

Chiara Artusi

PERSONAL DATA

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EDUCATION

PhD in Materials Science and Technology – University of Parma

Nov 2020 – Nov 2023

Institute of Science, Technology and Sustainability for the Development of Ceramic Materials (ISSMC-CNR) in Faenza

Date of awarding of title: 23/02/2024

Released by the Rector Professor Paolo Martelli

- **Final judgment:** Excellent
- **Thesis:** “*Design and Development of Eco-Sustainable Biomaterials for Healthcare Applications*”
- **Skills acquired:**
 - Development and chemical-physical characterization of nanostructured and eco-sustainable ceramic, polymeric, and hybrid biomaterials based on calcium phosphate matrix, aimed at both biomedical and cosmetic applications.
 - Development of porous 3D hybrid and ceramic devices obtained through biomineralization, cross-linking, and freeze-casting techniques for the biomedical field.
 - Development of ceramic and hybrid micro- and nanoparticles as SPF boosters for sunscreens and as carriers of active molecules for the biomedical field.
 - Use of instrumentation for chemical-physical, morphological-structural and mechanical characterization of hybrid, polymeric and ceramic materials both in the form of porous 3D constructs and nanostructured powders, with knowledge of techniques such as: XRD, UV-VIS, FT-IR, TG-DSC, ICP, FEG-SEM, ESEM-EDS, DMTA, HPLC.

Master's Degree in Industrial Chemistry – University of Bologna

Oct 2016 – Oct 2018

Department of Industrial Chemistry “Toso Montanari”

Date of awarding of title: 12/10/2018

Protocol: Reg. n. 5920

Released by the Rector Professor Francesco Umberti

- **Final judgment:** 110/110
- **Thesis:** “*Asymmetric synthesis of alkylidenecyclohexanes via the organocatalyzed Knoevenagel reaction*”
- **Curricular internship:** 10 months spent in the Chemistry Department during the thesis
- **Skills acquired:**
 - Literature research
 - Use of ChemDraw and MestreNova programs
 - Use of instrumentation such as: NMR (300 Hz-400 Hz-600 Hz), HPLC, FTIR, TG-DSC, DMTA, SEM
 - Synthesis and characterization of organic products
- **Exams:** *Organic Chemistry, Inorganic Chemistry, Physical Chemistry, Industrial Polymer Products, Development and Management of Industrial Chemical Processes, Chemical Plants, Fermentation Biotechnology, Environmental Technologies and Certification, Low-Impact Chemical Processes*

- **Final judgment:** 99/110
- **Thesis:** *"Preliminary study of the vinylic Michael addition of alkylideneoxyndoles to α,β -unsaturated aldehydes promoted by organic catalysts"*
- **Curricular internship:** 3 months spent in the Chemistry Department during the thesis
- **Skills acquired:**
 - Use of instruments such as: NMR (300 Hz), HPLC
 - Use of the ChemDraw program
 - Organic synthesis
- **Exams:** *Organic Chemistry, Inorganic Chemistry, Physical Chemistry, Physics, Mathematics, Polymer Science, Industrial Chemistry, Chemical Plants, Analytical Chemistry, Instrumental Analytical Chemistry, Protein Chemistry of Enzyme Catalysis, Environmental Chemistry, Metallurgy, Bioorganic Chemistry, Chemical Technologies for Energy Production*

High school diploma

Sep 2007 – Jun 2012

Fulceri Paulucci Di Calboli State Scientific High School in Forlì

School year: 2011/2012

Protocol N. 244304

Ordinary Scientific Course

- **Final judgment:** 92/100

WORK EXPERIENCE

Institute of Science, Technology and Sustainability for the Development of Ceramic Materials (ISSMC-CNR)

Research Fellow

Oct 2019 – Today

- Winner of the **postdoctoral fellowship** call for the PR-FERS 2021-2027 **INTERCH4WATER** project "Integrated technologies for pollutants in wastewater services". Prot. ISSMC-CNR N.0356068 (01/10/2024)
- Winner of the **professional fellowship** call for the PRIN 2024-2025 **SECURE-COATS** project "Safe, eco-friendly and durable coatings to prevent deterioration of heritage stones". Prot. ISSMC-CNR N.0010630 (15/01/2024)
- Winner of the **professional fellowship** call for the ISTEC-CNR 2022-2023 **CERAMITALY** project regarding the "Study of Intelligent and Hybrid Ceramic Processes and Materials for the Ceramic Industry". Prot. ISTEC-CNR N.0002104 (08/11/2022)
- Winner of the **professional fellowship** call for the ISTEC-CNR 2021-2022 **ProtecTHA** project "Innovative sunscreens for safer and more eco-sustainable protection: titanium apatites (TiHAPol) as physical UV filters", Bando MiSE for the co-financing of Proof of Concept (PoC) 2020. Prot. ISTEC-CNR N.0001767 (11/01/2021).
- Winner of the **professional fellowship** call for the PR-FERS 2014-2020 **MEDfil** project "Multifunctional filters with high heat and moisture exchange capacities (HMEf) and for the early identification of respiratory tract infections" Prot. CNR-ISTEC N. 0001414 (05/07/2019)

