

Curriculum Vitae – Manuela Ciocca

Personal information

Name: **Manuela Ciocca**
E-Mail: manuela.ciocca@unibz.it

Education since leaving school

- **2012 – B.Sc. in Medical Engineering** - University of Rome Tor Vergata.
Thesis Title: “Study and analysis of physical media (currents, ultrasounds, laser, magnetic radiation) for the design of an electromedical devices for physiotherapy and post-traumatic rehabilitation”.
Supervisor: Prof. Giuseppe Fazio.
Department of Electronic Engineering in collaboration with ISATEL srl – Elettromed srl.
Grade:100/110.
- **2016 – M.Sc in Medical Engineering**, University of Rome Tor Vergata.
Thesis Title: “Sight Restoration via organic and hybrid thin films. Design and development of a device working as an Artificial Retina.”
Supervisors: Prof. Thomas M. Brown, Prof. Antonella Camaioni.
Department of Electronic Engineering and Department of Biomedicine and prevention, research work conducted in CHOSE (Center of Hybrid and Organic Solar Energy).
Grade 106/110.
- **2017 – Government Exam** passed and licensed as a profession Engineer, **Industrial field**. University of Rome Tor Vergata.
- **2020 – PhD in Electronic Engineering – Bioelectronics**, University of Rome Tor Vergata.
Thesis Title: “Conjugated Polymer Bio-Hybrid Interfaces for Artificial Retina and Light-Control of Living Cells”.
Supervisors: Prof. Thomas M. Brown, Prof. Antonella Camaioni.
Department of Electronic Engineering and Department of Biomedicine and prevention, research work conducted in CHOSE (Center of Hybrid and Organic Solar Energy) and University of Surrey – Guildford, U.K., Department of Electrical and Electronic Engineering, Advanced Technology Institute (ATI).
Grade: Excellent.

Present appointment

- AR/Postdoctoral researcher at the Faculty of Engineering, Free university of Bolzano-Bozen (since May 2023 – present).

- Visiting scientist at EURAC research center – Institute of Biomedicine
- Tutor of PhD students in *Advanced-System Engineering* at the Faculty of Engineering, Free university of Bolzano-Bozen (since November 2020 – present).
- Tutor of PhD students in *Food Engineering and Biotechnology* at the Faculty of Agricultural, Environmental and Food Sciences, Free university of Bolzano-Bozen (since November 2020 – present).
- Lecturer for laboratory activities for the Master course in *Food Sciences for Innovation and Authenticity*, course of *Sensors and biosensors for food processing*, at the Free University of Bozen-Bolzano (10 hours of frontal lectures). November-December 2022.
- Writing European research projects in national and European context, with European (LMU- Ludwig Maximilian Universität München – Department of Biology I; Universidad de Granada - Department of Electronics and Computer Science; University of Rome Tor Vergata - Department of Electronics Engineering, RWTH Aachen University) and international (National Science Foundation (NSF), USA; Air Force Office of Scientific Research (AFOSR), USA) collaborations.
- Research working fields:
 - **Engineered Living Materials (ELMs)** and in particular **Hybrid Living Materials (HLMs)** interfacing engineered semiconducting polymer nanoparticles with biological systems (human cells and tissues, plants).
 - **Bio-hybrid platforms** based on conjugated polymers on rigid, flexible and edible substrates.
 - Customizing and optimizing **printing techniques for bio-hybrid platforms and biosensors**.
 - Organic semiconductors for Artificial Retina models.
 - Conjugated polymer mediated light-control of living cells.
 - Interfacing Organic and inorganic-hybrid electronics on rigid, flexible and edible substrates (polymer platforms, antennas, FETs, laser induces paper-based devices) with biological systems (human, animal and plant cells, cell-networks, organs).

Professional experience and academic positions

From / to	Job title	Name of academic Institution	Academic level	Responsibilities
2020-2022	Research assistant	Free university of Bolzano-Bozen - Faculty of Science and Technology – Sensing	Postdoc	<ul style="list-style-type: none"> • Research in areas of: <ul style="list-style-type: none"> - Organic optoelectronic interfaced with biological systems; - Conjugated polymer thin films and

		Technologies Laboratories		<p>nanoparticles bio-platforms;</p> <ul style="list-style-type: none"> - 3D bioprinting enhanced cell scaffolds; - Carbon based sensors for human digestion diseases detection; - Bioprinting techniques using food waste. <ul style="list-style-type: none"> • Laboratory training for Master students. • Tutoring of PhD students. • Writing research proposals for national, European and international fundings.
2020 (3 months, from 1 st of August to 31 st of October 2020, funded by Lazio Region)	Research assistant	University of Rome Tor Vergata - Department of Electronic Engineering - CHOSE (Center of Hybrid and Organic Solar Energy)	Postdoc	<ul style="list-style-type: none"> • Design and fabrication of a bio-hybrid conjugated polymer platforms for artificial retina model and light control of living cells via printing techniques on rigid and flexible substrates. • Laboratory training for Master students. • Teaching assistant for organic and biological electronics courses at M.Sc. level. • Co-supervisor of Master student. • Tutoring postgraduate students.

				<ul style="list-style-type: none"> • Collaboration with national, European and international academic and industrial partners (5 in total).
2017/2018 (13 months: 5 th October 2017 to 30 September 2018 funded by Lazio region scholarship + 1 month extension funded by Surrey University)	Visiting research assistant	University of Surrey – Guildford, U.K. - Department of Electrical and Electronic Engineering - Advanced Technology Institute (ATI)	Visiting AR/PhD	<ul style="list-style-type: none"> • Design and fabrication of an INKJET PRINTED 3-chromatic artificial retina based on conjugated polymers. • Spectrophotometry measurements. • Development of semiconducting polymer inks for inkjet printing. • Inkjet printing techniques optimized to mimic human retinal photoreceptors geometry on rigid and flexible substrates. • Optical measurements set-up customized to mimic human retinal activity. • Postgraduate training in <ul style="list-style-type: none"> - Nanoscience and nanotechnology - Nanoelectronics and devices.
2016/2020 (3 years of PhD + 1 year extension funded by Lazio)	Research assistant	University of Rome Tor Vergata – Department of Electronic Engineering -	AR/PhD	<ul style="list-style-type: none"> • Design and fabrication of a 3-chromatic artificial retina based on conjugated polymers via printing

