Curriculum Vitae of Paolo Lugli

Personal information

Nationality: Italian/German
Date of Birth: 8 February 1956

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Education

1979 **Laurea** in Physics, with honor, University of Modena, Italy
1981 **M.Sc.** in Electrical Engineering", Colorado State University, Fort Collins, CO, USA
1985 **Ph. D.** in Electrical Engineering", Colorado State University, Fort Collins, CO, USA

Employment history

2017-present **Full Professor**, Faculty of Engineering, Free University of Bozen-Bolzano, Italy
2002-2016 **Full Professor**, Dept. of Electrical and Computer Eng., Technical University of Munich, Germany
1993-2002 **Full Professor**, Faculty of Engineering, University of Rome „Tor Vergata“, Italy
1988-1993 **Associate Professor**, Faculty of Engineering of the University of Rome „Tor Vergata“, Italy
1984-1988 **Research Associate**, („Ricercatore Universitario“), Physics Dept., University of Modena, Italy
1984 **Faculty Research Associate**, Dept. of Electrical Eng., Airzona State University, USA
1980-1983 **Graduate Research Assistant**, Dept. of Electrical Eng., Colorado State University, USA

Institutional responsibilities

2017-2024 **Rector** of the Free University of Bozen-Bolzano
2017-2024 **Member of the Scientific Board** of NOI AG, in house of the Autonomous Province Bozen
2017-2024 **Member of the Scientific Committee** for Research and Innovation of the Autonomous Province Bozen
2014-2016 **Director** of the Department of Electrical and Computer Engineering, Technical University of Munich
2000-2002 **Director** of the CNR National Group for Solid State Matter, Italy
1999-2002 **President** of the Scientific Council of MDM (Materials and Devices for Microelectronics) Laboratory, a joint venture of STMicroelectronics and Istituto Nazionale di Fisica della Materia
1992-1997 **Chairman** of the Semiconductor Section (GNSM) of the Italian National Research Council (CNR)

Prof. Lugli has an outstanding technical and scientific record (with more than 500 scientific papers published in peer reviewed international journals and a h-index of 57 in SCOPUS and 71 in Google Scholar) with a strong interdisciplinarity accent. He is Fellow IEEE, the most important professional association for Electrical Engineering worldwide. He is also member of ACATECH, the prestigious National Academy of Science and Engineering in Germany. His academic and scientific carrier has been characterized by a strong international experience coupled to a deep knowledge of the Italian research and innovation systems. He studied in Italy, did his graduate and PhD studies in USA, worked in Rome for 15 years and then moved to Munich. He developed a network of partnerships with several European countries, China, Japan and Singapore, in addition to USA and Canada. In the last eight years, joining the Free University of Bozen-Bolzano as Professor of Electronics and his duty of Rector, has brought him in close touch with the productive sectors of South Tirol. In Bolzano, he has started an experimental research group on flexible electronics and sensors, contributed to the establishment the NOI TechPark, and stimulated the interaction of unibz and of his own group with local companies and other research institutions.

Cooperation with industry has been one of the focuses in his own research as well as in his institutional responsibilities. Most of the almost 10 M€ third-party funding he acquired over the years were related to projects with companies. About two-third of around 100 PhD students that he supervised were financed externally. He has contributed to the establishment of a culture for technology transfer in national institutions both in Italy and in Germany, fostering start-ups and educating students towards an entrepreneurial approach. He himself founded two start-ups in Rome with three of his former PhD students and has been co-author of 8 patents. He has developed strong managing and governance skills.

Teaching activities

Since 1989 Dr. Lugli has given lectures, seminars and laboratory sessions in Rome, Munich and lately in Bozen. His teaching activity, offered in Italian, German or English, has covered Bachelor, Master and PhD Programs, mostly in the field Electrical and Computer Engineering. He has been involved in the international Masters "Communication Engineering" and "Power Engineering" (at TUM) and "Food Innovation and Authenticity" (in Bozen). At TUM he has coordinated the joint MSc program with Nanyang Technological University of Singapore in "Green Electronics" and was involved in a second one in "Integrated Circuit Design". A compact list of his teaching portfolio is given here:

2017-present	**Free University of Bozen-Bolzano**: Lectures in "Electronic devices", "Sensors and biosensors for food processing", "Materials and Sensors for Food Engineering and Biotechnologies", "Introduction to printing technologies and flexible components"
2002-2016	**Technische Universität München**, Germany: Lectures in "Mikrosysteme", "Nanotechnology", "Nanoelectronics", "Molecular Electronics", "Computational Methods in Nanoelectronics"; Labs in "Nanoelektronik und Nanotechnologie", "Simulation and characterization of organic devices", "Nanobioelectronics", "Wissenschaftlichen Aspekten der Nanotechnologie"; Seminar Series in "Special topics in Nanoelectronics"
1989-2002	**University of Rome "Tor Vergata"**, Italy: Lectures in "Fisica II", "Optoelettronica", "Sistemi di Telecomunicazione", "Molecular und Biological Electronics"

