Silvia Barbi

Place and date of birth	Modena, 25 December 1984
Nationality	Italian
Residence	Modena (Italy)
E-mail	silvia.barbi@unimore.it

Professional experience

01/02/2023 - Present	Type-A Fixed-term Researcher – SSD ING-IND 22 at the Department of Sciences and Methods for Engineering, University of Modena and Reggio Emilia. Research activity: "Development of innovative engineering methods and tools for creating digital twins of industrial process heat-recovery systems, with particular focus on material selection to optimize heat exchange, using multivariate analysis and Design of Experiments methodologies", funded by the iWAYS project, "Innovative WAter recoverY Solutions through recycling of heat, materials and water across multiple sectors", H2020-LCCI-2020-EASME-single-stage - Project ID: 958274
01/09/2021 – 31/01/2023	Research Fellow at the Department of Sciences and Methods for Engineering, University of Modena and Reggio Emilia. Research activity: "Development of next-generation conductive ink mixtures for the application of printed and additive electronics techniques", funded by the Department FAR programme.
01/08/2020 – 31/07/2021	Research Fellow at the Interdepartmental Centre for Industrial Research and Technology Transfer in the field of Integrated Technologies for Sustainable Research, Efficient Energy Conversion, Energy Efficiency in Buildings, Lighting and Home Automation (En&Tech), University of Modena and Reggio Emilia. Research activity: "Design and production of smart materials for sports-textile applications: the WELIGHT project", funded by the Emilia-Romagna 2014-2020 POR-FESR programme
01/08/2018-31/07/2020	Research Fellow at the Department of Sciences and Methods for Engineering, University of Modena and Reggio Emilia. Research activity: "Design and optimization of functionalizing materials using Design of Experiments techniques"
01/02/2017-31/07/2018	Research Fellow at the Interdepartmental Centre for Applied Research and Services in the field of Advanced Mechanics and Automotive Engineering, University of Modena and Reggio Emilia (InterMech). Research activity: "Valorization of organic waste to obtain biomaterials for agricultural uses: VALORI-BIO", funded by the Emilia-Romagna 2014-2020 POR-FESR programme
06/07/2015-02/10/2015	Scholarship holder at the Physics Department of Coe College, Cedar Rapids, Iowa, U.S.A. Research activity: "Structural and optical properties of high-density luminescent glasses for heavy-particle detection", funded by the UNIMORE programme supporting mobility actions within scientific and cultural collaboration programmes with partner foreign universities.
16/10/2014-30/06/2015	Research Fellow at the Department of Engineering "Enzo Ferrari" (DIEF), University of Modena and Reggio Emilia. Research activity: "Recycling of waste raw materials from the thermal-spraying process", funded by project LIFE12 ENV/IT/000678
01/04/2014-30/09/2014	Scholarship holder at the National Interuniversity Consortium for Materials Science and Technology (INSTM). Research activity: "Preparation and characterization of frits for dental applications", funded by Straumann A.G.

07/03/2011-31/01/2014 Laboratory Technician at Smaltochimica S.p.A., Fiorano Modenese, Italy

- Quality control and research and development of ceramic suspensions for tile decoration, with particular focus on ceramic inks for digital decoration;
- Research and development of equipment and plant solutions for the wet milling of glazes and ceramic inks for digital decoration;
- Technical support for the international sales network in the field of digital ceramic decoration, including participation as a speaker at industry conferences and business travel to India and Brazil.
- Support to company management in preparing technical documentation for projects funded under Law 46 (Ministry of Economic Development, Italian Republic)

15/11/2008-04/03/2011 Researcher at Ingegneria Ceramica S.r.l., Sassuolo, Italy

- Prototype development and analysis of data relating to the development of an innovative digital printing system for glazes on ceramic substrates.
- Study and application of Colour Management to the digital decoration of tiles using software and hardware tools.
- Technical support for the Sacmi sales network in the field of digital-decoration products

01/02/2008 - 30/09/2008 University Internship at Ingegneria Ceramica S.r.l., Sassuolo, Italy

Laboratory work involving the design and characterization of glazes for the digital decoration of ceramic tiles using a prototype system.

01/05/2006 - 31/07/2006 University Internship at Ferro Italia S.r.l., Fiorano Modenese, Italy

Laboratory work involving the design and study of the tests required to formulate innovative colour-matching algorithms.

