn-Ge Alloys" CNRS Marseille (FR).
- September 2007, "SPM studies of ion implanted Mn-Ge" NPL London (UK).
- July 2006, "Properties of ion implanted Mn-Ge" Forschung Center Julich (DE).
- February 2005, "Ferromagnetism in implanted Mn-Ge alloys" Institut of Physics University of Gliwice (PL).
- March 2005, "Structural and electronic properties of two-dimensional metals and alloys" MATIS INFM Catania (IT).
- June 2003, "Two dimensional alloys of group IV elements on Si(111)" Physics Department University of Camerino (IT).
- November 2002, "Practical realization of a two-dimensional frustrated Ising model" Institute of Physics of the Academy of Science Prague (CZ).
- May 2001, "Low temperature structure of Sn/Si(111)" Condensed Matter Physics Department Universidad Autonoma de Madrid (ES).
- March 2001, "STM and STS investigation of the gas sensing properties of WO₃ thin films "ISM-LAMEL Institute of CNR in Bologna (IT).
- September 2000, "Photoemission investigation of two-dimensional metallic systems", Institute of Physics of the Academy of Science Prague (CZ).
- January 2000, "Defect density waves at low temperatures investigated with STM" NNL (National Nanotechnology Laboratory) Lecce (IT).
- July 1999, "STM investigation of the Sn/Si(111) surface" TASC Trieste (IT).