Memberships in panels, boards, and individual scientific reviewing activities (last 10 years)

2021	**Chair of the evaluation Panel** of the Department of Electrical Engineering, TU Dresden
2019	**Member of the Panel** for the selection of the Director of the Italian Institute of Technology
2019	**Member of the evaluation Committee** for the IIT Center for nanoscience (Milano)
2018	**Member of the Selection Committee** for the Director of the of the CNR Institute of Nanoscience
2017-present	**Member of the Conferenza Rettori** Universita' Italiane (CRUI)
2015-2019	**Member of the Technical Committee** for Research and Innovation of the Provincia Autonoma Trento, Italy
2015-2016	**Member of the Supervisory Board** of the TUM Integrative Center for Translational Oncology
2015-2016	**Member of the Extended Board** of the TUM Munich School of Bioengineering
2015-2016	**Member of the Evaluation Committee** of the Italian Institute of Technology
2010-2014	**Member of the Executive Board** of the Cluster of Excellence "Nanosystem Initiative Munich"
2006-2016	**Member of the Board of NanoTUM**, the TUM Institute for Nanoscience and Nanotechnology
2002-2010	**Member of the Board** of the Office of Technological Transfer at the National Institute for Astrophysics, Italy
1999-2002	**Member of the "Nucleo Applicativo",** the INFM Board in charge of technology transfer activities
1999-2002	**Responsible** of the Space-Related activities (interaction with Italian Space Agency and European Space Agency) for INFM
1991-1999	**Consultant** for the Helmholtz Research Center (KFA) Jülich, Germany
1998-present	**Member** of various review panels for European, German, Austrian, Israel, USA, Singapore research institutions and funding agencies

Organization of conferences, schools and workshops

2020	**Chair** of the Int. Workshop on "Technologies for the future", Bolzano, Italy
2017	**Co-chair** of the VDE "MikroSystemTechnik Kongress", München, Germany
2017	**Chair** of the Int. Workshop on "Internet of Things, Sustainability and Energy Awareness", Bolzano, Italy
2016	**Program Co-Chair** of the 16th IEEE Int. Conference on Nanotechnology , Sendai, Japan
2015	**Program Chair** of the 15th IEEE Int. Conference on Nanotechnology , Rome, Italy
2014	**Chair** of the Int. School on "System Integration", Munich, Germany
2011	**Chair** of the Int. Workshop "Advances in Photocatalysis and Photovoltaics", Garching Germany
2010	**Chair** of the Int. Workshop on "Frontiers of the Nanoelectronics", Munich, Germany
2009	**Chair** of the II Int. Workshop on "Non Volatile Memories", Genova, Italy
2008	**Chair** of the I Int. Workshop on "Non Volatile Memories", Munich, Germany
2005	**Chair** of the SPIE International Symposium on "Nanotechnology", Seville, Spain
2004	**General Chair** of IEEE International Conference on Nanotechnology, Munich, Germany
2003	**General Chair** of the 8th International Workshop on „Computational Electronics", Frascati, Italy
2001	**Chair** of the Int. Workshop on „Wide gap semiconductors: physics and novel sensor applications", Cagliari, Italy
1996-98	**Co-Director** of Euroconferences Series on "Advanced Heterostructure Devices for Micro and Optoelectronics" Torino (1996), Grenoble (1997), Torino (1998)

1994 **Co-chair** of the II Euroconference on “Ultrafast Phenomena in Semiconductors”, Frascati, Italy
1994 **Co-chair** of the NATO Advanced Study Institute “Pseudomorphic HEMTs: Technology and Applications”, Erice, Italy
1992 **Co-chair** of the Int. Workshop on Semiconductor Nanostructures, Rome, Italy
1989 **Co-chair** of the Nato Advanced Research Workshop on “Spectroscopy of Semiconductor Microstructures”,Venezia, Italy

Member of the Program Committee and/or Advisory Committee of several international Conferences (e.g. HCIS „Hot Carriers in Semiconductors“; IPRM „InP and Related Materials“, IWCE “International Workshop on Computational Electronics”; “IEEE International Conference in Nanotechnology”, IEEE “International Conference on Flexible and Printable Sensors and Systems”)