Region)		CHOSE (Center of Hybrid and Organic Solar Energy)		<p>techniques on rigid and flexible substrates.</p> <ul style="list-style-type: none"> • Laboratory training for Master students. • Teaching assistant for organic and biological electronics courses at M.Sc. level. • Involved in > 3 Research projects with national, European and international collaboration. • Coordination of research work in multidisciplinary group, managing reporting and materials purchase. • Author and co-author of research paper in open access journals. • Writing research proposals for national, European and international fundings. • Presented > 11 contributed and invited talks at international well-known top conferences
2015/2016 (18 months of research work for Master thesis)	Student research assistant	University of Rome Tor Vergata – Department of Electronic Engineering - CHOSE	M.Sc.	<ul style="list-style-type: none"> • Study and test of organic semiconducting polymers and printing techniques to reproduce human retinal visual

		(Center of Hybrid and Organic Solar Energy)		<p>system.</p> <ul style="list-style-type: none"> • Interfacing semiconducting polymers and/or hybrid thin films with living cells and animal retinal systems to study the polymer biocompatibility, the visual network and to opto-electrically mimic the mammalian visual system. • Design and development of a hybrid photovoltaic device (by printing/photolithography techniques) to test retinal and polymers electrical activities.
2011/2013 (3 years collaboration and research work during bachelor's degree)	Student research assistant	University of Rome Tor Vergata - Electrical and electronic Measurements Laboratory	B.Sc.	<ul style="list-style-type: none"> • Study of physical means for Electro-medical device (multi-functional electro-medical device for physiotherapy): electrotherapy, laser therapy, magnetic therapy, ultrasound therapy.
2011/2012 (12 months for Bachelor research thesis work)	Student research assistant	ISATEL srl – Elettromed srl– University of Rome Tor Vergata	B.Sc.	<ul style="list-style-type: none"> • Design and development of innovative multi-functional medical device for physiotherapy and post-traumatic rehabilitation. • Study and analysis

				<p>of physical media (currents, ultrasounds, laser, magnetic radiation) for electromedical devices.</p> <ul style="list-style-type: none"> • Electromedical device implementation. • Coordinator of working Engineering team. • Realization of sheets, economic prospects, verification tests related to the electromedical device made and implemented. • Realization of the user manual for the medical device.
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Editorial and referee activities

- Member of External Reviewer Panel (ERP) for Emerging Printed Electronics Research Infrastructure (EMERGE) is a H2020 project under the topic INFRAIA-02-2020 - Integrating Activities for Starting Communities (April 2023).
- Reviewer for ISIEA (2nd International Symposium on Industrial Engineering and Automation Towards a Smart, Resilient and Sustainable Industry) 2023 (March 2023)
- Review of one grant proposal for the National Science Center, Poland (March 2022)
- Reviewer for IEEE-JFLEX 2023 (IEEE Journal on Flexible Electronics)
- Reviewer for FLEPS 2023 (IEEE International conference on Flexible, Printable Sensors and Systems)
- Reviewer for FLEPS 2022 (IEEE International conference on Flexible, Printable Sensors and Systems)
- Reviewer for FLEPS 2021 (IEEE International conference on Flexible, Printable Sensors and Systems)
- Sub-committee member in EDTM 2022 (6th IEEE Electron Devices Technology and Manufacturing Conference) > Flexible & Wearable Electronics
- SIOF – Società Italiana di Ottica e Fotonica. Membro
- SIE – Società Italiana di Elettronica. Membro Ordinario

- IEEE Membership: n. 98168409
- Educational Activity chair for IEEE CRFID TC-AMES (Additively Manufactured Electronic Systems)
- Member of Working Group on flexible electronic systems and applications (WG-FESA) for IEEE CRFID TC-AMES
- IEEE Women in Engineering Membership
- IEEE Electron Devices Society Membership
- IEEE Engineering in Medicine and Biology Society Membership
- Bionanotechnology & BioMEMS, IEEE Engineering in Medicine and Biology Society Technical Committee
- Environmental Engineering Community, IEEE
- Sustainable ICT Community, IEEE
- Translational Engineering & Healthcare Innovations, IEEE Engineering in Medicine and Biology Society Technical Committee
- Wearable Biomedical Sensors and Systems, IEEE Engineering in Medicine and Biology Society Technical Committee

Conferences workshops and international meetings

- **Workshops, conferences, and talks presented by Manuela Ciocca:**
1. 3-6 JULY 2023: **International Symposium on Flexible Organic Electronics (ISFOE)** – Nanotechnology – Thessaloniki, Greece.
Invited Speaker: “Photo-sensitive bio-hybrid interfaces for biophotonic applications: from plants to human living cells”. M. Ciocca.
 2. 20th APRIL 2023: **Biophysics@Rome 2023** – Centre of National Research (CNR), Rome.
Oral Presentation: “A Polymer Bio–Photoelectrolytic Platform for Electrical Signal Measurement and for Light Modulation of Ion Fluxes and Proliferation in a Neuroblastoma Cell Line”. M. Ciocca, et al..
 3. 22nd FEBRUARY 2023: **Biological Systems Engineering (BSE) seminar**. University of Nebraska–Lincoln - Department of Biological Systems Engineering, Institute of Agriculture and Natural Resources, College of Engineering.
Giving seminar (invited) on “Bio/nanotechnology and bio-hybrid photosensitive interfaces for medical and plants applications”. M. Ciocca.
 4. 11-18th DECEMBER 2022: **Biocube meeting** – Workshop and winter school in biophotonics, bioelectronics and biomechanics. Sestriere, Italy.
Oral presentation: “Bio-hybrid Plants for Bioenergy production”. M. Ciocca, M. Maver, S. Krik, S. Walz, T. Rühle, T. Figueroa, P. Ibba, P. Lugli, T. Mimmo, D. Leister, L. Petti.

5. 21-24th AUGUST 2022: **IEEE IFETC 2022** – Qingdao, China – Hybrid. Poster presentation: “3D bio-printed light-sensitive cell scaffolds based on polymer nanoparticles for bio-photonics applications”. *M. Ciocca*, C. Febo, F. Massoumi, A. Altana, G. Cantarella, P. Lugli, and L. Petti.

6. 17-21st JUNE 2022: **Workshop for Early Career Investigators in Engineered Living Materials (ELMs)**. Nachwuchsakademie, funded by DFG, German Research Foundation - INM-Leibniz Institute for New Materials, Saarbrücken, Germany.
Outline of the research idea in ELMs presented (in the selected 20 participants).