Education and training

Since 12/07/2024 Awarded the Italian National Scientific Qualification for the position of Associate Professor in Competition Sector 09/D1 - MATERIALS SCIENCE AND TECHNOLOGY

May 2017 Training course “Effective DoE Experimentation with Design Expert training”, 40 hours, at SixSigmaIn Team snc, Lainate, Italy, from 10/05/2017 to 12/05/2017 and from 24/05/2017 to 25/05/2017

June 2015 24-hour Summer School on “Ceramic and Glass Science and Technology application to Bioceramics and Bioglasses”, organized by ECERS, Madrid, ES, from 17/06/205 to 19/06/2015

01/01/2014-31/12/2016 PhD in Models and Methods for Material and Environmental Sciences at the Department of Chemical and Geological Sciences, University of Modena and Reggio Emilia, Modena (Italy).
Thesis: “Optical and mechanical properties of rare earths and transition metal doped glass-ceramics”, in collaboration with the Physics Department of Coe College (IOWA, U.S.A.), the Italian National Institute for Nuclear Physics (INFN) and Fermi National Accelerator Laboratory (Illinois, U.S.A.)

Since July 2009 Qualified to practise as an Industrial Engineer – Section A

September 2006 - December 2008 Master’s Degree in Design and Development of New Materials (final grade: 110/110 with honours) at the Faculty of Engineering of Modena, University of Modena and Reggio Emilia, Italy
Thesis “Optimization of traditional glazes for innovative digital decoration on ceramic tiles”

September 2003 - October 2006 Bachelor’s Degree in Materials Engineering (final grade: 107/110) at the Faculty of Engineering of Modena, University of Modena and Reggio Emilia, Italy
Thesis “Neural and regression analysis methods for predicting colour development in traditional ceramic systems”

September 1998 - July 2003 Upper secondary school diploma (final grade: 81/100) from Wiligelmo State Scientific High School, Modena, Italy

Skills

Languages	Italian: native speaker; English: B2 level; holder of the First Certificate in English - University of Cambridge (ESOL), Level B2 of the Council of Europe framework and Level 3 of the ALTE framework (Association of Language Testers in Europe).
Computer skills	Advanced level: Windows™ and OsX™ operating environments; Office™ and Adobe™ applications; Design Expert 13™, OPUS 5.0, Spectragryph 1.2.6 and X'Pert Highscore Plus; main internet-browser, email-client and file-sharing tools. Basic level: Linux™ environment, AutoCAD™ 2D, Matlab™ and C++ programming
Scientific skills	Advanced level: preparation of ceramic, polymer and composite samples; analysis of mechanical and surface properties according to ISO standards; colorimetric, particle-size and gas-permeability analyses; thermal analyses (DSC) and gas-chromatography analyses. Statistical data analysis using multivariate analysis and development of predictive correlation models. Basic level: rheological analyses.
Driving licence	Category B driving licence; own vehicle

Awards

2015	Scholarship funded by UNIMORE for mobility actions within the scientific and cultural collaboration programme with partner foreign universities
2009	"Professor Cirillo Mussini" Technological Research Award, established by Gruppo Concorde, for the Master's Degree thesis "Optimization of glazes for innovative digital decoration of ceramic tiles"

Project responsibilities

From 16/05/2025 – ongoing	Project "DEVELOPMENT OF SUSTAINABLE, CUSTOMIZABLE AND SMART PACKAGING, FOR THE FOOD INDUSTRY" within the DISMI Department FAR 2025 programme
From 28/06/2024 – 30/09/2025	Project "STATISTICAL OPTIMIZATION OF THE FORMULATION OF SUSTAINABLE INKS FOR THE DIGITAL PRINTING OF ELECTRONIC CIRCUITS BASED ON SUITABLY FUNCTIONALIZED BACTERIAL CELLULOSE" within the DISMI Department FAR 2024 programme
From 23/06/2023 to 31/07/2024	Project "MODELLING THE BEHAVIOUR OF SUSPENSIONS FOR DIGITAL PRINTING IN ADDITIVE MANUFACTURING PROCESSES USING AN EXPERIMENTAL AND STATISTICAL APPROACH" within the DISMI Department FAR 2023 programme

Academic appointments

A.Y. 2025-2026 Lecturer for the “Material Design and Optimization in Digital Manufacturing” course in the Master’s Degree Programme in Digital Automation Engineering at the Department of Sciences and Methods for Engineering in Reggio Emilia, University of Modena and Reggio Emilia, Italy (54 hours of teaching).