Visiting PhD student

Feb 2023 – May 2023

- Exchange period aimed at the in vitro and ex vivo development and validation of UV filters based on nanostructured ceramic hybrid particles for the creation of eco-sustainable and safer sunscreen formulations for human health.

Chemistry-tutoring

Teacher

2015 - Today

- Tutoring for high school and university students in various Chemistry courses

SCIENTIFIC PROJECTS

- **Key Personnel** of PR-FERS 2021-2027 **INTERCH4WATER** project “*Integrated technologies for pollutants in wastewater services*”. Prot. ISSMC-CNR N.0356068 (01/10/2024)
- **Key Personnel** of PRIN 2024-2025 **SECURE-COATS** project “*Safe, eco-friendly and durable coatings to prevent deterioration of heritage stones*”. Prot. ISSMC-CNR N.0010630 (15/01/2024)
- **Key Personnel** of ISTEC-CNR 2022-2023 **CERAMITALY** project regarding the “*Study of Intelligent and Hybrid Ceramic Processes and Materials for the Ceramic Industry*”. Prot. ISTEC-CNR N.0002104 (08/11/2022)
- **Key Personnel** of ISTEC-CNR 2021-2022 **PROTECTHA** project “*Innovative sunscreens for safer and more eco-sustainable PROTECTION: titanium apatites (TiHAPol) as physical UV filters*”, Bando MiSE per il cofinanziamento di **Proof of Concept (PoC)** 2020. Prot. ISTEC-CNR N.0001767 (11/01/2021)
- **Key Personnel** of ISTEC-CNR 2020-2022 project financed by the bank **Fondazione del Monte of Bologna and Ravenna**. Title: *Antibiotic biomaterials and new medical devices for rapid infection mapping and treatment of chronic skin lesions*. Partners: Alma Mater Studiorum University of Bologna (Dipartimento di Chimica Ciamician e FaBit). Prot. CNR-ISTEC N. 0001030 (03/06/2020).
- **Key Personnel** of POR-FESR 2014-2020 **MEDFil** project “*Multifunctional filters with high heat and moisture exchange capacities (HMEf) and for the early identification of respiratory tract infections*”. Prot. CNR-ISTEC N. 0001414 (05/07/2019), (www.medfil.it).

CORPORATE COLLABORATIONS

- **SAATI SpA - Technical operator** (MS 2022/002) for comparative tests using a new generation filter bag micronizer. Prot. N. ISTEC-CNR N. 0001787 del 05.10.2022.
- **GreenBone Ortho Srl - Technical operator** (CO-2019/07) for the development of drug release profiles (vancomycin). ISTEC-CNR Prot. N. 0000076 del 19.01.2021.

SCIENTIFIC PUBLICATIONS

- **Paper:** Artusi C., Campodoni E.*, Montanari M., Ziosi P., Manfredini S., Vertuani S., Sandri M.*. *Safe-by-Design Approach to Sunscreens: Synthesis and Validation of Biomimetic Hybrid Particles for an Eco-Sustainable UV Protection*. **Materials Today Communications**, 2025.
- **Paper:** Ortelli S.*, Faccani L., Ercolani E., Zanoni I., Artusi C., Blosi M., Albonetti S., Costa A. L.*. *Design and Properties of Titanium Dioxide/Graphene Oxide Composites Exploitable in Wastewater Treatments*. **Water**, 2025. <https://doi.org/10.3390/w17121809>