Invited presentations at international conferences, schools and workshops

2024 XXII Conferenza Nazionale Sensori e Microsistemi (AISEM 2024), Bologna, Italy
2023 Int. Conf. Nano Research and Development (ICNRD-2023), Singapore (*Keynote*)
2023 UnILiON Annual Event, Bruxelles, Belgium (*Keynote*)
2023 2023 IEEE Nanotechnology Materials and Devices Conference (NMDC), Paestum, Italy (*Plenary*)
2019 International Workshop on Innovative Nanoscale Devices and Systems, Kona, USA
2019 Summer School on " Sensor Technologies for Water Monitoring", Trento, Italy
2017 38th International Association of University Libraries, Bolzano, Italy (*Keynote*)
2016 9th International Conference on Nanostructured Polymers and Nanocomposites, Rome, Italy (*Plenary*)
2016 Int. Workshop on “Surface, Interfaces and Functionalization Processes in Organic Compounds and Applications”, Napoli, Italy
2014 AAAS Annual Meeting, Chicago, USA
2013 VI International School of Nanophotonics and Photovoltaics, Maratea, Italy
2012 Int. Conference 3M-NANO, Xi-an, China (*Keynote*)
2011 Int. Workshop NANO-TEC, Granada, Spain
2010 Int. Microwave Symposium, Anaheim, CA, USA
2009 Workshop on Hybrid and Organic Solar Energy (WHOSE 2009), Rome, Italy
2009 Int. School of Nanophotonics and Photovoltaics, Maratea (PZ), Italy
2009 Int. Workshop Radio-Frequency Applications of Nanotechnology, Boston, USA
2009 Int. Conf. on Nano Giga Challenges, Hamilton, ON, Canada (*Keynote*)
2008 Int. Workshop on Transport in Molecular Systems, Bonn, Germany
2008 MTT-Workshop on RF-Applications of Nanotechnology, Atlanta, USA
2008 NANO-E3 Joint Australian-Italian Workshop on Nanotechnology, Margaret River, Australia
2007 IEEE Int. Conf. Nanotechnology, Hong Kong
2007 Int. Workshop on Transport through single Molecules, Bremen, Germany
2007 Int. Workshop of Future Information Technology, Dresden, Germany
2007 Int. Workshop on Flexible Electronics, Munich (*Keynote*)
2007 Int. Symposium on Microwave and Optical Technologies, Rome, Italy
2006 Workshop on Enabling Technologies for ICT “Future Perspectives of the Nanotechnologies”, Rome
2006 EDA Forum „Technology beyond CMOS”, Berlin, Germany (*Keynote*)
2006 International Workshop on Optical Engineering, Ancona, Italy
2006 Heraeus-Seminar "Quantum transport at the molecular scale", Bad Honnef
2006 R&D Days: International Forum on Project Development, Bologna
2006 BMBF Strategiegespräch „Beyond CMOS“, Bonn, Germany
2006 International Meeting in Molecular Electronics, Grenoble, France
2006 VDE Kongress, Aachen
2005 Workshop “Analog ‘05”, Hannover, Germany
2005 General Assembly URSI 2005, New Delhi, Indien
2005 Workshop “Devices nach CMOS”, Munich, Germany
2004 International Workshop on Computational Electronics, Purdue, IN, USA
2004 5th Int. Symposium on MEMS and Nanotechnology, Costa Mesa, CA, USA
2003 Int. Conf. on Hot Carrier in Semiconductors, Modena, Italy
2003 Int. Symposium on Mathematical Modelling, Wien, Austria
2003 Eur. Conf. on Circuit Theory and Design, Krakow, Poland
2002 URSI General Assembly meeting, Maastricht, Netherland
2001 Short Course on Wide Bandgap Semiconductor, GAAS2001, London, UK
2000 International Workshop on Computational Electronics, Glasgow, UK

1997 Euroconference on Ultrafast Phenomena in Semiconductors, Oxford, UK
1995 Int. Conf. on Computational Electronics, Tempe, AZ, USA
1995 Italian-German Symposium, Villa Vigoni, Como, Italy
1994 NATO Advanced Study Institute on 'PM-HEMT Technology and Applications". Erice, Italy
1994 Advanced Heterostructure Workshop, Hawaii, USA
1993 Condensed Matter and Material Physics Conference CMMP93, Leeds, UK
1992 European Solid State Device Research Conference ESSDERC92, Leuven Belgium
1992 International School on Physics and Technology of Semiconductor Quantum Devices, Brindisi, Italy
1992 International Workshop on Light Emitting Silicon LESi II, Garching, Germany
1991 Int. Conf. on Hot Carrier in Semiconductors, Nara, Japan
1991 Int. Workshop on Parallel Computing, Taormina, Italy
1991 School on Materials for Electronics: Growth, Properties and Applications, ICTP, Trieste, Italy
1990 Spring College in Condensed Matter on ``Physics of Low-Dimensional Semiconducotr Structures", ICTP,Trieste, Italy
1990 National Congress of the Italian Physical Society, Trento, Italy
1990 Int. Conf. on Ultrafast Laser Probe Phenomena in Bulk and Microstructure Semiconductors III, S. Diego, CA (USA)
1989 6th Int. Conf. on Numerical Analysis of Semiconductor Devices and Integrated Circuits NASECODE VI, Dublin, Ireland
1989 Italian-Swiss Symposium, Villa D'Este, Como, Italy
1988 Int. Conf. on Ultrafast Laser Probe Phenomena in Bulk and Microstructure Semiconductors II, Newport Beach, CA (USA)
1988 SPIE Advances in Semiconductors and Superconductors, Physics and Device Applications, Newport Beach, CA (USA)
1988 March Meeting of the American Physical Society, New Orleans, LI (USA)
1988 NATO Advanced Research Workshop on Band Structure Engineering in Semiconductor Microstructures, Il Ciocco (LU), Italy
1988 Int. Conf. on Simulation of Semiconductor Devices and Processes, Bologna, Italy
1988 Int. Conf. on the Physics of Semiconductors, Warsaw, Poland
1987 7th General Con. of European Physical Society, Pisa, Italy
1987 Int. Conf. on Hot Carriers in Semiconductors, Boston, USA
1987 School on Superlattices and Hot Electrons, Bad Hoffer, Bonn, Germany