Lecturer for the “Material design and process optimization by statistical approaches” course for the Doctoral School in Industrial Innovation Engineering (DISMI) and the Doctoral School in Civil, Environmental and Materials Engineering (DIEF) (12 hours of teaching)

Co-lecturer for the course “Materials and Manufacturing Process Technology” in the Master’s Degree Programme in Management Engineering at the Department of Sciences and Methods for Engineering in Reggio Emilia, University of Modena and Reggio Emilia, Italy (12 hours of teaching).

Member of the Scientific and Technical Committee of the Advanced Training Programme “Packaging Challenges for the Circular Economy”, coordinated by the University of Parma and co-funded by the Emilia-Romagna Region

A.Y. 2024-2025 Lecturer for the “Material Design and Optimization in Digital Manufacturing” course in the Master’s Degree Programme in Digital Automation Engineering at the Department of Sciences and Methods for Engineering in Reggio Emilia, University of Modena and Reggio Emilia, Italy (54 hours of teaching).

Co-lecturer for the course “Materials and Manufacturing Process Technology” in the Master’s Degree Programme in Management Engineering at the Department of Sciences and Methods for Engineering in Reggio Emilia, University of Modena and Reggio Emilia, Italy (12 hours of teaching).

Co-supervisor of the Master’s degree thesis in Management Engineering entitled “CHARACTERIZATION OF A LABORATORY SPRAY-DRYING PLANT AND THE RESULTING SPRAY-DRIED POWDERS: THE TORRECID ITALIA CASE ”, to be defended at UNIMORE in the February 2026 graduation session

Supervisor of the Master’s degree thesis in Digital Automation Engineering entitled “Data analysis and predictive modeling of Vineyard soil properties using machine learning”, to be defended at UNIMORE in the February 2026 graduation session

Co-supervisor of the Master’s degree thesis in Management Engineering entitled “IDENTIFICATION OF AN OPERATING METHOD FOR CONTROLLING BALLS IN DRY GRINDING: THE TORRECID ITALIA CASE” defended at UNIMORE in the July 2024 graduation session

Co-supervisor of the Master’s degree thesis in Management Engineering entitled “Sustainable solutions in food packaging: innovation in biodegradable coatings” defended at UNIMORE in the October 2024 graduation session

Co-supervisor of the Master’s degree thesis in Management Engineering entitled “Materials and Repairability of Surgical Gowns: An Analysis for Economic and Sustainable Management - The Staff Jersey srl Case” defended at UNIMORE in the December 2024 graduation session

Co-supervisor of the Master’s degree thesis in Management Engineering entitled “Application of Design of Experiments in a continuous-improvement project: the CIMA S.p.A. case” defended at UNIMORE in the April 2025 graduation session

Co-supervisor of the Master’s degree thesis in Management Engineering entitled “Synergy between DoE and LCA: an integrated model for optimization and sustainability” defended at UNIMORE in the April 2025 graduation session

Member of the Scientific and Technical Committee of the Advanced Training Programme “Packaging Challenges for the Circular Economy”, coordinated by the University of Parma and co-funded by the Emilia-Romagna Region

A.Y. 2023-2024 Lecturer for the “Material Design and Optimization in Digital Manufacturing” course in the Master’s Degree Programme in Digital Automation Engineering at the Department of Sciences and Methods for Engineering in Reggio Emilia, University of Modena and Reggio Emilia, Italy (54 hours of teaching).

Co-lecturer for the course “Materials and Manufacturing Process Technology” in the Master’s Degree Programme in Management Engineering at the Department of Sciences and Methods for Engineering in Reggio Emilia, University of Modena and Reggio Emilia, Italy (12 hours of teaching).