7. 21-23rd JUNE 2022: **Third International Conference on Engineered Living Materials**. INM-Leibniz Institute for New Materials, Saarbrücken, Germany.
Poster presentation: “Engineered Living Materials towards engineered plant-hybrid living systems”. *M. Ciocca*, M. Maver, S. Walz, T. Rühle, T. Figueroa Gonzalez, P. Ibba, T. Mimmo, P. Lugli, D. Leister, L. Petti.

8. 15-16th FEBRUARY 2022: **Virtual International Workshop on Biosensing with emphasis on Nanomanufacturing** – Virtual – International Institute for Biosensing.
Oral presentation (invited speaker): “Conjugated polymer bio-hybrid platform for artificial retina model and light control of living cells”. *M. Ciocca*, P. Giannakou, P. Mariani, L. Cinà, A. Di Carlo, M. O. Tas, S. Marcozzi, H. Asari, A. Camaioni, M. Shkunov, T. M. Brown.

9. 8-9th DECEMBER 2020: **Virtual International Workshop on Biosensing with emphasis on Nanomanufacturing** – Virtual – International Institute for Biosensing.
Oral presentation (invited speaker): “Bio-hybrid Photovoltaic device based on conjugated polymers for a colour sensitive inkjet-printed Artificial Retina”. *M. Ciocca*, P. Giannakou, P. Mariani, L. Cinà, A. Di Carlo, M. O. Tas, S. Marcozzi, H. Asari, A. Camaioni, M. Shkunov, T. M. Brown.

10. 31st AUGUST – 4th SEPTEMBER 2020: **2020 AFOSR Biophysics Program** – Virtual.
Oral presentation (invited speaker): “Color Sensitive Organic Semiconductor Pixelated Photosensitive Device”. *M. Ciocca*, P. Giannakou, P. Mariani, L. Cinà, A. Di Carlo, M. O. Tas, S. Marcozzi, H. Asari, A. Camaioni, M. Shkunov, T. M. Brown.

11. 21-23rd OCTOBER 2019: **Orbitaly 2019** - Congress Center of the University of Naples Federico II – Naples – Italy.
Poster Presentation: “Bio-hybrid optoelectronic device to record and stimulate bioelectrical activity”. M. Ciocca, G. Ciccone, S. Marcozzi, L. Cina, A. Camaioni, T. M. Brown.
12. 18th MAY 2019: **EUROPEAN NIGHT OF MUSEUMS** - “Prostheses, hybrids and cyborgs”
Work presentation on “ARTIFICIAL RETINA” M. Ciocca, K Snashall, P Giannakou, L Cina, A Camaioni, M Shkunov and T M Brown.
13. 15-16th MAY 2019: **Biophysics@Rome 2019** – Centre of National Research (CNR), Rome.
Oral Presentation: “Bio-hybrid Optoelectronic interface for stimulation and characterization of biological tissues and cells”. M. Ciocca, S. Marcozzi, L. Cina, A. Camaioni, T. M. Brown.
14. 16-23rd MARCH 2019: 6TH INTERNATIONAL WINTERSCHOOL ON BIOELECTRONICS - BioEI 2019 - Kirchberg in Tyrol, Austria.
Poster Presentation “Ink-jet printed Artificial Retina”. M. Ciocca, K Snashall, P Giannakou, L Cina, A Camaioni, M Shkunov and T M Brown.
15. 16-17th AUGUST 2018: EuroSciCon Ltd – World Congress on Ophthalmology and Eye Surgery, Paris, France.
Oral presentation (invited speaker): “Sight Restoration via Organic and Hybrid thin films (SIROH)”. M. Ciocca, K Snashall, P Giannakou, L Cina, A Camaioni, M Shkunov and T M Brown.
Award: RECOGNITION CERTIFICATE: for her phenomenal oral presentation. The award was attributed in recognition of research paper quality, novelty, and significance. Given by Dr. Pedro Grimaldos (Medical Director EYECOS Corp, Barcelona, Spain).
16. 4th JULY 2018: **Doctoral College Conference 2018, Breaking new Ground** - University of Surrey, Guildford, UK.
Poster Presentation “Ink-jet printed Artificial Retina”. M. Ciocca, K Snashall, P Giannakou, L Cina, A Camaioni, M Shkunov and T M Brown.
Award: PREMIUM POSTER.
17. 22nd JUNE 2018: Festival of Research Faculty of Health and Medical Sciences (FHMS) and Faculty of Engineering and Physical Sciences (FEPS).
Poster Presentation “Ink-jet printed Artificial Retina”. M. Ciocca, K Snashall, P Giannakou, L Cina, A Camaioni, M Shkunov and T M Brown.
Award: BEST POSTER PRESENTATION, University of Surrey, Guildford,

UK.

18. 29th JUNE 2017: EIWIIN (European International Women Inventors&Innovators), University of Bari, ITALY.
Exhibition of the research project for the realization of an Artificial Retina and preliminary results.
Award: Special Recognition Award 2017 for Ingenious and Innovative Achievements.
19. 22nd NOVEMBER 2016: ITWIIN award (Italian Women Innovators and Inventors), CNR Bologna, Emilia-Romagna, ITALY.
Exhibition of the research project for the design and realization of an Artificial Retina.
Award: Special Mention MaterialConneXion- Best Italian Woman Innovator 2016.
- **Further talks presented by collaborators:**
20. 7-9th JULY 2021: **SIE 2021** - 52nd Annual Meeting of the Associazione Società Italiana di Elettronica (SIE), Trieste, Italy. "Colour-Sensitive Conjugated Polymer Inkjet-Printed Pixelated Artificial Retina Model studied via a Bio-hybrid photovoltaic device". M. Ciocca, Pavlos Giannakou, Paolo Mariani, Lucio Cinà, Aldo Di Carlo, Mehmet O. Tas, Hiroki Asari, Serena Marcozzi, Antonella Camaioni, Maxim Shkunov, Thomas M. Brown. (oral invited – T.M. Brown).
21. 15th DECEMBER 2020: **Institute for Photonics and Nanotechnologies - CNR, Rome, Italy.** "Capturing visible light: from perovskite solar cells developed for indoor photovoltaics to organic semiconductor artificial retina applications". T.M. Brown, M. Ciocca, G. Lucarelli. (online invited seminar – T.M. Brown).
22. 17th JUNE 2020: **2020 Smart Sensing Non-classical Biology Workshop.** "Bio-hybrid organic semiconductor devices and their photoresponses incorporating biological materials". M. Ciocca, P. Giannakou, P. Mariani, L. Cinà, A. Di Carlo, M. O. Tas, S. Marcozzi, H. Asari, A. Camaioni, M. Shkunov, T. M. Brown. Virtual, (oral invited – T.M. Brown).
23. 29th MAY 2019: **E-MRS** (European Materials research Society) – Organic Bioelectronics > Bio and Soft Materials. "Inkjet-printed flexible conjugated polymer devices towards full colour artificial retina". M. Ciocca, P. Giannakou, K. Snashall, T.M. Brown, M. Shkunov. (oral - M. Shkunov).
24. 6-10th MAY 2019: **2019 Airforce Office of Scientific Research Life Biophysics Program Review**, Arlington, USA. "Biophysical Investigations

on Additive Manufactured Nanoscale Biosensors”. M. Ciocca, P. Giannakou, P. Mariani, L. Cinà, A. Di Carlo, M. O. Tas, S. Marcozzi, H. Asari, A. Camaioni, M. Shkunov, T. M. Brown. Virtual, (oral invited – T.M. Brown).