Language proficiency

Italian (mother tongue)
English (excellent – C1 certificate from 2017)
German (very good – C1 certificate from 2017)

Major scientific achievements

Prof. Paolo Lugli is full professor of Electronics at the Free University of Bozen-Bolzano since January 2017, where he also serves as Rector. For the previous 15 years he was full professor at the Technical University of Munich, where he led the Institute for Nanoelectronics and, for the last two years, was Dean of the Department of Electrical and Computer Engineering. Before that, he was Full Professor of Optoelectronics at the University of Rome “Tor Vergata”. His current research interests are in printed electronics, simulation of semiconductor devices, modeling of charge transport in organic and inorganic semiconductors, realization and characterization of molecular devices. Prof. Lugli is author of more than 500 scientific papers published in peer reviewed international journals, has an h-index (Google Scholar) of 71, a total number of 23516 citations, and a total funding since 2006 of more than 7 million €. The h-index on SCOPUS is 57 with 15214 citations. He is co-author or co-editor of 6 books and co-author of 8 patents.

Dr. Lugli have made sustained contributions to engineering education as a university faculty for over 30 years, having supervised or co-supervised more than 200 Bachelor, Master and Diplom/Laurea students and more than 100 doctoral candidates, many of whom now hold significant positions in academic, research and industrial institutions. Among others, M. Saraniti is full professor at the School of Electrical, Computer and Energy Engineering, Arizona State University; A. Di Carlo is full professor at the University of Rome Tor Vergata and Director of the ISM- CNR laboratory; A. Neviani is full Professor at the University of Padova; A. Reale and F. Brunetti are Associate Professors at the University of Rome Tor Vergata. S. Harrer is senior researcher at the IBM Melbourne Laboratory. Among the recent TUM PhD graduates, S. Joshi and V. Bhatt are senior project managers at Infineon AG in Munich. Dr. Lugli is currently supervising 15 PhD students in Bolzano.

In 2011 he was elevated to the grade of IEEE Fellow of the Electron Device Society for contributions to nanostructured materials and devices. In the same year he was also elected as member of ACATECH, the prestigious National Academy of Science and Engineering in Germany.

In 2020 he was ranked among the top 2% world scientists in the field of "Applied Physics": https://doi.org/10.1371/journal.pbio.3000918

He is currently ranked 33rd in the list of the Top Italian Scientists for the area of "Material & Nano Sciences": https://topitalianscientists.org/TIS_HTML/Top_Italian_Scientists_Material_Nano_Sciences.htm

Since 2023 he has been nominated "Socio Corrispondente" of the "Accademia Nazionale di Scienze Lettere e Arti di Modena" (former "Accademia dei Dissonanti")

Approved research projects

Prof. Lugli has been involved, both as partner and coordinator, in several national and international research projects with a variety of public and private funding agencies and companies. Here a list of the most important projects:

2022 Joint Project South Tirol-Switzerland: *In-Memory sensing* - **246 k€**
2022 PNRR-MUR: *Interconnected Nord-Est Innovation Ecosystem (iNEST)*- **160 k€**
2019 FESR: *Smart textile for monitoring muscles activity* - **208 k€**
2018 Unibz Interdisciplinary Project: *Sustainable Smart Parasites* – **198 k€**
2018 FESR: Sensing Laboratory - **1.199 k€**
2017 Industrial Project (with ASK SpA): *Printed Electronic Components* – **450 k€**
2013 UE/Open FET: *Graphene doping and texturing in efficient electrodes for organic solar cells* - **210 k€**
2013 UE/Marie Curie ITN: *Network for Training in Organic Optoelectronics integrated with living systems* – **280 k€**
2012 UE/Marie Curie ITN Project: *Network for Training in Electronic Skin Technology* - **640 k€**
2012 DFG/Excellenzcluster Nanosystems Initiative Munich: *Nanoimprint lithography* - **520 k€**
2011 Industrial Project (with Sharp Corp.) *Modeling of THz quantum cascade lasers* - **70k€**
2010 DARPA Project: *Nanomagnetic Logic* **580 k$**
2009 DFG Project: *Field-coupled computing devices in magnetic multilayers* - **240 k€**
2009 TUM/IAS Focus Research Group: *Nanotransfer and nanoimprinting* - **600 k€**
2009 Fondazione Bruno Kessler - Joint Project: *Integration of organic photodiodes on CMOS* - **81 k€**
2009 TUM/IAS: *Highly complex nanostructured systems for cryptography and security* - **100 k€**
2008 TUM/IAS/NTU Project: *Towards manufacturability of carbon nanotube-based printed electronics* - **350 k€**
2008 BMW Grant: *Low cost FIR camera* - **30k€**
2006 EU/FET: *Vertically stacked memory cells based on heterojunctions made of hybrid organic/inorganic materials* - **340 k€**
2006 EU/Marie Curie Intra-European Fellowship: *Realization and characterization of flexible arrays of photodetectors* - **130 k€**
2006 DFG/SSP 1243: *Multiscale modeling and simulation of molecular devices and systems* - **140 k€**
2006 DFG/Excellenzcluster NIM: *Modeling and simulation of functional networks and Nanoimprint lithography* – **450 k€**
2005 DFG/SFB 631: *Solid state quantum information processing: physical concepts and material aspects: Circuit modeling of interaction between electromagnetic fields and superconducting qubits* - **210 k€**
2005 EOARD Grant *Modelling of THz Quantum Cascade Lasers for room temperature operation* – **230 k€**
2005 DFG/SSP 1121 *Organische Feldeffekt-Transistoren: strukturelle und dynamische Eigenschaften: Modeling and simulation of OTFT-based circuits* - **140 k€**
2004 INFN Trieste Joint Project: *Characterization of infrared devices for a high-energy experiment* - **150 k€**
2003 EU/FET: *Silicon heterostructure intersubband emitters* - **100 k€**
2001 ASI: *Nitride-based devices for space applications* - **200.000 kLIT**
2000 MIUR: *Physics of nitride-based heterostructures* - **130.000 kLIT**
2000 MIUR: *Organic LED sourced for telecommunication* - **90.000 kLIT** (in collaboration with CISCO)
2000 ONR: *Transport Phenomena in Semiconductor Nanostructures* - **200 K$**
2000 EU Network "Diode" **– 150.000 kLIT**
1999 ONR: *Novel methods of quantum transport in nanostructures* – **100 k$**
1999 MIUR: *Quantum effects in nanometer-size Silicon nanostructures* - **130.000 kLIT**
1999 ASI: *InP-based HEMTs for space applications* - **105.000 kLIT** (in collaboration with Alenia Marconi System)

1998 CNR: Finalized Project for Material and Devices in Microelectronics II *Quantum effects in submicron EEPROM cells*" – **150.000 kLIT** (in collaboration with SGS-Thomson)
1998 CNR - Finalized Project for Material and Devices in Microelectronics II *Simulation and modeling of HBTs* **60.000 kLIT** (in collaboration with Alenia)
1998 CNR - Finalized Project for Material and Devices in Microelectronics II *Modeling of SOA* - **60.000 kLIT** (in collaboration with Agilent)
1998 INFM - *Quantum Cascade Lasers* - **90.000 kLIT**
1998 TMR Network "Ultrafast Quantum Electronics" - **165.000 kLIT**
1997 MIUR *Semiconductor nanostructures* - **75.000 kLIT**
1997 ERO: *Simulation of SiC diodes* - **20 k$**
1995 TMR Network "ULTRAFAST" - **150.000 kLIT**
1994 MIUR: *HEMT Devices* - **150.000 kLIT**
1991 ESPRIT Working Group ELTRASIN ("Electronic Transport Parallel and Perpendicular to Semiconductor heterostructures") - **120.000 kLIT**
1991 MIUR: *Nanostructures* - **110.000 kLIT**
1990 NATO: Bilateral Grant Italy (Roma II)-USA (OSU) *Microwave GaAs Devices* - **10 k$**
1989 IBM-Yorktown Grant *Non-equilibrium Phonons in Heterostructures* - **30 k$**
1989 CNR-Finalized Project for Material and Devices in Microelectronics *Monte Carlo Simulation of HEMT*s – **150.000 kLIT** (in collaboration with Alenia)
1989 MIUR - Monte Carlo Simulation of GaAs Devices - **120.000 kLIT**

Acronyms. DARPA: Defense Advanced Research Projects Agency, USA; DFG: Deutsche Forschungsgemeinschaft; EOARD: European Office of Aerospace Research & Development, London UK; ERO: European Research office; EU/FET: European Union Future and Emerging Technologies; FESR: Fondo europeo per lo sviluppo regionale (FESR); INFN: Istituto Nazionale di Fisica Nucleare, Italy; MIUR: Ministero dell'Universita' e Ricerca, Italia; TMR: training and mobility of researchers; TUM/IAS: Institute of Advance Study at TUM; FBK: Fondazione Bruno Kessler, Trento, Italy; NTU: Nanyang Technological University, Singapore; ONR: Office of Naval Research, USA