Co-supervisor of the degree thesis in Management Engineering entitled “Use of photovoltaic energy in industrial processes” defended at UNIMORE in the April 2023 graduation session

Co-supervisor of the Master’s degree thesis in Management Engineering entitled “Recycling polymer materials in the injection-moulding process: the GHEPI srl case” defended at UNIMORE in the October 2023 graduation session

Supervisor of the Bachelor’s degree thesis in Mechatronics Engineering entitled “Recycling and second life of lithium batteries in light of recent European Regulation 2023/1542” defended at UNIMORE in the October 2023 graduation session

Examiner of the Master’s degree thesis in Mechatronics Engineering entitled “Antibacterial functionalization of polymer surfaces through laser texturing of plastic-injection moulds” defended at UNIMORE in the February 2024 graduation session

Member of the Scientific and Technical Committee of the Advanced Training Programme “Packaging Challenges for the Circular Economy”, coordinated by the University of Parma and co-funded by the Emilia-Romagna Region

A.Y. 2022-2023 Subject Expert for the course “Materials and Manufacturing Process Technology” in the Master’s Degree Programme in Management Engineering at the Department of Sciences and Methods for Engineering in Reggio Emilia, University of Modena and Reggio Emilia, Italy (6 hours of teaching).

Co-lecturer for the course “Materials for the Digital and Creative Industry” in the Master’s Degree Programme in Management Engineering at the Department of Sciences and Methods for Engineering in Reggio Emilia, University of Modena and Reggio Emilia, Italy (40 hours of teaching).

Co-taught practical classes for the Industrial and Environmental Engineering PhD programme at the Department of Engineering “Enzo Ferrari”, University of Modena and Reggio Emilia, within the course “Material design and process optimization by statistical approaches”

Co-supervisor of the Master’s degree thesis in Management Engineering entitled “Electrification in the automotive sector and the transition towards zero-emission mobility: challenges and scenarios for currently used technologies.Defended at UNIMORE in the February 2023 graduation session

Co-supervisor of the Master’s degree thesis in Management Engineering entitled “Application of an Integrated Management System compliant with ISO 9001, 14001 and 45001” defended at UNIMORE in the February 2023 graduation session

Co-supervisor of the Master’s degree thesis in Management Engineering entitled “Plastics in the agricultural sector: materials, their applications, environmental impact and green replacement strategies” defended at UNIMORE in the February 2023 graduation session

Member of the Scientific and Technical Committee of the Advanced Training Programme “Packaging Challenges for the Circular Economy”, coordinated by the University of Parma and co-funded by the Emilia-Romagna Region.

Lecturer at the Winter School “Packaging Challenges for the Circular Economy” at the University of Parma from 16/01/2023 to 10/02/2023 (6 hours of teaching)

A.Y. 2021-2022 Subject Expert for the course “Materials and Manufacturing Process Technology” in the Master’s Degree Programme in Management Engineering at the Department of Sciences and Methods for Engineering in Reggio Emilia, University of Modena and Reggio Emilia, Italy (9 hours of teaching).

Subject Expert for the course “Materials for the Digital and Creative Industry” in the Master’s Degree Programme in Management Engineering at the Department of Sciences and Methods for Engineering in Reggio Emilia, University of Modena and Reggio Emilia, Italy (9 hours of teaching).

Co-taught practical classes for the Industrial and Environmental Engineering PhD programme at the Department of Engineering “Enzo Ferrari”, University of Modena and Reggio Emilia, within the course “Material design and process optimization by statistical approaches”

Co-supervisor of the Master’s degree thesis in Management Engineering entitled “Implementation of new optical measurement technologies and definition of optimal automatic-selection parameters for quality control: the Vimi Fasteners S.p.A. case” defended at UNIMORE in the February 2022 graduation session

Member of the Scientific and Technical Committee of the Advanced Training Programme “Packaging Challenges for the Circular Economy”, coordinated by the University of Parma and co-funded by the Emilia-Romagna Region.

Lecturer at the Summer School “Packaging Challenges for the Circular Economy” at the University of Parma from 20/06/2022 to 01/07/2022 (6 hours of teaching)

A.Y. 2020-2021 Subject Expert for the course “Materials and Manufacturing Process Technology” in the Master’s Degree Programme in Management Engineering at the Department of Sciences and Methods for Engineering in Reggio Emilia, University of Modena and Reggio Emilia, Italy (9 hours of teaching).

A.Y. 2019-2020 Subject Expert for the course “Materials and Process Technology and Life-Cycle Analysis ” in the Master’s Degree Programme in Management Engineering at the Department of Sciences and Methods for Engineering in Reggio Emilia, University of Modena and Reggio Emilia, Italy (9 hours of teaching.

Classroom tutor for the Inter-University Second-Level Master’s Programme “Ceramic Enterprise and Technology” at the
Department of Engineering “Enzo Ferrari” in Modena, University of Modena and Reggio Emilia, Italy.

