



Dr. Marco Contardi

Personal Information

Date and Place of Birth: 2nd April 1990, Palermo, Italy

Nationality: Italian

Current Position: Assistant Professor (Milano-Bicocca/MaRHE Center) and Affiliated Scientist (IIT)

Affiliation:

- University of Milano-Bicocca, Department of Earth and Environmental Sciences (DISAT), Piazza Della Scienza, 20126 Milano, Italy.
- Marine Research and High Education Center (MaRHE), Magoodhoo, Faafu Atoll, Maldives.
- Smart Materials Group, Istituto Italiano di Tecnologia (IIT), Via Morego 30, 16163 Genova, Italy

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Web: <https://scholar.google.it/citations?user=Atghyr8AAAAJ&hl=en>

Educational Experiences and Qualifications

May 2023 – Today

Assistant Professor (RTD-A) at the University of Milano-Bicocca, Department of Earth and Environmental Sciences, under the supervision of Prof. Paolo Galli and Dr. Simone Montano.

The project goal is to combine materials science, pharmaceuticals, and marine biology to develop new strategies for coral restoration, treatment of coral diseases and coral bleaching.

At the same time, I am involved in research activities in different areas, such as food packing, natural colorimetric indicators, super-hydrophobic and antioxidant coatings, sustainable materials, engineering living materials, and biomedicine. I tutor Master's and Ph.D. students.

February 2023 – April 2023

Post-Doc position at the Italian Institute of Technology (IIT) under the supervision of Dr. Athanassia Athanassiou. The project aimed to evaluate the biodegradation in the seawater environment of new bioplastics.

Supervisors of the project: Athanassia Athanassiou, Ph.D.

January 2021 – December 2022

Post-Doc position at the University of Milano-Bicocca, Department of Earth and Environmental Sciences, under the supervision of Prof. Paolo Galli and Dr. Simone Montano. The project was focused on the design of biomaterials for coral treatment and restoration in collaboration with the Smart Materials group (IIT), MaRHE Center in the Maldives, and the Aquarium of Genoa.

March 2019 – December 2020

Post-Doc at IIT in the Smart Materials group and in collaboration with the Translational Pharmacology Facility of IIT. I worked on an industrial project in the biomedical field. The project requires the use of *in vivo* animal models.

Supervisors of the project: Athanassia Athanassiou, Ph.D.; Rosalia Bertorelli, Ph.D.

November 2015 – February 2019:

Ph.D. in Bioengineering and Robotics, curriculum: Bionanotechnology at IIT in the Smart Materials group and Università Degli Studi di Genova. Thesis title: “Design and Fabrication of Polyvinylpyrrolidone-based Intelligent Materials Suitable for Controlled Release and Wound Treatment”. Studies focused on the fabrication of novel materials for the treatment of injured tissues, such as wounds and burns. Use of different design approaches for the development of new wound dressings able to deliver antibacterial and natural antioxidant agents and promote skin regeneration. Short abroad experience at the Clinical Research Center for Hair and Skin Science in the Department of Dermatology and Allergy of Charité – Universitätsmedizin in Berlin, under the supervision of Dr. Fiorenza Rancan.

Supervisors: Athanassia Athanassiou, Ph.D.; Ilker S. Bayer, Ph.D.

November 2014 - November 2015:

Internship at the Institute of Bio-Physics (IBF) of the National Research Council (CNR), Palermo, Italy.

- Rheological measurements with the use of rotation rheometer AR-G2 on BSA, pectin, and agarose gels.
- Attended practical and theoretical lectures on research subjects and several analytical techniques (HPLC, Fluorescence spectroscopy, Circular Dichroism, Light Scattering, Rheology, and Microscopy).
- Knowledge of cellular tests such as immunological assay (ELISA and Western Blot) and cytotoxicity assay (MTS).
- Data analysis using SigmaPlot 12 (Jandel Sci).

Tutors: Daniela Giacomazza, Ph.D.; Pier Luigi San Biagio, Ph.D.

November 2014 - November 2015:

Internship at the Department of Physics and Chemistry of the Università degli Studi di Palermo, Palermo, Italy.

- Liposome preparation by using the thin-film hydration method.
- Interaction studies between liposomes and proteins, such as Amyloid Beta and Concanavalin A, before and after aggregation by using the Laurdan probe.
- Expertise in the use of confocal fluorescence microscopy (LEICA), UV-Vis, and Fluorimetric spectroscopy.

Tutor: Prof. Valeria Vetri.

1st October 2008 - 29th October 2014:

Master of Science in Pharmaceutical Chemistry and Technology 110/110 cum laude.

Experimental thesis at the Department of Science and Biological, Chemical and Pharmaceutical Technologies (STEBICEF) of Università Degli Studi di Palermo, entitled “Synthesis of curcumin derivatives with heterocyclic moieties.”

Tutor: Prof. Antonio Palumbo Piccionello.

1st September 2013 - 31st May 2014:

Internship at Giuffrè Chiara's Pharmacy.