25. 3rd MAY 2019: **International Institute of Biosensing- IIB Site Visit and Symposium** - Penn State University, USA. “Bio-hybrid photo-sensitive organic semiconductor devices for the investigation of DNA and other biological materials”. T.M. Brown, M. Ciocca, S. Marcozzi, H. Asari, A. Camaioni. (oral invited – T.M. Brown).

26. 3rd DECEMBER 2018: **13th US Italy Joint Commission Meeting on Science and Technology Cooperation** > Advanced Materials and Nanotechnologies, Symposium: The Importance of Basic Science in Science Diplomacy - Italian Embassy, Washington, USA. “Photovoltaic devices for investigations on biological materials”. T.M. Brown, M. Ciocca, A. Camaioni. (oral invited – T.M. Brown).

Participation in exhibitions (where applicable)

- **Exhibitions/competitions:**
 - **Festival os Science “Le mille e una scienza”, Bolzano – 2022.** Exhibition desk Free University of Bozen-Bolzano (Sensing Technology Lab) and Competence Center for Plant Health. “Come prescono le piante? Scopriamolo con le nanoparticelle” – Exhibition for children of the semiconducting polymer nanoparticles through the plant for enhanced photosynthesis.
 - **Maker Faire, Rome – 2022.** Exhibition desk Free University of Bozen-Bolzano and University of Rome TorVergata, Dept. Material Science
 - **Maker Faire, Rome – 2016.** Exhibition desk for CHOSE (Center of Hybrid and Organic Solar Energy).
 - **ITWIIN (Italian Women Innovators and Inventors) - 2016,** CNR Bologna, Emilia-Romagna, ITALY. Exhibition of the research project for the design and realization of an Artificial Retina.
 - **EIWIIN (European International Women Inventors&Innovators) - 2017,** University of Bari, ITALY. Exhibition of the research project for the realization of an Artificial Retina and preliminary results.
 - **European Night of Museums, Rome – 2019.** Exhibition of the Artificial Retina for science outreach event, with scientific talk as well as games for children and adults with the objective of raising public awareness on science and the specific research field.
 - **Pint of Science, Rome – 2020.** Organization of talks and sessions, contacting hosting pubs and presenting top level researchers for science outreach event.

- **Awards and recognitions:**

- 2018. EuroSciCon Ltd – World Congress on Ophthalmology and Eye Surgery, Paris, France. **RECOGNITION CERTIFICATE: for her phenomenal oral presentation** on “Sight Restoration via Organic and Hybrid thin films (SIROH)”, the award was attributed in recognition of research paper quality, novelty, and significance. Given by Dr. Pedro Grimaldos (Medical Director EYECOS Corp, Barcelona, Spain).
 - 2018. EuroSciCon Ltd – World Congress on Ophthalmology and Eye Surgery, Paris, France. **RECOGNITION CERTIFICATE: for moderating at the Congress.**
 - 2018. Doctoral College Conference 2018, Breaking new Ground - **PREMIUM POSTER**, University of Surrey, Guildford, UK.
 - 2018. Festival of Research Faculty of Health and Medical Sciences (FHMS) and Faculty of Engineering and Physical Sciences (FEPS), **BEST POSTER PRESENTATION**, University of Surrey, Guildford, UK.
 - 2017. EIWIIN (European International Women Inventors&Innovators), University of Bari, ITALY. Special **Recognition Award 2017 for Ingenious and Innovative Achievements.**
 - 2016. ITWIIN award (Italian Women Innovators and Inventors), CNR Bologna, Emilia-Romagna, ITALY. **Special Mention MaterialConneXion-Best Italian Woman Innovator 2016.**
- **Schools, workshops and conferences attended:**
 - 11-18th DECEMBER 2022: Biocube meeting. Workshop and winter school in biophotonics, bioelectronics and biomechanics. Sestriere, Italy
 - 17-21st JUNE 2022: Workshop for Early Career Investigators in Engineered Living Materials (ELMs). Nachwuchsakademie, - INM-Leibniz Institute for New Materials, Saarbrücken, Germany ELMs.
 - 29th AUGUST 2020: International Conference on Advanced Materials for Energy and Information Technology. (Online)
 - 20th OCTOBER 2019: “1st graduated school of organic bioelectronics”. Complesso dei SS. Marcellino e Festo - Congress Center of the University Federico II – Naples.
 - 23rd MAY 2019: “Innovative approaches for label-free manipulation and monitoring of biological cells and tissues” – University of Rome Tor Vergata, School of Engineering, Rome.
 - 8-12th APRIL 2019: “HIGH RESOLUTION ELECTRONIC MEASUREMENTS in Nano-Bio Science” – Politecnico di Milano - Dipartimento di Elettronica, Informazione e Bioingegneria (DEIB) at POLIFAB.
 - 16-23rd MARCH 2019: 6th International Winterschool on Bioelectronics - BioEI 2019 - Kirchberg in Tyrol, Austria.
 - 2018: Peer review Workshop: “How to review a manuscript” heled by Rob van Daalen (Publisher Chemistry at Elsevier) and Professor Max Lu (Editor of the Journal of Colloid and Interface Science) - Guildford, University of

Surrey (UK).