Research fellows’ representative on the Council of the Department of Sciences and Methods for Engineering in Reggio Emilia, University of Modena and Reggio Emilia, Italy

A.Y. 2018-2019 Subject Expert for the course “Materials and Process Technology and Life-Cycle Analysis ” in the Master’s Degree Programme in Management Engineering at the Department of Sciences and Methods for Engineering in Reggio Emilia, University of Modena and Reggio Emilia, Italy (9 hours of teaching.

Co-supervisor of the Master’s degree thesis in Mechatronics Engineering entitled “Study of contamination in the injection circuit of a mechanical diesel engine” defended at UNIMORE in the July 2019 graduation session

A.Y. 2017-2018 Subject Expert for the course “Materials and Process Technology and Life-Cycle Analysis ” in the Master’s Degree Programme in Management Engineering at the Department of Sciences and Methods for Engineering in Reggio Emilia, University of Modena and Reggio Emilia, Italy (9 hours of teaching.

Co-supervisor of the Master’s degree thesis in Management Engineering entitled “Validation process for alternative lead-free materials compliant with the European REACH-RoHS regulations: the Bosch Rexroth case” defended at UNIMORE in the April 2019 graduation session

Co-supervisor of the Master’s degree thesis in Environmental Sustainability Engineering entitled “Rational design of environmentally sustainable aggregates for agronomic use” defended at UNIMORE in the April 2019 graduation session

A.Y. 2016-2017 Co-supervisor of the Master's degree thesis in Management Engineering entitled "Valorization of organic waste using insects to obtain biomaterials for agricultural uses: material development and environmental sustainability analysis" defended at UNIMORE in the April 2018 graduation session

Co-supervisor of the Master's degree thesis in Management Engineering entitled "Thermoforming of polymer materials at G3 Spa: statistical analysis of process-product correlations and environmental assessments" defended at UNIMORE in the December 2017 graduation session.

Co-supervisor of the Master's degree thesis in Management Engineering entitled "Analysis of critical issues
in managing spare parts and suppliers in ceramic production: the Emilceramica srl case, graduation session
of December 2017.

A.Y. 2015-2016 Co-supervisor of the Master's degree thesis in Civil Engineering entitled "Application of chemical strengthening to ceramic tiles", defended at UNIMORE in the July 2016 graduation session.

Co-supervisor of the Bachelor's degree thesis in Civil and Environmental Engineering entitled "Study of ion-exchange process variables on glazed ceramic tiles", defended at UNIMORE in the October 2016 graduation session.

Co-supervisor of the Master's degree thesis in Civil Engineering entitled "Study and characterization of glazed ceramic tiles under different ion-exchange processes", defended at UNIMORE in the April 2017 graduation session.

A.Y. 2013-2014 Co-supervisor of the Bachelor's degree thesis in Civil and Environmental Engineering entitled "DOE optimization of cellular ceramics used as thermal-acoustic insulators", defended at UNIMORE in the October 2014 graduation session.

Affiliations with Research Centres and Scientific Associations

Since 2019 Member of the Italian Association of Materials Engineering (AIMAT)

Since 2015 Member of the Italian Ceramic Society (ICERS)

Since 2014 Affiliated with the National Interuniversity Consortium for Materials Science and Technology (INSTM)

Attachments

List of publications
List of journals for which reviewer or editor activities have been performed
List of participation in national and international conferences and workshops

List of publications

Journal publications

Brenda, F., Barbi, S., Montorsi, M., Gallichi-Nottiani, D., Grimaldi, M., Pitirollo, O., Sciancalepore, C., Milanese, D., Cespi,
Structural, Mechanical, and Environmental Assessment of a Poly(butylene adipate- co -terephthalate) (PBAT)-Inulin Composite Material In: ACS SUSTAINABLE CHEMISTRY & ENGINEERING. - ISSN 2168-0485. - (**2026**), pp. 1-10. [10.1021/acssuschemeng.5c13077]

Barbi, S., Brugnoli, M., La China, S., Montorsi, M., & Gullo, M.
Combining Microbial Cellulose with $FeSO_4$ and $FeCl_2$ by Ex Situ and In Situ Methods. *Polymers*, ISSN 2073-4360 - *17*:13(**2025**), pp1743-1757. https://doi.org/10.3390/polym17131743