- Galenic preparations.
- Support at the desk.
- Warehouse management.

Tutor: Giuffrè Chiara.

Languages

Native: Italian.

English: fluently written and well-spoken.

Technical Skills

- Experience with several biomedical materials and compounds such as synthetic polymers (PVP, PCL, Polyethylenimine, and Poly-2-ethyl-2-oxazoline), natural polymers (Hyaluronic acid, Alginate, Agarose, Pectin, and Chitosan), natural molecules (p-coumaric acid, ferulic acid, caffeic acid, carminic acid, rutin, essential oils, *Malva Silvestri's* extracts, curcumin, anthocyanins, lignin), proteins (Silk, Keratin, Zein, Bovine Serum Albumin, Amyloid Beta and Concanavalin A), micro-algae (Klamath, Spirulina), antibiotics (Ciprofloxacin, Levofloxacin, Gentamycin, Silver Sulfadiazine), fillers for formulations (stearic acid, calcium stearate), minerals (talc, sepiolite).
- Keratin and fibroin silk extraction from wool and cocoons of the *Bombyx mori*, respectively.
- Labelling of protein with fluorescence dyes.
- Protein aggregation.
- Hydrogels, oleogels, liposomes, films, pastes, and electrospun nanofibers fabrication and characterization.
- Design of pH indicators from natural sources.
- Biopolymer synthesis.
- Characterization of materials: mechanical (tensile test, compression test, nano-indentation, DMA), adhesive, rheological, water uptake, water contact angle, thermal (TGA, DSC), and antioxidant (DPPH, ABTS) properties, Biochemical Oxygen Demand test (BOD).
- Spectroscopic instruments: ATR-FTIR, Raman, NMR, UV-Vis, XPS, XRD, and Spectrofluorometer.
- Imaging techniques: confocal fluorescence microscopy, two-photon confocal microscopy, AFM, SEM.
- Organic synthesis and characterization.
- Design of biomaterial for underwater drug delivery in coral bleaching events and coral diseases.

- Design of underwater hardening and conductive materials for coral restoration.
- Experience with *Stylophora pistillata* and different corals.
- Experience in setting experiments for simulating thermal stress/bleaching in corals.
- Engineering Living Materials (ELMs): fungal growth (mycelium part of *Ganoderma lucidum* and *Pleurotus ostreatus*) to be used as a new and edible material for different applications, such as composites and scaffolds.
- Experience with bacterial growth (*Escherichia coli* and *Bacillus subtilis*) and inhibition zone assay.
- Experience in planning and understanding *in-vitro* tests for biocompatibility, wound scratch, cell attachment, oxidative stress, and inflammatory response.
- Experience with *ex-vivo* human skin models.
- Authorized user for *in-vivo* experiments.
- Experience with *in-vivo* mice models: full-thickness skin wound mice model, UV-B induced burn mice model, inducing Diabetes in mice using Streptozotocin (STZ).
- Quantification of inflammatory mediators and growth factors in mice models using ELISA kits.
- Computer programs and imaging software: Microsoft Office™ tools, OriginLab, GraphPad Prism, SigmaPlot, ACD/ChemSketch, ChemDraw, ChemDraw 3D, SpectraManager, ImageJ, Inkscape, GIMP, Adobe Photoshop.

Publications

Total number: 35; h-index: 18; i10-index: 21 (source: google scholar)
 13 papers as the first author and 13 papers as the corresponding author.
<https://scholar.google.it/citations?user=Atghyr8AAAAJ&hl=en>

* = Corresponding author

§ = Co-first author

\$ = Co-last author

Articles:

- A. Zych^{*,§}, **M. Contardi^{*,§}**, C. Rinaldi, V. Scribano, V. Isa, D. Kossyvaki, J. Gobbato, L. Ceseracciu, S. Lavorano, P. Galli, A. Athanassiou^{*,§}, S. Montano^{*,§}; Underwater Quick-Hardening Vegetable Oil-Based Biodegradable Putty for Sustainable Coral Reef Restoration and Rehabilitation, *Advanced Sustainable Systems* (2024), 2400110.
<https://doi.org/10.1002/adsu.202400110>