- 2018: Seminar – Quantum Biology “Retinal rod cells are sensitive to the coherence of the incoming stimulating light” heled by Dr David Racine - Guildford, University of Surrey (UK).
- 2018: Evening Language Courses (English) – Guildford, University of Surrey (UK)
- 2017: Summer school “11th edition of the International School on Hybrid and Organic Photovoltaics (ISOPHOS) and 4th edition of the School on Advanced Materials for Photonics, Electronics and Bioelectronics (MAPHEBIO)” – Arbatrax, Sardinia (ITALY)

Research and scholarships

Date granted	Award Holder(s)	Funding Body	Title	Amount received
2018	University of Rome Tor Vergata	Lazio Region	PROGETTI DI GRUPPI DI RICERCA Conoscenza e cooperazione per un nuovo modello di sviluppo. Determinazione n. G08096 del 26/06/2018 SIROH project “Slight Restoration via Organic and Hybrid thin films”.	3 years job reserch fundings > € 150.000,00
2017-2018	Myself	Lazio Region	TORNO SUBITO Program, promoted by Regione Lazio - Department of Education, Research, School Education and Universities - financed by the ROP (Regional Operational Program) Lazio ESF (European Social Fund) 2014 - 2020 Axis - III “Education and Training” (Investment Priority 10.ii - Specific Objective, 10.5). “Inkjet printing technologies for 3-color sensitive pixelated artificial retina based on organic semiconducting	18 months job research funding > € 25.486,21

			inks".	
2017-2018	Department of electrical Engineering, University of Rome Tor Vergata	University of Rome Tor Vergata	MISSION SUSTAINABILITY University of Rome Tor Vergata (Decreto n. 2817 del 22 Dicembre 2016) Bic-Vision project "Bio-hybrid optoelectronic device incorporating semiconducting polymer/carbon nanotube thin films and eye retinal tissue for bringing back Vision".	18 months job research funding > € 21.000,00

National and international research group collaborations

- Multidisciplinary research group for Artificial Retina project (2016-2020): University of Rome Tor Vergata (Department of Electronic Engineering, Department of Biomedicine and prevention) + EMBL (European Molecular Biology Laboratory) + Advanced Technology Institute (ATI), University of Surrey, Guildford, U.K.
- Multidisciplinary research group for research project on "Fundamental Biophysics Investigations on Upconversion Nanoparticles Modified Photoreceptive Composite Architectures for Enhanced Quantum Optoelectronics" (2018-2020). University of Rome Tor Vergata (Department of Electronic Engineering, Department of Biomedicine and prevention) + Penn state University, USA (Department of Material science and Engineering) + Macquarie University, Sydney - Australia (Department of Physics).
- Multidisciplinary research group for research project on "Enhancement of bio-photosynthetic systems with engineered nanoparticles" (2021 - ongoing). Free University of Bolzano-Bozen (Faculty of Engineering & Competence Center for Plant Health) + LMU- Ludwig Maximilian Universität München (Department of Biology I) + Universidad de Granada (Department of Electronics and Computer Technology) + YORDAS GmbH (Germany).
- Multidisciplinary research group for research project on "Optoelectrical monitoring of autonomic modulation of cardiac cells in a dish and its implications on cardiac behaviors implicated in cardiac and autonomic diseases" (2022- ongoing). Free University of Bolzano-Bozen (Faculty of Engineering) + EURAC research center (institute of Biomedicine, Bolzano).
- Multidisciplinary research group for research project on "Autonomic modulation of cardiac cells in a dish and its implications on cardiac and autonomic diseases: set up of a neurocardiac construct and optoelectrical monitoring" (2023- ongoing). Free University of Bolzano-Bozen (Faculty of

Engineering) + EURAC research center (institute of Biomedicine, Bolzano).

Experience in academic teaching

- **Frontal lectures – Teaching Assistant:** Course “Organic and Biological Electronic”, Master in “Science and Technology of the Materials” (dual degree program for students of the photon curriculum, with University of Applied Sciences of Wildau (DE)), Master in “Medical Engineering” and Master in “Electronic Engineering”- University of Rome Tor Vergata. (AYs 20017-2018, 2018-2019, 2019-2020).

Lectures focused on:

- Principles of Biology
- Molecular Biology
- Gene chip
- Genearray fabrication
- Case of study: Cystic fibrosis
- Bio-electronics and Bioelectrical signals
- Opto-bio electronics
- Conjugated polymers for Artificial Retina model device (theory, measurements and fabrication process)
- Laboratory activities on fabrication techniques with practical demonstrations on the manufacture and measurements of organic semiconductor optoelectronic devices (held at CHOSE -Centre of Hybrid and Organic Solar Energy -Rome)

- **Hybrid lectures – Lecturer** - laboratory activities: Course “Sensors and biosensors for food processing”, Master in “Food Sciences for Innovation and Authenticity”, Free University of Bozen-Bolzano. (December 2021 and December 2022)

Lectures focused on:

- Introduction to sensors and biosensors
- Principles of electronics: Kirchhoff’s laws, Ohm’s law, resistors, capacitors, electrochemical sensors
- Laboratory activities on electronic circuits with resistors and capacitors (series and parallel connections), voltage divider circuit and LEDs.

- **Examination commission member** for the Master course in *Food Sciences for Innovation and Authenticity* (LM70), course of *Sensors and biosensors for food processing*, at the Free University of Bozen-Bolzano. (2022 and 2023)

- **Visiting research assistant** – AR/PhD - University of Surrey, Guildford, U.K. - Department of **Electrical and Electronic Engineering** - Advanced Technology Institute (ATI). Research filed: “Inkjet printing 3-colour Artificial Retina model based on photosensitive semiconducting polymers.” (2019/2020)

- Planning lessons to motivate and thrill master students of electronic

engineering – Teaching and explaining bioelectronics and bioelectrical activity – receiving positive feedbacks from students. (2017-2021)