Research Output

Selected publications

1. P. Lugli, D. K. Ferry, *Degeneracy in the ensemble Monte Carlo method for high-field transport in semiconductors* IEEE Trans. Electron Dev., ED-32, 2431 (1985) [333 cit]
2. P. Lugli, P. Bordone, L. Reggiani, M. Rieger, P. Kocevar, S. Goodnick, *Monte Carlo studies of nonequilibrium phonon effects in polar semiconductors and quantum wells: Laser photoexcitation*, Phys. Rev. B39, 7865 (1989) [131 cit]
3. V. Fiorentini, F. Bernardini, F. Della Sala, A. Di Carlo, P. Lugli*, Effects of macroscopic polarization in III-V nitride multiple quantum wells,* Phys. Rev. B 60, 8849 (1999) [696 cit]
4. S. Tedde, ES Zaus, J. Furst, D. Henseler, P. Lugli, *Active pixel concept combined with organic photodiode for imaging devices* IEEE Electron Device Letters, vol.28, no.10, pp. 893-5 (2007) [90 cit]
5. A. Abdellah, B Fabel, P Lugli, G Scarpa, *Spray deposition of organic semiconducting thin-films: Towards the fabrication of arbitrary shaped organic electronic devices,* Organic Electronics 11 (6), 1031 (2010) [172 ci
6. M. Bareiß, BN Tiwari, A. Hochmeister, G. Jegert, U. Zschieschang, H. Klauk, B. Fabel, G. Scarpa, G. Koblmüller, G H, Bernstein, W. P. Lugli, *Nano Antenna Array for Terahertz Detection. Microwave Theory and Techniques*, IEEE Transactions on (Volume:59 , Issue: 10) 2751 (2011) [63 cit]
7. D Baierl, L Pancheri, M Schmidt, D Stoppa, GF Dalla Betta, G Scarpa, P Lugli, *A hybrid CMOS-imager with a solution-processable polymer as photoactive layer*, Nature Communications 3, 1175 (2012) [150 cit]
8. R.K. Cavin, P. Lugli, PV.V. Zhirnov, *Science and Engineering Beyond Moore's Law*. Proceedings of the IEEE (Volume:100 , Issue: Special Centennial Issue) , 1720 (2012) [463 cit]
9. P. Ibba, C. Tronstad, R. Moscetti, T. Mimmo, G. Cantarella, L. Petti, O.G. Martinsen, S. Cesco S. P. Lugli, Supervised binary classification methods for strawberry ripeness discrimination from bioimpedance data. Scientific reports, 11(1), 1 (2021) [48 cit]
10. AKMS Inam, MAC Angeli, B. Shkodra, A. Douaki, E. Avancini, L, Magagnin, P. Lugli, P. *Flexible screen-printed amperometric sensors functionalized with spray-coated carbon nanotubes and electrodeposited Cu nanoclusters for nitrate detection* IEEE Sensors Journal DOI: 10.1109/JSEN.2022.3171066 (2022) [48 cit]
11. G. Cantarella, M. Madagalam, I. Merino, C. Ebner, M. Ciocca, A. Polo, P. Ibba, P. Bettotti, A. Mukhtar, B. Shkodra, AKM. S. Inam, AJ. Johnson, A. Pouryazdan, M. Paganini, R. Tiziani, T. Mimmo, S. Cesco, N. Münzenrieder, L. Petti, N. Cohen, P. Lugli, *Laser-Induced, Green and Biocompatible Paper-Based Devices for Circular Electronics* Advanced Functional Materials 33 (17), doi: 10.1002/adfm.202210422 (2023) [30 cit]

12. B. Shkodra, S. De Prà, A. Altana, M. Petrelli, M. Ploner, M. Costa Angeli L. Petti L. S. Carrara, P. Lugli., *Flexible Memristive Biosensors for Sensitive Detection of Prostate-Specific Antigen in Biological Environments* IEEE Sensors Journal, doi: 10.1109/JSEN.2025.3528755 (2025)

Selected Books

- *High Speed Optical Communications*, (with R. Sabella) Kluver Academic, Dordrecht, 1999
- *The Monte Carlo Method for Semiconductor Device Simulation* (with C. Jacoboni) Springer Verlag, 1989

Third mission contributions and academic services

Since the beginning of his career, Dr. Lugli combined management duties and scientific activities. In 1985, just after his return to Italy from the United States, where he did his doctoral studies, Dr. Lugli got involved in the Semiconductor Section of the National Research Council (CNR). In 1992, he became the head of the Section. In the meantime, he won an Associate Professor position in the first national open competition to be held in Italy and was hired as Associate Professor for Solid State Physics at the University of Rome "Tor Vergata" in the college of Engineering. In 1993, he became Full Professor for Optoelectronics. There, he built a strong research group (about 5 doctoral students per year, most of whom supported with external funding) which was active in the areas of *i)* simulation and modeling of semiconductor devices and nanostructures and *ii)* fabrication and characterization of organic electronic devices. From 2000 to 2002, he was Director of the CNR National Group for Solid State Matter (GNSM). During the same period, he acted as President of the Scientific Council of MDM (Materials and Devices for Microelectronics) Laboratory, a joint venture of STMicroelectronics and Istituto Nazionale di Fisica della Materia (INFM) and member of the Office of Technological Transfer at the National Institute for Astrophysics (INAF) and of the so-called Nucleo Applicativo, the Technology Transfer branch of INFM.