- K. B. Bonga, L. Bertolacci, **M. Contardi**, U. C. Paul, M. S. Zafar, G. Mancini, L. Marini, L. Ceseracciu, D. Fragouli, A. Athanassiou*; Mycelium Agrowaste-Bound Biocomposites as Thermal and Acoustic Insulation Materials in Building Construction, *Macromolecular Materials and Engineering* (2024), 309, 2300449. <https://doi.org/10.1002/mame.202300449>
- A. Martorana, M. Lenzuni*, **M. Contardi***, F. S. Palumbo*, S. Cataldo, A. Pettignano, V. Catania, D. Schillaci, M. Summa, A. Athanassiou, C. Fiorica, R. Bertorelli[§], G. Pitarresi[§]; Schiff Base-Based Hydrogel Embedded with In Situ Generated Silver Nanoparticles Capped by a Hyaluronic Acid–Diethylenetriamine Derivative for Wound Healing Application, *ACS Applied Materials & Interfaces* (2024), 16, 16, 20186–20201. <https://doi.org/10.1021/acsami.4c00657>
- I. Tagliaro*, M. Mariani, R. Akbari, **M. Contardi**, M. Summa, F. Saliu, R. Nisticò, C. Antonini*; PFAS-free Superhydrophobic Chitosan Coating for Fabrics, *Carbohydrate Polymers* (2024), 333, 121981. <https://doi.org/10.1016/j.carbpol.2024.121981>
- **M. Contardi***, M. Summa, M. Lenzuni, L. Miracoli, F. Bertora, M. D. Mendez, A. Athanassiou*, R. Bertorelli*; Combining Alginate/PVPI-based Film with Frequency Rhythmic Electrical Modulation System (FREMS™) Technology as an Advanced Strategy for Diabetic Wounds, *Macromolecular Bioscience* (2024), 24, 2300349. <https://doi.org/10.1002/mabi.202300349>
- D. Kossyvakı, M. Bustreo, **M. Contardi**, A. Athanassiou, D. Fragouli*; Functional Polymeric Membranes with Antioxidant Properties for the Colorimetric Detection of Amines, *Sensors*, 2023, 23(22), 9288. <https://doi.org/10.3390/s23229288>
- M. Ruggeri, D. Miele, **M. Contardi**, B. Vigani, C. Boselli, A. I. Cornaglia, S. Rossi, G. Suarato*, A. Athanassiou*, G. Sandri*; Mycelium-based biomaterials as smart devices for skin wound healing, *Frontiers in Bioengineering and Biotechnology* (2023), 11. <https://doi.org/10.3389/fbioe.2023.1225722>
- F. Rancan*, J. Jurisch, S. Hadam, A. Vogt, U. Blume-Peytavi, I. S. Bayer, **M. Contardi**, C. Schaudinn; Ciprofloxacin-Loaded Polyvinylpyrrolidone Foils for the Topical Treatment of

Wound Infections with Methicillin-Resistant *Staphylococcus aureus* (MRSA), *Pharmaceutics* (2023), 15, 1876. <https://doi.org/10.3390/pharmaceutics15071876>

- **M. Contardi***, M. Fadda, V. Isa, Y. D. Louis, A. Madaschi, S. Vencato, E. Montalbetti, L. Bertolacci, L. Ceseracciu, D. Seveso, S. Lavorano, P. Galli, A. Athanassiou*, S. Montano*: Biodegradable Zein-Based Biocomposite Films for Underwater Delivery of Curcumin Reduce Thermal Stress Effects in Corals, *ACS Applied Materials & Interfaces* (2023), 15, 28, 33916–33931. <https://doi.org/10.1021/acsami.3c01166>
- D. Kossyvaki, **M. Contardi**, A. Athanassiou, D. Fragouli*; Colorimetric indicators based on anthocyanin polymer composites: A review, *Polymers* (2022), 14, 4129. <https://doi.org/10.3390/polym14194129>
- D. Kossyvaki, A. Barbetta, **M. Contardi**, M. Bustreo, K. Dziza, S. Lauciello, A. Athanassiou, D. Fragouli*; Highly Porous Curcumin-Loaded Polymer Mats for Rapid Detection of Volatile Amines, *ACS Applied Polymer Materials* (2022), 4, 6, 4464–4475. <https://doi.org/10.1021/acsapm.2c00418>
- **M. Contardi*§**, A. M. M. Ayyoub§, M. Summa, D. Kossyvaki, M. Fadda, N. Liessi, A. Armirotti, D. Fragouli, R. Bertorelli, A. Athanassiou*; Self-Adhesive and Antioxidant Poly(vinylpyrrolidone)/Alginate-Based Bilayer Films Loaded with *Malva sylvestris* Extracts as Potential Skin Dressings, *ACS Applied Bio Materials* (2022), 5, 6, 2880–2893. <https://doi.org/10.1021/acsabm.2c00254>
- M. Fadda*, **M. Contardi**, S. Dante, M. Di Carlo, G. Galizzi, A. Athanassiou, I. S. Bayer*; Antioxidant Coatings from Elastomeric Vinyl Acetate-vinyl Laurate Copolymers with Reduced Bacterial Adhesion, *Progress in Organic Coatings* (2022), 168, 106883. <https://doi.org/10.1016/j.porgcoat.2022.106883>
- **M. Contardi*§**, M. Summa§, P. Picone, O. R. Brancato, M. Di Carlo, R. Bertorelli, A. Athanassiou*; Evaluation of a Multifunctional Polyvinylpyrrolidone/Hyaluronic Acid-Based

Bilayer Film Patch with Anti-Inflammatory Properties as an Enhancer of the Wound Healing Process, *Pharmaceutics* (2022), 14, 483. <https://doi.org/10.3390/pharmaceutics14030483>