- **Co-Supervisor of a master student thesis** (Mathematical Engineering) on designing patterned device based on 4 conjugated polymers for biological systems stimulation - University of Rome Tor Vergata. (2020-2021)
- **Supervision of one postgraduate student** (Industrial Bioengineering) for research project “Light-sensitive bio-hybrid platform based on conjugated polymers and carbon nano tubes” - University of Rome Tor Vergata in collaboration with Air Force Office of Scientific Research (AFOSR). (2018)
- **Tutor of a master student** (Electronic Engineering) for inkjet printing of semiconducting polymer inks – University of Surrey, Guildford, U.K. - Advanced Technology Institute (ATI). (2017-2018)
- **Tutor of PhD students** – Free University of Bozen-Bolzano, Faculty of Engineering and Faculty of Agricultural, Environmental and Food Sciences - in the following research projects: (2020-ongoing)
 - Electronic enhancement of bio-photosynthetic systems via organic semiconducting nanoparticles - Free University of Bozen-Bolzano, PhD Programme in *Advanced-System Engineering*
 - Optoelectrical monitoring of autonomic modulation of cardiac cells and the implications for arrhythmogenesis. – Free University of Bozen- Bolzano, PhD Programme in *Advanced-System Engineering*, co-founded by unibz and EURAC- Institute of Biomedicine (Eurac Research private center - Bolzano).
 - Development of a sensor (EG-FET) to detect micro and nanoplastics in food and environment samples. - Free University of Bozen-Bolzano, PhD program of *Food Engineering and Biotechnology*, co-funded by unibz and IIT (Italian Institute of Technology) Genova.
 - Carbon-based sensors (conjugated polymer) for the detection of biomolecules. - Free University of Bozen-Bolzano, PhD program of *Food Engineering and Biotechnology*.
 - Development of coating and components (antennas on multiresponsive polymers) for space applications. - Free University of Bozen-Bolzano, PhD Program in *Advanced-System Engineering*, co-founded by unibz and Thales Alenia Space (Rome) in collaboration with University of Rome Tor Vergata.
 - Developing biosensing systems from food waste. Free University of Bozen-Bolzano, PhD program of *Food Engineering and Biotechnology*, co-funded by unibz and IIT (Italian Institute of Technology) Genova.

Other

- Planning experiments for multidisciplinary research group

academic responsibilities

- Managing laboratory materials, tools and instrumentations orders and purchases.
- Writing proposals for fundings.
- Managing and planning research projects in multidisciplinary teams.
- Organization of administrative documentation for research projects reporting.
- Attending European and International conferences.
- Presenting research work in international conferences and congresses.

Research collaborations with industry and public administrations

- **ELECTROMED srl (Rome)** – “Design and development of a multi-functional medical device for physiotherapy and post-traumatic rehabilitation” (2011-2012)
- **ISATEL srl (Rome)** - “Development and validation of a multi-functional medical device for physiotherapy and post-traumatic rehabilitation” (2011-2012)
- **Sight for Surrey (Guildford, U.K.)** (charity offering a lifetime of support for people who are blind or partially sighted) – Discussion on prosthetic innovative devices for blind people and technological-micro/nano electronic solutions with Robert Hughes (Chief Executive of Sight for Surrey), Cllr Mike Parsons (Mayor of Guildford in 2018) and Anne Milton (Member of parliament for Guildford from 2005 to 2019 and British politician who served as *Minister of State for Skills and Apprenticeships* from 2017 to 2019) (2018).
- **Italian Minister of Culture (Rome)** – European Night of Museums – “Protheses, hybrids and cyborgs” (2019)
- **EMBL** (European Molecular and Biology Laboratory), **Monterodondo, Rome** – “Artificial retina model based on conjugated polymers” > electrophysiological measurements on rat explanted retinas interfaced with artificial retina conjugated-polymer device. (2016-2020)
- **CRV – Centro Ricerche sulla Visione - ORLANDI VISION 1986 s.r.l. Rome** > measurements and study of optical stimuli for human retinal diseases therapy. (2019-2020)
- **Air Force Office of Scientific Research (AFOSR), USA** – “Artificial retina model based on conjugated polymers”; “Light sensitive bio-polymer platforms”; “SELF POWERED ARTIFICIAL RETINA based on organic photovoltaic polymer & up conversion nanoparticles”. (2016-ongoing)
- **Cicci Research srl, Grosseto (GR) Italy** - “Artificial retina model based on conjugated polymers” > customizing opto-electrical and electrophysiological measurements set-ups. (2016 - ongoing)
- **Thales Alenia Space (Rome)** – “Antennas based on 3D printed multi-responsive polymers for space applications”. (2020 - ongoing)
- **EURAC** (Research private center - **Bolzano**) > customizing Multy Electrodes Arrays (MEAs) for opto-electrical living cells stimulation and electrophysiological measurements; writing a PhD research project funded

by 50% unibz and 50% EURAC. (2020 - ongoing)

- **IIT (Italian Institute of Technology) Genova** > bioprinting based on food waste; biosensors based on EGFET technology for micro and nano plastics detection in environment samples. (2020 - ongoing)
- **TwinHelix – Bio-printer Bio X, Cellink (Milano)** > Bioprinter purchase, educational and academic funds, Free University of Bolzano-Bozen. (2021)
- **Notion Systems GmbH (Schwetzingen, Germany)** > ink-jet printer Fuji Dimatix Materials Printer (DMP2850) purchase and training (given by Heiman Mustafa, Process Engineer & Trainer), Free University of Bolzano-Bozen – Faculty of Science and Technology – NOI Techpark.
- **BIOMETIC and MICROTEC (Brixen-Bressanone)** > developing novel fruit waste-based bioprinting technologies. (2021 - ongoing)
- **YORDAS GmbH (Forchheim, Germany)** > collaboration for ELSA (ethical, legal, and social aspects) and communication and dissemination linked to bio-hybrid interfaces (electronic/biological systems) research works. (2021 - ongoing).
- **Competence Center for Plant Health (Bolzano)** > collaboration for multidisciplinary research project on “Enhancement of bio-photosynthetic systems with engineered nanoparticles” (2021 - ongoing).
- **Strategieentwicklung Biotech, NOI Techpark (Bolzano)** > transfer of technology in industries. (2021 - ongoing)

Publications

1. “A Polymer Bio-photo-electrolytic Platform for electrical signal measurement and for light modulation of ion fluxes and proliferation in a neuroblastoma cell line.” *Manuela Ciocca*, Serena Marcozzi, Paolo Mariani, Valentina Lacconi, Aldo Di Carlo, Lucio Cinà, Marcelo D. Rosato-Siri, Alessandra Zanon, Giada Cattelan, Enrico Avancini, Paolo Lugli, Shashank Priya, Antonella Camaioni, Thomas M. Brown. *Adv. NanoBiomed Res.* 2200127. <https://doi.org/10.1002/anbr.202200127>
2. “3D Bio-Printed Light-Sensitive Cell Scaffolds Based on Polymer Nanoparticles for Bio-Photonics Applications.” *M. Ciocca*, C. Febo, F. Massoumi, A. Altana, G. Cantarella, P.Lugli, and L.Petti. 2022 IEEE International Flexible Electronics Technology Conference (*IFETC*). DOI: 10.1109/IFETC53656.2022.9948487
3. “Advances in printing technologies for soft robotics devices applications”. Martina Aurora Costa Angeli, *Manuela Ciocca*, Luisa Petti, Paolo Lugli. Editor(s): Luca Magagnin, Filippo Rossi, *Advances in Chemical Engineering (Chapter 2)*, Academic Press, Volume 57, 2021, Pages 45-89, ISSN 0065-2377, ISBN 9780128206461, <https://doi.org/10.1016/bs.ache.2021.05.001>.
4. “Colour-Sensitive Conjugated Polymer Ink-Jet printed Pixelated Artificial Retina Model Studied Via a Bio-Hybrid Photovoltaic Device”, *Manuela Ciocca*, Pavlos Giannakou, Paolo Mariani, Lucio Cinà, Aldo Di Carlo, Mehmet O. Tas, Hiroki Asari, Antonella Camaioni, Maxim Shkunov, Thomas