At the University of "Tor Vergata" in Rome he oversaw the Engineering Library and was involved in several committees for hiring and for the definition of new academic initiatives. Dr. lugli was coordinating several national and international research projects, involving for instance US funding agencies as well as European and US universities, research centers and companies. He managed to build a strong research team of around 30 people, including PhD students, postdoctoral fellows and junior faculty members. The group was conducting both experimental as well as theoretical work focusing mainly on semiconductor materials and devices.

In 2002, he moved to Munich to become the Head of the newly established Institute for Nanoelectronics at the Department for Electrical and Computer Engineering (ECE) of the Technical University of Munich (TUM). There, Dr. Lugli started some new interdisciplinary activities in the fields of molecular electronics, bioelectronics and nanoimprinting, building a highly international institute with around 40 members (mostly doctoral students). A large portion of such activity was and is carried out in collaboration with physicists and chemists within the Cluster of Excellence "Nanosystem Initiative Munich" of which he was member of the executive committee in the first five years. At TUM, in addition to ECE, he had a secondary appointment with the Physics Department.

In Germany, Dr. Lugli got involved in the activities of the Association of German Electronic Engineers (VDE) and became the chairperson of the VDE Chapter on Microelectronics in South-Bayern. In 2011, he had the honor to become member of the German National Academy of Science and Engineering (Acatech).

His teaching activities always reflected the internationality and interdisciplinarity of his research. Dr. Lugli taught courses in Physics and Electrical Engineering at both Bachelor and Master level, supervised a large number of Master thesis (around 10 per year) and tutored more than a hundred doctoral candidates. He was also coordinator of a joint international Master program on "Green Electronics" of TUM with Nanyang Technological University in Singapore. In 2006, TUM started a university-wide Graduate School, to coordinate and establish a standard in the doctoral education. The Graduate School was organized in department branches, to assure that the specificity of the individual departments is not lost, and in interdisciplinary and interdepartmental ones, to promote intellectual diversity. One of the latter, the International Graduate School of Science and Engineering (IGSSE), was funded in the framework of the first and second rounds of the Excellence Initiative competition held in Germany in 2006 and 2011. Dr. Lugli was among the proposers of IGSSE and have had several doctoral candidates that were supported financially via interdisciplinary projects with colleagues from physics or chemistry. In 2012, he was one of the organizers of the International Graduate School for "Functional Hybrid Materials" between TUM and the University of Alberta, which was approved by the German Research Foundation (DFG) and has been financed for the following 12 years. His lifetime experience has confirmed that being part of international multidisciplinary network an effective way to enhance the quality of doctoral education and the placement of the PhD students in the marketplace and in the academia.

In 2011, TUM started, first university in Germany, a Tenure Track (TT) program. Since then, around 60 junior

professors were hired, over the full spectrum of disciplines covered by the University. The program offered an associate professor position for those you are tenured after 5-6 years, with a salary level equivalent to a full professor. In addition, it gave the possibility of a future upgrade to full professors (that is, holding a chair) in case of an excellent performance as associate professor. The attractiveness of the TT program has allowed TUM to compete for the best candidates with top universities worldwide. The ECE Department has hired six TT Professors, two of them were associated to Dr. lugli's Institute. As Director of the Department and/or Head of Institute, he was a member, or the chair, of the mentoring committee for all six TT professors and have been able to closely monitor their development.

In 2012, Dr. Lugli was elected Vice Director of the ECE Department and two years after he became Director. The ECE Department was one of the largest Departments at TUM. Its size (around 60 Professors, 700 active doctoral candidates, 3500 Bachelor and Master students, annual research budget of around 50 million €) with a broad range of research and teaching topics. As Director of the ECE Department, he was member of the University Council (Praesidium), a board that included the University President, the vice-Presidents and all Department directors and took all strategic decisions for the University.

One of the challenges that TUM faced at that time was to find ways for the department to interact effectively with the TUM School of Medicine. Dr. Lugli contributed to two important new initiatives. On the one side, the creation of an integrative Center on Translation Oncology (TranslaTUM), with a new building located in the Medical Campus next to the TUM polyclinic (Klinikum Rechts-der-Isar) and a team of biologists, doctors and engineers that will be focusing on new strategies to fight tumors. A new ECE Chair for "Medical Electronics" was located within TranslaTUM to guarantee a strong interaction with the researchers from other Departments. As Director of the ECE Department, Dr. Lugli was part of the board of the Center. On the other side, TUM started the Munich School of Bioengineering (MSB), another integrative Center of which he was board member. MSB has worked as an umbrella for the activities on Bio- and Neuroengineering, which up to that point had been carried out with minimal interaction between various TUM departments. MSB organized a series of international Master programs, a Graduate School and coordinated an ambitious research agenda.