- S. Aracri*, **M. Contardi**, I. S. Bayer, M. Zahid, F. Giorgio-Serchi, A. A. Stokes; Propaedeutic Study of Biocomposites obtained with Natural Fibers for Oceanographic Observing Platforms, *Frontiers in Marine Science* (2021), 8:761307. DOI: 10.3389/fmars.2021.761307
- **M. Contardi**^{*,§}, S. Montano^{*,§}, P. Galli, G. Mazzon, A. Mah'd Moh'd Ayyoub, D. Seveso, F. Saliu, D. Maggioni, A. Athanassiou*, I. S. Bayer; Marine Fouling Characteristics of Biocomposites in a Coral Reef Ecosystem, *Advanced Sustainable Systems* (2021), 100089. DOI: 10.1002/adsu.202100089
- **M. Contardi***, M. Lenzuni, F. Fiorentini, M. Summa, R. Bertorelli, G. Suarato, A. Athanassiou*; Hydroxycinnamic Acids and Derivatives Formulations for Skin Damages and Disorders: A Review, *Pharmaceutics* (2021) 13, 999. <https://doi.org/10.3390/pharmaceutics13070999>
- M. E. Antinori, **M. Contardi**, G. Suarato, A. Armirotti, R. Bertorelli, G. Mancini, D. Debellis, A. Athanassiou*; Advanced mycelium materials as potential self-growing biomedical scaffolds, *Scientific Reports* (2021) 11, 12630. <https://doi.org/10.1038/s41598-021-91572-x>
- F. Annesi, A. Pane, L. Pezzi*, P. Pagliusi, M. A. Losso, B. Stamile, A. Qualtieri, G. Desiderio, **M. Contardi**, A. Athanassiou, G. Perotto*, L. De Sio*; Biocompatible and biomimetic keratin capped Au nanoparticles enable the inactivation of mesophilic bacteria via photo-thermal therapy, *Colloids and Surfaces A: Physicochemical and Engineering Aspects* (2021) 625, 126950. <https://doi.org/10.1016/j.colsurfa.2021.126950>
- **M. Contardi***, D. Kossyvaki, P. Picone, M. Summa, X. Guo, J. A. Heredia-Guerrero, D. Giacomazza, R. Carzino, L. Goldoni, G. Scoponi, F. Rancan, R. Bertorelli, M. Di Carlo, A. Athanassiou, I. S. Bayer*; Electrospun polyvinylpyrrolidone (PVP) hydrogels containing hydroxycinnamic acid derivatives as potential wound dressings, *Chemical Engineering Journal* (2021) 409, 128144. <https://doi.org/10.1016/j.cej.2020.128144>
- G. Mazzon*, **M. Contardi**, A. Quilez-Molina, M. Zahid, E. Zendri, A. Athanassiou, I. S. Bayer*; Antioxidant and hydrophobic Cotton fabric resisting accelerated ageing, *Colloids and Surfaces A: Physicochemical and Engineering Aspects* (2021) 613, 126061. <https://doi.org/10.1016/j.colsurfa.2020.126061>
- A. Guglielmelli[§], P. Rosa[§], **M. Contardi**, M. Prato, G. Mangino, S. Miglietta, V. Petrozza, R. Pani, A. Calogero, A. Athanassiou, G. Perotto*, L. De Sio*; Biomimetic keratin gold

nanoparticle-mediated in vitro photothermal therapy on glioblastoma multiforme, *Nanomedicine – Future medicine* (2021), 16:2. <https://doi.org/10.2217/nnm-2020-0349>