Barbi, S. Discepoli, G. Montorsi, L., Milani, M., Montorsi, M.
Developing Tailored Materials for the Industrial Production of Anion Exchange Membrane Electrolyzers through a Statistical Approach ADVANCED ENGINEERING MATERIALS. - ISSN 1527-2648. - 27:5(**2025**), pp. 1-7. [10.1002/adem.202400780]

Lo Faro, E.; Bonofiglio, A.; Barbi, S.; Montorsi, M.; Fava, P.
Polycaprolactone/Starch/Agar Coatings for Food-Packaging Paper: Statistical Correlation of the Formulations' Effect on Diffusion, Grease Resistance, and Mechanical Properties. - In: POLYMERS. - ISSN 2073-4360. - 15:19(**2023**), pp. 3921-3939. [10.3390/polym15193921]

Barbieri, F.; Barbi, S.; Bertacchini, A.; Montorsi, M.
Combined Effects of Different LED Light Recipes and Slow-Release Fertilizers on Baby Leaf Lettuce Growth for Vertical Farming: Modeling through DoE APPLIED SCIENCES. - ISSN 2076-3417. - 13:15(**2023**), pp. 8687-8707. [10.3390/app13158687]

Barbi, S.; Barbieri, F.; Taurino, C.; Bertacchini, A.; Montorsi, M.
Quantitative Calculation of the Most Efficient LED Light Combinations at Specific Growth Stages for Basil Indoor Horticulture: Modeling through Design of Experiments- In: APPLIED SCIENCES. - ISSN 2076-3417. - **(2023)**, pp. 1-20. [10.3390/app13032004]

Barbi, S., Montorsi, M., Maistrello, L., Caldironi, M., Barbieri, L.
Statistical optimization of a sustainable fertilizer composition based on black soldier fly larvae as source of nitrogen **(2022)** Scientific Reports 12:1 pp. 20505-20505.
DOI: 10.1038/s41598-022-24964-2

Barbi, S., Barbieri, F., Marinelli, S., Rimini, B., Merchiori, S., Bottarelli, M., Montorsi, M.
Phase Change Material Evolution in Thermal Energy Storage Systems for the Building Sector, with a Focus on Ground-Coupled Heat Pumps (**2022**) Polymers, 14 (3), art. no. 620.
DOI: 10.3390/polym14030620

Barbi, S., Barbieri, F., Bertacchini, A., Montorsi, M.
Statistical optimization of a hyper red, deep blue, and white leds light combination for controlled basil horticulture (**2021**) Applied Sciences (Switzerland), 11 (19), art. no. 9279.
DOI: 10.3390/app11199279

Barbi, S., Macavei, L.I., Caligiani, A., Maistrello, L., Montorsi, M.

From Food Processing Leftovers to Bioplastic: A Design of Experiments Approach in a Circular Economy Perspective (**2021**) Waste and Biomass Valorization, 12 (9), pp. 5121-5130.
DOI: 10.1007/s12649-021-01376-3

Fuso, A., Barbi, S., Macavei, L.I., Luparelli, A.V., Maistrello, L., Montorsi, M., Sforza, S., Caligiani, A.
Effect of the rearing substrate on total protein and amino acid composition in black soldier fly (**2021**) Foods, 10 (8), art. no. 1773.
DOI: 10.3390/foods10081773

Barbi, S., Barbieri, F., Marinelli, S., Rimini, B., Merchiori, S., Larwa, B., Bottarelli, M., Montorsi, M.
Phase change material-sand mixtures for distributed latent heat thermal energy storage: Interaction and performance analysis (**2021**) Renewable Energy, 169, pp. 1066-1076.
DOI: 10.1016/j.renene.2021.01.088

Barbi, S., Barbieri, F., Bertacchini, A., Barbieri, L., Montorsi, M.
Effects of different LED light recipes and NPK fertilizers on basil cultivation for automated and integrated horticulture methods (**2021**) Applied Sciences (Switzerland), 11 (6), art. no. 2497.
DOI: 10.3390/app11062497

Barbi, S., Taurino, C., La China, S., Anguluri, K., Gullo, M., Montorsi, M.
Mechanical and structural properties of environmental green composites based on functionalized bacterial cellulose (**2021**) Cellulose, 28 (3), pp. 1431-1442.
DOI: 10.1007/s10570-020-03602-y