- **Paper:** Vespignani M., Zanoni I.*, Ortelli S., Blosi M., Artusi C., Piancastelli A., Melandri C., Furxhi I., Costa A. L.*. *Performance by design of TiO₂ nanostructured granules exploitable in water remediation applications.* **Environmental Nanotechnology, Monitoring & Management**, **2025**. <https://doi.org/10.1016/j.enmm.2025.101071>
- **Paper:** Artusi C., Campodoni E.*, Tarlati L., Vazquez Iglesias B., Sansone A., Ferreri C., Belosi F., Vandini A., Sansone A., Monticelli P., Sandri M.*. *Development and validation of eco-friendly designed heat and moisture exchange filters for the safeguard of the respiratory tract and of the environment.* **Materials Today Sustainability**, **2025**. <https://doi.org/10.1016/j.mtsust.2025.101108>
- **Paper:** Bernardoni S.*, Ferrazzano L., Palladino C., Artusi C., Bovancini F., Campodoni E., Gentilomi A., Tolomelli A., Sandri M.*. *Multiple-layer chitosan-based patches medicated with LTX-109 antimicrobial peptide for modulated local therapy in the management of chronic wounds.* **Macromolecular Bioscience**, **2024**. <https://doi.org/10.1002/mabi.202400375>
- **Paper:** Campodoni E.*, Montanari M., Artusi C., Bergamini L., Bassi G., Panseri S., Tampieri A., Sanson A., Sandri M.*. *Biomineralization: a new tool for developing eco-sustainable Ti-doped hydroxyapatite-based hybrid UV filters.* **Biomaterials Advances**, **2023**. <http://doi.org/10.1016/j.bioadv.2023.213474>
- **Paper:** Campodoni E.*, Artusi C., Vazquez Iglesias B., Nicosia A., Belosi F., Vandini A., Monticelli P., Tampieri A., Sandri M.*. *Innovative Biomedical HME devices: nature inspires the design of “artificial noses”.* **ACS Applied Polymer Materials**, **2023**. <https://doi.org/10.1021/acsapm.3c00140>
- **Review:** Campodoni E.*, Montanari M., Artusi C., Bassi G., Furlani F., Montesi M., Panseri S., Sandri M., Tampieri A.*. *Calcium-based biomineralization: a smart approach for the design of novel multifunctional hybrid materials.* **Journal of Composites Science**, **2021**. <https://doi.org/10.3390/jcs5100278>
- **Paper:** Crotti S.*, Di Iorio N., Artusi C., Mazzanti A., Righi P., Bencivenni G.*. *Direct Access to Alkylideneoxindoles via Axially Enantioselective Knoevenagel Condensation.* **Organic Letters**, **2019**. <https://doi.org/10.1021/acs.orglett.9b00505>

SCIENTIFIC DISSEMINATIONS

Oral presentation

- **SIB 2021**, Lecce – Italy, Oral - **Ti-doped hydroxyapatite based eco-sustainable physical filter for novel sunscreen formulation.**

Poster presentation

- **EUROMAT 2021**, Gratz – Austria, Poster - **Eco-sustainable biomimetic physical filter for novel sunscreen formulations**
- **ESB 2022**, Bordeaux – France, Poster - **Innovative UV-physical filter based on hybrid Ti-doped hydroxyapatite for eco-sustainable sunscreen formulations.**
- **BIOCERAMICS32 2022**, Venezia Mestre – Italy, Poster - **Hybrid nanostructured Ti-doped hydroxyapatite-based UV filter to develop eco-sustainable sunscreens.**
- **ESB 2023**, Davos – Swiss, Poster - **Nature-inspired biomineralization process for the development of a stable phycocyanin-apatite multifunctional system for biomedical applications.**

Scientific dissemination projects

- **Speaker** during the Open Day on the theme of health and well-being for humans and the environment at ISSMC-CNR organised by the Institute to give citizens an overview of its activities on_15/05/2025. Prot. N. 0177261.

- **Scientific dissemination and practical laboratory experience** at ISSMC-CNR aimed at the students of the fifth classes of the Dante Alighieri Primary School of Cesena (FC) on 28/03/2025 Prot. N. 0095388 (27/03/2025).
- **Scientific dissemination and practical laboratory experience** at the Opificio Golinelli middle school (Bologna) for the project "Materials Science - Let's get our hands on the Nano World" aimed at first and second year students on 18/03/2025.
- **Scientific dissemination and practical laboratory experience** at ISSMC-CNR for the "STEM Together" project of the National Recovery and Resilience Plan (PNRR) aimed at students of the third and fourth classes of the Primary School of the State Comprehensive Institute "A. Baccarini" of Russi (RA) on 11-12/11/2024 and 20-21/11/2024. Prot. N. 0424349 (6/11/2024).
- **Scientific dissemination** at ISSMC-CNR for the Researchers' Night on September 27 2024, to present the topic of nanotechnologies and nanosafety. Prot. N. 0356664 (1/10/2024).
- **Companion** during the Open Day on the theme of sustainability and renewable energy at ISSMC-CNR organised by the Institute to give citizens an overview of its activities on 16/05/2024. Prot. N. 0175754.
- **Scientific dissemination and practical laboratory experience** at the Opificio Golinelli middle school (Bologna) for the project "Materials Science - Let's get our hands on the Nano World" aimed at second year students on 14/03/2024.
- **Scientific dissemination and practical laboratory experience** at the ISSMC-CNR for the project "The language of research" with a training proposal entitled "BIOCERAMIC PARTICLES INSPIRED BY NATURE: FROM COSMETICS TO NANOMEDICINE" aimed at the second year students of the Moruzzi Middle School of Casalecchio (BO) on 13/02/2023. Prot. N. 0058624.
- **Scientific dissemination** at ISSMC-CNR for the project "Introduction to nanotechnologies" aimed at students of the third and fourth classes of the Torricelli-Ballardini High School in Faenza (RA) on the dates 4-5/05/2022. Prot. N. 00566732.