- D. Murgia*, G. Angellotti, A. Conigliaro, F. Carfi Pavia, F. D'Agostino, **M. Contardi**, R. Mauceri, R. Alessandro, G. Campisi, V. De Caro; Development of a Multifunctional Bioerodible Nanocomposite Containing Metronidazole and Curcumin to Apply on L-PRF Clot to Promote Tissue Regeneration in Dentistry, *Biomedicines* (2020) 8, 425. DOI:10.3390/biomedicines8100425
- G. Suarato*, **M. Contardi**, G. Perotto, J. A. Heredia-Guerrero, F. Fiorentini, L. Ceseracciu, C. Pignatelli, D. Debellis, R. Bertorelli, A. Athanassiou; From fabric to tissue: Recovered wool keratin/polyvinylpyrrolidone biocomposite fibers as artificial scaffold platform, *Materials Science & Engineering C* (2020) 116:111151. <https://doi.org/10.1016/j.msec.2020.111151>
- **M. Contardi***, S. Montano, G. Liguori, J. A. Heredia-Guerrero, P. Galli, A. Athanassiou, I. S. Bayer*; Treatment of Coral Wounds by Combining an Antiseptic Bilayer Film and an Injectable Antioxidant Biopolymer, *Scientific Reports* (2020), 10:988. <https://doi.org/10.1038/s41598-020-57980-1>
- D. Nuzzo, **M. Contardi**, D. Kossyvakis, P. Picone, L. Cristaldi, G. Galizzi, G. Bosco, S. Scoglio, A. Athanassiou, M. Di Carlo*; Heat-Resistant Aphanizomenon flos-aquae (AFA) Extract (Klamin®) as a Functional Ingredient in Food Strategy for Prevention of Oxidative Stress, *Oxidative Medicine and Cellular Longevity* (2019), Article ID 9481390, 15 pages. <https://doi.org/10.1155/2019/9481390>
- F. Rancan*, **M. Contardi**, J. Jurisch, U. Blume-Peytavi, A. Vogt, I. S. Bayer, C. Schaudinn; Evaluation of Drug Delivery and Efficacy of Ciprofloxacin-Loaded Povidone Foils and Nanofiber Mats in a Wound-Infection Model Based on Ex Vivo Human Skin, *Pharmaceutics* (2019) 11, 527. DOI:10.3390/pharmaceutics11100527
- **M. Contardi***[§], A. Alfaro-Pulido[§], P. Picone, S. Guzman-Puyol, L. Goldoni, José J. Benítez, A. Heredia, M. J. Barthel, L. Ceseracciu, G. Cusimano, O. R. Brancato, M. Di Carlo, A. Athanassiou*, J. A. Heredia-Guerrero*; Low molecular weight ϵ -caprolactone-*p*-coumaric acid copolymers as potential biomaterials for skin regeneration applications, *Plos One* (2019) 14 (4): e0214956. <https://doi.org/10.1371/journal.pone.0214956>
- **M. Contardi***, J. A. Heredia-Guerrero*, S. Guzman-Puyol, M. Summa, J. J. Benítez, L. Goldoni, G. Caputo, G. Cusimano, P. Picone, M. Di Carlo, R. Bertorelli, A. Athanassiou, I. S. Bayer*; Combining dietary phenolic antioxidants with polyvinylpyrrolidone: transparent biopolymer films based on *p*-Coumaric acid for controlled release, *Journal of Materials Chemistry B* (2019) 7, 1384. DOI: 10.1039/c8tb03017k

- **M. Contardi***, D. Russo, G. Suarato, J. A. Heredia-Guerrero, L. Cesaracciu, I. Penna, N. Margaroli, M. Summa, R. Spanò, G. Tassistro, L. Vezzulli, T. Bandiera, R. Bertorelli, A. Athanassiou*, I. S. Bayer*; Polyvinylpyrrolidone/Hyaluronic acid-based Bilayer Constructs for Sequential Delivery of Cutaneous Antiseptic and Antibiotic, *Chemical Engineering Journal* (2019) 358, 912-923. <https://doi.org/10.1016/j.cej.2018.10.048>
- **M. Contardi**, J. A. Heredia-Guerrero, G. Perotto, P. Valentini, P. P. Pompa, R. Spanò, L. Goldoni, R. Bertorelli, A. Athanassiou, I. S. Bayer*; Transparent ciprofloxacin-povidone antibiotic films and nanofiber mats as potential skin and wound care dressings, *European Journal of Pharmaceutical Sciences* (2017) 104, 133-144. <http://dx.doi.org/10.1016/j.ejps.2017.03.044>
- J. A. Heredia-Guerrero*, J. J. Benítez, P. Cataldi, U. C. Paul, **M. Contardi**, R. Cingolani, I. S. Bayer, A. Heredia, A. Athanassiou*; All-natural sustainable packaging materials inspired by plant cuticles, *Advanced Sustainable Systems* (2017) 1, 1600024. DOI: 10.1002/adsu.201600024
- P. Picone*, G. Navarra, C. Peres, **M. Contardi**, P. L. San Biagio, M. Di Carlo, D. Giacomazza, V. Militello; Data concerning the proteolytic resistance and oxidative stress in LAN5 cells after treatment with BSA hydrogels, *Data in Brief* (2016) 9, 324-327. <http://dx.doi.org/10.1016/j.dib.2016.08.065>
- G. Navarra, C. Peres, **M. Contardi**, P. Picone, P. L. San Biagio, M. Di Carlo*, D. Giacomazza*, V. Militello*; Heat- and pH-induced BSA conformational changes, hydrogel formation and application as 3D cell scaffold, *Archives of Biochemistry and Biophysics* (2016) 606, 134-142. <http://dx.doi.org/10.1016/j.abb.2016.07.020>
- P. Picone, S. Vilasi, F. Librizzi, **M. Contardi**, D. Nuzzo, L. Caruana, S. Baldassano, A. Amato, F. Mulè, P. L. San Biagio, D. Giacomazza*, M. Di Carlo*; Biological and biophysics aspects of metformin-induced effects: cortex mitochondrial dysfunction and promotion of toxic amyloid pre-fibrillar aggregates, *Aging* (2016) 8, 1718-1734. DOI: 10.18632/aging.101004

Covers of Journals

4 covers of international Journals:

- **M. Contardi***, M. Fadda, V. Isa, Y. D. Louis, A. Madaschi, S. Vencato, E. Montalbetti, L. Bertolacci, L. Ceseracciu, D. Seveso, S. Lavorano, P. Galli, A. Athanassiou*, S. Montano*: Biodegradable Zein-Based Biocomposite Films for Underwater Delivery of Curcumin Reduce Thermal Stress Effects in Corals, *ACS Applied Materials & Interfaces*, 2023. 10.1021/acsami.3c01166

- **M. Contardi**^{*,§}, S. Montano^{*,§}, P. Galli, G. Mazzon, A. Mah'd Moh'd Ayyoub, D. Seveso, F. Saliu, D. Maggioni, A. Athanassiou^{*}, I. S. Bayer; Marine Fouling Characteristics of Biocomposites in a Coral Reef Ecosystem, *Advanced Sustainable Systems* (9/2021), <https://doi.org/10.1002/adsu.202170017>
- **M. Contardi**, J. A. Heredia-Guerrero, S. Guzman-Puyol, M. Summa, J. J. Benítez, L. Goldoni, G. Caputo, G. Cusimano, P. Picone, M. Di Carlo, R. Bertorelli, A. Athanassiou, I. S. Bayer; Combining dietary phenolic antioxidants with polyvinylpyrrolidone: transparent biopolymer films based on p-Coumaric acid for controlled release, *Journal of Materials Chemistry B* (2019) 7, 1335-1512. DOI: 10.1039/c8tb03017k
- J. A. Heredia-Guerrero, J. J. Benítez, P. Cataldi, U. C. Paul, **M. Contardi**, R. Cingolani, I. S. Bayer, A. Heredia, A. Athanassiou; All-natural sustainable packaging materials inspired by plant cuticles, *Advanced Sustainable Systems* (2017) DOI: 10.1002/adsu.201770012

Patents

- F. Bertora, M. Palermo, L. Miracoli, **M. Contardi**, R. Bertorelli, M. Summa, A. Athanassiou; BIOMEDICAL DEVICE FOR THE TREATMENT OF ULCERS OR LESIONS. WO2023067449A1
- **M. Contardi**, S. Montano, P. Galli, A. Athanassiou; BIOCOMPATIBLE AND BIODEGRADABLE COMPOSITE MATERIAL FOR UNDERWATER DELIVERY ACTIVE AGENTS AND USES THEREOF. EP4282921A1

I hold other 2 patent applications pending. Both are from the University of Milano-Bicocca, one in the field of composite materials and the other in the field of materials science and engineering.

For obvious reasons of disclosure, I cannot add further details.

Project leading and management experience

For almost 2 years, I was the contact and reference person for an industrial project for an external company at the Italian Institute of Technology. The project was very successful, with a submitted patent as an outcome that the company is currently launching in the market.

Teaching and Tutoring of Students

- Supervision of Michael Warrenner an undergraduate student from Union College, NY, USA, in a research program for ten weeks during the spring of 2015 at the Biophysics Institute of the National Council of Research (CNR) of Palermo, Italy.

- External Tutor of Amin Mah'd Moh'd Ayyoub during his M.S. thesis in Bioengineering, University of Genova, 2020. Thesis Title: Fabrication of Polyvinylpyrrolidone/Alginate-based films loaded with *Malva Sylvestris* extracts as potential wound dressings.
- External Tutor of Andrea Madaschi during his M.S. thesis in Marine Science, University of Milan-Bicocca, 2022. Thesis Title: Curcumin-loaded smart materials as new strategy to mitigate impacts of coral bleaching.
- External Tutor of Francesco Brovero during his M.S. thesis in Physics, University of Genova, 2022. Thesis Title: Design, fabrication, and characterization of protein-based materials via solvent-casting method.
- I held a Ph.D. course in Marine Sciences Technology and Management Ph.D. school of the University of Milano-Bicocca, entitled “New materials and technologies applicable in the marine environment” for 12 hours in November 2022.
- I held a Ph.D. course in Marine Sciences Technology and Management Ph.D. school of the University of Milano-Bicocca, entitled “New materials and technologies applicable in the marine environment” for 8 hours in June 2023.

Editor and Reviewer Work

I serve as a Guest Editor for two international Journals. I work as a Reviewer for several international Journals.