M. Brown. *Sci Rep* 10, 21457 (2020). <https://doi.org/10.1038/s41598-020-77819-z>.

5. "Laser-Induced, Green and Biocompatible Paper-Based Devices for Circular Electronics", Giuseppe Cantarella, Mallikarjun Madagalam, Ignacio Merino, Christian Ebner, Manuela Ciocca, Andrea Polo, Pietro Ibba, Paolo Bettotti, Ahmad Mukhtar, Bajramshahe Shkodra, AKM Sarwar Inam, Alexander J Johnson, Arash Pouryazdan, Matteo Paganini, Raphael Tiziani, Tanja Mimmo, Stefano Cesco, Niko Münzenrieder, Luisa Petti, Nitzan Cohen, Paolo Lugli. *Advanced Functional Materials*, 2023. DOI: <https://doi.org/10.1002/adfm.202210422>
6. "Flexible and Printed Chemiresistive Ammonia Gas Sensors based on Carbon Nanotube and Conjugated Polymers: a Comparison of Response and Recovery Performance", Annelot Nijkoops, Manuela Ciocca, Soufiane Krik, Ali Douaki, Arvind Gurusekaran, Sahira Vasquez, Mattia Petrelli, Martina Aurora Costa Angeli, Luisa Petti, Paolo Lugli. *IEEE Sensors Letters*, 2023. DOI: 10.1109/LESENS.2023.3274909
7. "Thiazolo[5,4-d]thiazole-based organic sensitizers with improved spectral properties for application in greenhouse-integrated dye-sensitized solar cells". Alessio Dessì, Massimo Calamante, Adalgisa Sinicropi, Maria Laura Parisi, Luigi Vesce, Paolo Mariani, Babak Taheri, Manuela Ciocca, Aldo Di Carlo, Lorenzo Zani, Alessandro Mordiniab and Gianna Reginato. *Sustainable Energy Fuels*, 2020, Advance Article, DOI:10.1039/D0SE00124D.
8. "The influence of climate conditions and on-skin positioning on InGaZnO Thin-Film Transistor performance." Catania F, De Souza Oliveira H, Costa Angeli MA, Ciocca M, Pané Vidal S, Münzenrieder N, Cantarella G. 2021, *Frontiers in Electronics*.:22.
9. "Field-Effect Transistor-Based Biosensors for Environmental and Agricultural Monitoring." Giulia Elli, Saleh Hamed, Mattia Petrelli, Pietro Ibba, Manuela Ciocca, Paolo Lugli, Luisa Petti. *Sensors* 2022, 22, 4178. <https://doi.org/10.3390/s22114178>
10. "Transistor-based plant sensors for agriculture 4.0 measurements". S. Hamed, P. Ibba, M. Petrelli, M. Ciocca, P. Lugli and L. Petti. 2021 IEEE International Workshop on Metrology for Agriculture and Forestry (MetroAgriFor), 2021, pp. 69-74, doi:10.1109/MetroAgriFor52389.2021.9628560.
11. "2.4 GHz Microstrip Patch Antenna Fabricated by Means of Laser Induced Graphitization of a Cellulose-based Paper Substrate." Mukhtar Ahmad, Giuseppe Cantarella, Martina Aurora Costa Angeli, Mallikarjun Madagalam, Christian Ebner, Manuela Ciocca, Raheel Riaz, Pietro Ibba, Mattia Petrelli, Ignacio Merino, Nitzan Cohen, Paolo Lugli, and Luisa Petti. 2021 IEEE

International Flexible Electronics Technology Conference (IFETC), 2021, pp. 0044-0046, doi: 10.1109/IFETC49530.2021.9580510.

12. "Field-effect-transistor based biosensors: a review of their use in environmental monitoring applications". G. Elli, *M. Ciocca*, P. Lugli and L. Petti. 2021 IEEE International Workshop on Metrology for Agriculture and Forestry (MetroAgriFor), 2021, pp. 102-107, doi:10.1109/MetroAgriFor52389.2021.9628685.
13. "Analysis of Dispense and Water Transfer Printing as Fabrication Methods for UHF Antennas on 3D Printed Substrates." Arvind Gurusekaran, Mukhtar Ahmad, *Manuela Ciocca*, Enrico Avancini, Paolo Lugli, Luisa Petti. 2022 6th IEEE Electron Devices Technology & Manufacturing Conference (EDTM), doi:10.1109/EDTM53872.2022.9797997
14. "Flexible Auxetic Structure as Substrates for Resistive Pressure Sensors", Hugo de Souza Oliveira, Annelot Nijkoops, *Manuela Ciocca*, Alejandro Carrasco-Peña, Luisa Petti, Giuseppe Cantarella, Niko Münzerieder. 2022 IEEE Sensors. DOI: 10.1109/SENSORS52175.2022.9967254.