WORKSHOPS, SCUOLE E CORSI

Period	Name	Hours	ECTS (credits)
9-13/11/2020	Sem School in Material Science	32	4
From 3/12/2020 to 11/02/2021	Introduction to the methods and tools of scientific research	32	4
From 15/02 to 30/03/2021	Science Communication Talk Series 2021	17	2
From 7/04 al 2/07/2021	Magnetic properties of materials from nano to macro	16	2
From 20/04 to 11/06/2021	Analysis techniques of nanostructured, amorphous and crystalline materials	16	2
26-27/05/2021	Theory and practice of X-ray diffraction for materials characterization	16	2
7-8/06/2021	Processes and applications of ceramic materials	12	1
1/07 e 8/07/2021	Advanced fluorescence techniques	8	1
From 07/10/2021 to 01/03/2022	English language course_B2	30	4
22-23/02/2022	Processes promoted by visible light	8	1
19-20/05/2022	Course on health and safety for workers	8	1
23-24-25/05/2022	Advanced optical and electronic sensor applications	8	1
From 13/06 to 17/06 2022	1st School of Supramolecular and Bio-Nanomaterials	24	3

LANGUAGES

- **Italian:** Native
- **English:** Intermediate - B2 level
- **French:** Beginner - A2 level

PERSONAL SKILLS

- 6 years of experience in materials science, in particular:
 - 4 years of experience in the development of hybrid, biocompatible, and biomimetic materials, from sustainable synthesis processes to complete characterization to investigate the relationship between micro- and nano-structural properties and the application of materials as porous 3D or powders for the biomedical and cosmetic fields. Main activities include:
 - Development of hybrid composites based on natural polymers (collagen, gelatin, alginate, chitosan, natural cellulose fibers), mineralized with nanostructured biomimetic apatites developed following biologically inspired processes to obtain powders or 3D structures;
 - Development of biomaterials functionalized with antibiotics, obtained through blending processes, for skin regeneration;
 - Development of porous 3D structures for antibacterial gas filtering medical devices (HMEf), biodegradable and low-cost, obtained from waste materials through environmentally friendly processes;
 - Development of hybrid nanostructured particles composed of doped hydroxyapatite for cosmetic applications: SPF boosters and stabilizers for chemical/physical filters in sunscreens, and raw materials for makeup formulations.
 - 2 years of experience in the development of inorganic or hybrid, antimicrobial and photocatalytic nanomaterials based on silver and zinc oxide, starting from sustainable synthesis processes (SSbD) up to their complete characterization, for the formation of coatings aimed at the protection of cultural heritage and adsorbent materials for water purification.
 - Technical expertise in prototyping porous materials or powders using freeze-casting, spray-freeze-drying, and spray-drying methods.
 - Technical expertise in prototyping porous 3D structures using 3D printing, useful for pollutant adsorption in water purification.
 - Technical expertise in chemical-physical-morphological characterization of materials, such as: XRD, FT-IR, ICP, UV-VIS, TG-DSC, SEM-FEG, ESEM-EDS, DMTA, HPLC.

This CV is provided in the form of a self-certification and affidavit pursuant to Articles 46 and 47 of Presidential Decree 445/2000. To this end, the undersigned declares that he or she is aware of the criminal liability provided for by Article 76 of the aforementioned decree for the cases of forgery of documents and false declarations indicated therein.

The undersigned authorizes the processing of the personal data contained therein and for the purposes related to its use pursuant to Legislative Decree no. 196/03 and subsequent amendments and additions.

Data
01/10/2025