During his tenure as Director, the ECE Department was evaluated by a committee of 12 international experts. The preparation of the report for the evaluation and of the on-site visit that took place in April 2016 was a very useful exercise for the whole department. Such type of evaluation was not common in Germany. It forced academic and administrative/technical personnel to critically assess our work and to scrutinize our vision of the future. Incidentally, such an experience was extremely valuable during Dr. Lugli's period as Rector in Bolzano.

Over the years, Dr. Lugli maintained strong international links, via a variety of collaborative projects, many of which sponsored e.g. by the European Commission, by DARPA and other agencies as well as by industrial partners such as IBM or Siemens and through Fellowships and Awards (e.g. from the Alexander von Humboldt Foundation or from DAAD, the German academic exchange service). He was part of the evaluation committee of two of the most effective players in the Italian research landscape, namely the Autonomous Province of Trento and the Italian Institute of Nanotechnology (IIT). This activity gave him a chance to analyze the policies of research and innovation, to critically look at the research output (both in purely scientific terms as well as in economic and social ones) and to compare the approaches to scientific research in a diverse set of regions and countries.

In 2016, he applied for the position of Rector at the Free University of Bozen-Bolzano (FUB). As a winner if the competition, Dr. Lugli started there at the beginning of 2017. The University is a locally owned public institution. Its budget comes mainly from the Autonomous Province of Bolzano on the basis a three-years agreement that defines a series of objectives to be achieved in that period. This implies a much stronger connection to local stakeholders than in the more common Italian public universities that strictly depend on and are financed by the central government. On the other end, FUB is subjected to all national laws and regulations defined by the Ministry of University and Research. The University is run by a University Council made up of 7 members: the Rector (who has to be a FUB Professor), a student representative, one external professor nominated by the Senate, and four external members nominated by the Autonomous Province of Bolzano. One of the four external members is selected as President of the University Council and is the legal representative of the university. As Rector, Dr. Lugli was heading the Academic Senate (made of two Prorectors, the five Deans and two student representatives), oversaw teaching, research and outreach activities. Together with the University President, he carried out all personnel hires and participated to budget discussions with the Province.

FUB is a small-size University, with around 4000 students, 130 permanent faculty members and 150 permanent administrative staff. Despite the size, the university Rector is exposed to the entire range of problems and issues involved in university administration. During his first 4-year term as Rector in Bolzano (2017-2020), FUB significantly increased its research budget and strengthened ties with local partners, especially from the innovative and competitive

industrial and financial sectors in North-Eastern Italy. It also developed strategic programs with the local administration, which brought in extra funding in addition to the 3-years budget agreement. FUB was instrumental in the founding of a technological park, which has since been very successful for all the entrepreneurial programs of the Province. In addition, he promoted and was involved in a variety of outreach activities for local schools, associations, companies, in addition to dissemination events and interviews with local radio and TV stations and newspapers.

During his tenure as the Rector of FUB, Dr. Lugli was able to continue his research activities, acquiring funding, setting up new labs and hiring postdocs and PhD students. In a relatively short period, my team grew to approximately 20 researchers, concentrating on innovative materials and sensors with a strong emphasis on sustainability and the environment.

In 2020, Dr. Lugli was asked to continue my service to FUB with a second four-years term. The transition between my two terms was marked by the Covid epidemic. A national lockdown was put in place in February 2020, just at the end of the winter semester. FUB managed to set up very quickly virtual lectures and exams, so that we could continue all teaching activities online with almost no interruption. In the following months, the University opened as soon as regulations would allow it, and implemented a major upgrade of all classrooms with audiovisual equipment. The overall operation was very effective, and students could continue their studies with basically no delay. Three lockdown occurred in Italy over a period of 18 months. After each lockdown FUB went immediately back to teaching in person, allowing virtual classes only when travel was impeded. From 2022 onward, Dr. Lugli requested (as Rector, and with full backing of the University Council) professors to teach their classes in person, with only a few, motivated, exceptions. Covid has been a challenging, but also a learning experience for everybody in the university, but especially for administrators.

Selected Patents

1. P Lugli, L Larcher, Y Ricci, L Cattani, T Nili, *Manufacturing method of a piezoelectric microphone with pillar structure*, US Patent App. 16/792,691 (2020)
2. V.D.Bhatt, S. Joshi, P. Lugli, *Sensor arrangement for analyzing substances in a material and method for operating such a sensor arrangement*. US Patent US 2019/0030531 A1 (2019)
3. P. Lugli, V.D. Bhatt, K. Melzer, *Device for analyzing biological Substances in a Test Solution and Production Method*, US Patent US10145838 (2018)

Spin-off activities

In addition to the promotion of start-ups with institutions cited previously, Dr. Lugli created two spin-offs, Raptech and Kenergia, together with his former PhD students from the University of Tor Vergata, M. Berliocchi, A. Bolognesi and M. Manenti and with his colleague Prof. Aldo di Carlo.