**Publications
about the
applicant**

- About "Polymer Bio-photo-electrolytic Platform for electrical signal measurement and for light modulation of ion fluxes and proliferation in a neuroblastoma cell line":
 - <https://ing.uniroma2.it/2023/02/24/bioelettronica-controllare-il-comportamento-delle-cellule-attraverso-la-luce-la-ricerca-di-ingegneria-elettronica-per-la-realizzazione-di-una-biopiattaforma-fotosensibile/>
 - <https://www.insalutenews.it/in-salute/tag/manuela-ciocca/>
 - <https://www.salto.bz/de/article/10032023/una-luce-contro-il-cancro>
 - <https://www.academia.bz.it/articles/bioelettronica-e-terapie-dei-tumori-una-piattaforma-foto-sensibile-per-controllare-il-comportamento-cellulare-attraverso-la-luce>
- Press release on the Artificial Retina research project headed by Manuela Ciocca, after the publication in Scientific Reports: <http://www.chose.uniroma2.it/chose/56-news-featured/395-of-a-colour-sensitive-inkjet-printed-pixelated-artificial-retina-model-and-its-study-via-an-optoelectronic-device-press-release.html>
- Specialized websites in science and technology, on the Artificial Retina research project headed by Manuela Ciocca:
 - <https://sciencex.com/news/2021-01-color-sensitive-inkjet-printed-pixelated-artificial-retina.html>

- <https://www.newsbreak.com/news/2120709649591/colour-sensitive-conjugated-polymer-inkjet-printed-pixelated-artificial-retina-model-studied-via-a-bio-hybrid-photovoltaic-device>
- <https://medicalxpress.com/news/2020-12-color-sensitive-inkjet-printed-pixelated-artificial-retina.html>
- <https://tectales.com/bio-tech-it/an-inkjet-printed-artificial-retina-model.html>
- <https://www.tagmedicina.it/2021/02/15/retina-artificiale-colori/>
- <https://emergency-live.com/sw/it/curiosita/patologie-della-vista-ricercatori-tor-vergata-sviluppano-retina-artificiale-realizzata-con-stampa-inkjet/>
- <http://uicilombardia.org/index.php/rassegna-stampa/1364-sviluppo-di-un-modello-di-retina-artificiale-sensibile-ai-colori>
- About Manuela Ciocca's ITWIIN award:
 - 6th biannual European and international women inventors, innovators and entrepreneurs.
 - ZAC.it (http://www.zac7.it/index/zac7_2015/index_dx_css_new_2015.php?pag=16&art=0&categ=CRONACA%20&IDX=21027)
 - Retina Italia onlus (<http://www.retinaitalia.org/wp-content/uploads/2016/12/CartaIntestataRetina.pdf>)
 - ITWIIN.org – Hall of fame 2016 (<https://www.itwiin.org/en/albo/hall-of-fame-2016.html>)
 - Donnainaffari.it (<http://www.donnainaffari.it/2016/12/premio-itwiin-2016/>)
 - Dol's magazine (<https://www.dols.it/2016/11/23/premio-itwiin-2016-vincitrici/>)
- About Manuela Ciocca's exhibition in the European night of museums:
 - The European night of museums (<http://www.resviva.it/wp-content/uploads/2019/05/notte-cyborg-programma.pdf>)

Further data

- **Piano di Formazione Nazionale (PNF) - Modulo 2 "Laboratorio Modelli per l'internazionalizzazione dei sistemi salute"** (given by ProMIS - Provincia Autonoma di Bolzano – Alto Adige) at Auditorium del Palazzo provinciale 12, Bolzano (2022)
- **Ink-jet printer Fuji Dimatix Materials Printer (DMP2850) training** (given by Heiman Mustafa, Process Engineer & Trainer. Notion Systems GmbH, Schwetzingen, Germany) at Free University of Bolzano-Bozen – Faculty of Engineering – NOI Techpark (2021), on:
 - DMP2850 resolution vs angle;
 - DMP2850 training workflow;

- Basics-of-inkjet;
- DMP2850 training;
- DMP2850 User Manual.
- **TwinHelix – Bio-printer Bio X, Cellink (Milano) training** (given by Mario Barlocco, Product Specialist Molecular and Cell Biology. Twin Helix) at Free University of Bolzano-Bozen – Faculty of Engineering (2021)
- Programming environment engineers:
 - LabVIEW Core 1 (24hrs) – National Instruments Course (21-23rd January 2019)
 - LabVIEW Core 2 (16hrs) – National Instruments Course (24-25th January 2019)
- Manuela Ciocca Orcid ID: 0000-0001-8014-9814

Statement of interest

After my master's degree in *Medical Engineering*, my studies were focusing on *Organic Electronics*, in particular **semiconducting polymer** thin films to develop a **photosensitive and biocompatible device**, on rigid (conductive glass) and flexible (conductive PET) transparent substrates, via printing and photolithography technologies, **mimicking human retina activities**.

Organic electronic interfaced with biological systems was the focus on my PhD research project. Interfacing Organic Electronic with living cells and tissues is the forefront of bioengineering. It is a novel and interesting field that fascinated me completely.

I used spin-coating, blade coating, screen-printing and ink-jet printing techniques. I developed novel semiconducting polymer inks and I designed and fabricate new layouts and architectures for the fabrication of a novel bio-hybrid device.

Obtained exciting research work results, lead me to win awards, recognitions, and national and European grants, as well as working in international fruitful multidisciplinary groups involving medical engineering, biology, electrophysiology, biophysics, and materials science.

My research journey, from my studies at University of Rome Tor Vergata till my current position (AR/postdoc) at the Faculty of Science and Technology in the Free University of Bolzano-Bozen, lead me to mature academic and scientific experiences in electronics and in particular in printing technologies for development of electronic bio-hybrid platforms and devices (mostly based on semiconducting polymers) for biomedical application and their extension to environment, plants and agriculture. Working on **organic electronic materials interfaced with biological systems** (human living cells, plants) I gained expertise in biophysics, organic electronics, and bio-interfaces, namely in the field called "**opto-bio-electronics**", on both theoretical and experimental levels. My principal research activities are centered on the design, fabrication and characterization of **opto-bio-hybrid systems** (e.g., printed opto-electrical bio-hybrid platform for biological interfaces – plant and human living cells and

tissues) via additive manufacturing technologies (ink-jet printing, screen- printing, 3D bioprinting, spray coating, spin coating, dip-coating) employing rigid, flexible and alternative edible substrates also based on food-waste.

Moreover, my participation in national, European and international multidisciplinary research groups and collaborations with industries and companies drove me in building up fruitful and synergic contacts in the field of opto-bio-electronics, as well as Engineered Living Materials (ELMs) and Hybrid Living Materials (HLMs).

Furthermore, my background and expertise in Organic Electronics and Bioelectronics would help in opening new research gateways in the field of flexible opto-bio-electronics exploiting new avenues in the didactic (offering breaking new ground teaching subjects) and in the laboratory activities (employing novel biopolymers and cutting-edge printing fabrication techniques). Problem solving, flexibility, managing and organizing multidisciplinary teams are my best skills. Laboratory life for device fabrication, teaching electronics and bioelectronics, research presentations to scientific audience, new challenges and overcoming research boundaries are my favorite things.

Language competence

- Mother language: Italian.
- IELTS English certificate – Academic B2
- German language: A1.1
- German language: A1.2

Driving license

Type of driving license: B