Guest Editor of the Research Topic “Engineered Living Materials based on Mycelia: from fabrication to future applications” in Frontiers in Bioengineering and Biotechnology.
<https://www.frontiersin.org/research-topics/42048/engineered-living-materials-based-on-mycelia-from-fabrication-to-future-applications>

Guest Editor of the Special Issue “Development and Testing of Nanotechnology-Based Delivery Systems for Topical Drug Delivery to Wounds, Skin or Mucosa” in Pharmaceutics.
https://www.mdpi.com/journal/pharmaceutics/special_issues/nano_tdd

Reviewer Board for:

“Antioxidants”, MDPI, https://www.mdpi.com/journal/antioxidants/submission_reviewers

“Microorganisms”, MDPI, https://www.mdpi.com/journal/microorganisms/submission_reviewers

Topical Advisory Panel Members for:

“Pharmaceutics”, MDPI, https://www.mdpi.com/journal/pharmaceutics/topical_advisory_panel

Reviewer for: “Scientific Reports”, Nature; “Antioxidants”, MDPI; “Cosmetics”, MDPI; “Molecules”, MDPI; “Antibiotics”, MDPI; “Pharmaceutics”, MDPI; “Separations”, MDPI; “International Journal of Molecular Sciences”, MDPI; “International Journal of Biological Macromolecules”, Elsevier; “Materials Today Communications”, Elsevier; “Chemical Engineering Journal”, Elsevier; “Journal of Biological Regulators and Homeostatic Agents”.

National and International Conferences

Oral presentation held by Dr. Marco Contardi: Biodegradable Zein/Polyvinylpyrrolidone-based films for underwater delivery of Curcumin mitigate thermal stress effects in corals; **M. Contardi**, M. Fadda, V. Isa, Y. D. Louis, A. Madaschi, S. Vencato, E. Montalbetti, L. Bertolacci, L. Ceseracciu, D. Seveso, S. Lavorano, P. Galli, A. Athanassiou, S. Montano. E-MRS 2023 SPRING MEETING held at the Exhibition & Convention Center in Strasbourg (France) from May 29 to June 2.

Poster session held by Marta Fadda: Vinyl acetate-vinyl laurate copolymer and curcumincoatings with reduced bacterial adhesion and antioxidant properties; Marta Fadda, **Marco Contardi**, Silvia Dante, Marta Di Carlo, Giacomina Galizzi, Athanassia Athanassiou, Ilker S. Bayer. 5th International Conference on Applied Surface Science, 25 -28 April 2022, Palma, Mallorca, Spain.

Poster session held by Despoina Kossivaki: Curcumin-loaded PCL highly porous composites for rapid amine gas detection. D. Kossyvaki, A. Barbetta, **M. Contardi**, M. Bustreo, K. Dziza, S. Lauciello, A. Athanassiou, D. Fragouli. 5th International Conference on Applied Surface Science, 25 -28 April 2022, Palma, Mallorca, Spain.

Oral presentation held by Dr. Giulia Suarato: Towards a sustainable skin wound management: biomaterials from biomasses for novel nature-inspired tissue regeneration platforms. Giulia Suarato, **Marco Contardi**, Giovanni Perotto, Marco Ruggeri, Giuseppina Sandri, Rosalia Bertorelli, Athanassia Athanassiou. Materials Research Society (MRS) 2021 FALL MEETING AND EXHIBIT, November 28 – December 3, 2021, Boston, Massachusetts, USA.

Oral presentation held by Dr. Giulia Suarato: Self-growing mycelia: tuning nature for novel tissue engineering platforms. Giulia Suarato, Maria Elena Antinori, **Marco Contardi**, Marco Ruggeri, Cinzia Boselli, Icaro Cornaglia, Rosalia Bertorelli. Giuseppina Sandri, Athanassia Athanassiou. 5th International Conference on Bioinspired and Biobased Chemistry and Materials, October 11 – 14, 2020, Nice, France.

Oral presentation held by Dr. Simone Montano: Natural and non-natural mitigation tools for Maldivian coral diseases. S. MONTANO, D. SEVESO, **M. CONTARDI**, G. STRONA, D. MAGGIONI, E. MONTALBETTI, I. DEHNERT, I. BAYER & P. GALLI. Third Maldives Marine Science Symposium, 12 - 13 December 2020, online event.

Oral presentation held by Dr. Marco Contardi: Polyvinylpyrrolidone/hyaluronic acid-based bilayer construct a multifunctional wound dressing; **M. Contardi**, M. Summa, P. Picone, D. Russo, G. Suarato, L. Vezzulli, T. Bandiera, M. Di Carlo, R. Bertorelli, A. Athanassiou, I. S. Bayer. FisMat 2019 September 30 – October 4, 2019, Catania, Italy.

Oral Presentation held by Dr. Marco Contardi: Polyvinylpyrrolidone/Ciprofloxacin-based transparent films and electrospun nanofibers as potential wound care dressings; **M. Contardi**, J. A. Heredia-Guerrero, G. Perotto, P. Valentini, P. P. Pompa, R. Spanò, L. Goldoni, R. Bertorelli, A. Athanassiou, I. S. Bayer. 4th International Conference on Biomedical Polymers and Polymeric Biomaterials, July, 15 – 18, 2018, Krakow, Poland.

Oral Presentation held by Dr. Marco Contardi: Transparent Ciprofloxacin-polyvinylpyrrolidone antibiotic films and nanofiber mats as potential skin and wound care dressings; **M. Contardi**, J. A. Heredia-Guerrero, G. Perotto, P. Valentini, P. P. Pompa, R. Spanò, L. Goldoni, R. Bertorelli, A.

Athanassiou, I. S. Bayer. 10th International Conference & Exhibition on Pharmaceutics & Novel Drug Delivery Systems, March 13-15, 2017, London, UK.

Poster Presentation held by Dr. Marco Contardi: BSA hydrogels: novel biomaterials; G. Navarra, C. Peres, M. Leone, V. Militello, **M. Contardi**, D. Giacomazza, P. L. San Biagio, P. Picone, L. Inguglia, M. Di Carlo. FisMat Conference, 28 September – 2 October 2015, Palermo, Italy

Attending to the “Sclerosi Multipla e Malattia di Anderson-Fabry: Verso un Algoritmo per la Diagnosi Differenziale”, organized by Prof. Giovanni Duro, 27 – 28 February 2015, Palermo, Italy.

Attending to the “XXII Convegno Nazionale della Società Italiana di Biofisica Pura e Applicata (SIBPA)”, 21 – 24 September 2014, Palermo, Italy.

Attending to the “Congresso: Ricerca di base, interdisciplinare e traslazionale in ambito Biologico e Biotecnologico (II ed.), organized by Dr. Vincenzo Cavalieri, 26 – 27 June 2014, Palermo, Italy.

Attending to the “Second “Galveston – Palermo” Meeting Advances in Biomedicine and Neuroscience”, organized by Prof. Giovanni Zummo, March 13th 2014, Palermo, Italy.

Attending to the “Biotecnologie: Ricerca di base interdisciplinare traslazionale in ambito biomedico” organized by Dr. Marta Di Carlo, 27 – 28 June 2013, Palermo, Italy.

Workshop, Seminars, Courses, Stage, Events, Summer Schools

Speaker at the Workshop entitled “From University to market: U4I as a driver for technology transfer” organized during the Nanoinnovation2022 (Rome, 20 - 23 September 2022 - www.nanoinnovation2022.eu/home/). I presented the work entitled “Advanced bio-composites for delivering curcumin and mitigating coral bleaching” (<https://www.nanoinnovation2022.eu/home/index.php/programme/workshops/from-university-to-market-u4i-as-a-driver-for-technology-transfer>).

Invited Speaker at the Workshop entitled “Polymers for Environmental Preservation and Remediation” organized by Prof. Dr. Javier Pinto and Prof. Dr. María José Cocero at the University of Valladolid, Spain, June 24th 2022. I presented the work entitled “Biomaterials for the healing of corals and conservation of reefs’ biodiversity”.

Speaker at the International Workshop entitled “Coral Reef Health and Disease Assessment 2021” organized by Dr. Simone Montano at the Marine Research and High Education Center, Magoodhoo, Faafu Atoll Maldives, on the 6th of December 2021. I had a talk about: “Biomaterials and biocomposites for preserving and restoring

the coral reef ecosystem”.

I attended to the “Corso base sulla Sperimentazione Animale per le realizzazione di procedure su animali in ottemperanza al D.Lgs 26/2014”, April 9-10 2019, Genoa, Italy. The course is mandatory for performing *in-vivo* experiments with mice, rats and other animals.

I attended to *Ph.D. Summer School* on “Drug Delivery” at Danmarks Tekniske Universitet (DTU), August 13 – 24, 2018, Copenhagen, Denmark.

I attended to *Ph.D. Summer School* on “43rd Course of International School of Biophysics «Antonio Borsellino»” on “Focus on Methods and Techniques”, April, 17-24, 2016, Erice, Italy.

I attended to the event *European Biotech Week: Approcci Multidisciplinari per lo Sviluppo delle Biotecnologie nel Settore Biomedico ed Agroalimentare*, March 14, 2015, Palermo, Italy.

I attended to the “*Stage Teorico-Pratico*” focused on learning and acquiring skills of Biotechnologies organized by Dr. Marta Di Carlo, 5th March and 19th – 20th March 2007, Palermo, Italy.

Disseminations and Communication Skills

During my years at the Italian Institute of Technology (IIT), I developed excellent communication skills. I held several times demonstrations of the Smart Materials activities for people from industries, schools (both teachers and students), politicians, and general guests of IIT. I attended several dissemination events representing the IIT, such as Ecomondo in Rimini, Italian Tech Week in Turin, and the Ocean Film Festival in Genoa. These activities strongly developed my dissemination and communications skills.

I am attaching a letter of reference from the communication office of IIT.

Hobbies

I was a professional swimmer for the Rari Nantes 89’, Waterpolo Palermo, and Iron Team. I was the capitan of the Iron Team during my experience in this swimming Team. I attended regional and international races. During my university years, I always combined swimming activity (training 4-5 hours

every day) and studying, to succeed in both fields. After my graduation, I joined as a Master swimmer, first the Team of Waterpolo Palermo and then the Team of Genova Nuoto – MySport, when I started my Ph.D. in Genoa.

I love traveling, cooking, and meeting new people.