Barbi, S., Barbieri, F., Andreola, F., Lancellotti, I., Barbieri, L., Montorsi, M.
Preliminary study on sustainable NPK slow-release fertilizers based on byproducts and leftovers: A design-of-experiment approach (**2020**) ACS Omega, 5 (42), pp. 27154-27163.
DOI: 10.1021/acsomega.0c03082

Rosa, R., Spinelli, R., Neri, P., Pini, M., Barbi, S., Montorsi, M., Maistrello, L., Marseglia, A., Caligiani, A., Ferrari, A.M.
Life Cycle Assessment of Chemical vs Enzymatic-Assisted Extraction of Proteins from Black Soldier Fly Prepupae for the Preparation of Biomaterials for Potential Agricultural Use
(**2020**) ACS Sustainable Chemistry and Engineering, 8 (39), pp. 14752-14764.
DOI: 10.1021/acssuschemeng.0c03795

Barbi, S., Barbieri, F., Andreola, F, Lancellotti, I., García, C.M., Palomino, T.C., Montorsi, M., Barbieri, L.
Design and characterization of controlled release pk fertilizers from agro-residues
(**2020**) Environmental Engineering and Management Journal, 19 (10), pp. 1669-1676.

Setti, L., Francia, E., Pulvirenti, A., De Leo, R., Martinelli, S., Maistrello, L., MacAvei, L.I., Montorsi, M., Barbi, S., Ronga, D.
Bioplastic film from black soldier fly prepupae proteins used as mulch: Preliminary results
(**2020**) Agronomy, 10 (7), art. no. 933, .
DOI: 10.3390/agronomy10070933

Barbi, S., Macavei, L.I., Fuso, A., Luparelli, A.V., Caligiani, A., Ferrari, A.M., Maistrello, L., Montorsi, M.
Valorization of seasonal agri-food leftovers through insects
(**2020**) Science of the Total Environment, 709, art. no. 136209, .
DOI: 10.1016/j.scitotenv.2019.136209

Barbi, S., Messori, M., Manfredini, T., Pini, M., Montorsi, M.

Rational design and characterization of bioplastics from Hermetia illucens prepupae proteins (**2019**) Biopolymers, 110 (5), art. no. e23250, .
DOI: 10.1002/bip.23250

Barbi, S., Mugoni, C., Montorsi, M., Siligardi, C.
Chemical hardening of glazed porcelain tiles (**2019**) Journal of the American Ceramic Society, 102 (5), pp. 2853-2862.
DOI: 10.1111/jace.16134

Barbi, S., Spinelli, R., Ferrari, A.M., Montorsi, M.
Design and environmental assesment of bioplastics from Hermetia illucens prepupae proteins (**2019**) Environmental Engineering and Management Journal, 18 (10), pp. 2123-2131.

Spinelli, R., Neri, P., Pini, M., Barbi, S., Montorsi, M., Ferrari, A.M.
Using black soldier flies (Hermetia illucens) to bioconvert waste from the livestock production chain: A life cycle assessment case study
(**2019**) WIT Transactions on Ecology and the Environment, 231, pp. 47-58.
DOI: 10.2495/WM180051

Barbi, S., Mugoni, C., Montorsi, M., Affatigato, M., Gatto, C., Siligardi, C.
Structural and optical properties of cerium oxide doped barium bismuth borate glasses (**2018**) Journal of Non-Crystalline Solids, 499, pp. 183-188.
DOI: 10.1016/j.jnoncrysol.2018.07.033

Barbi, S., Mugoni, C., Montorsi, M., Affatigato, M., Gatto, C., Siligardi, C.
Structural and optical properties of rare-earths doped barium bismuth borate glasses (**2018**) Journal of Non-Crystalline Solids, 481, pp. 239-247.
DOI: 10.1016/j.jnoncrysol.2017.10.043

Siligardi, C., Barbi, S., Casini, R., Tagliaferri, L., Remigio, V.
Recycling of yttria-stabilized zirconia waste powders in glazes suitable for ceramic tiles (**2017**) International Journal of Applied Ceramic Technology, 14 (6), pp. 1236-1247.
DOI: 10.1111/ijac.12702

Barbi, S., Miselli, P., Siligardi, C.
Failure analysis of glazed LAS glass-ceramic containing cerium oxide (**2017**) Ceramics International, 43 (1), pp. 1472-1478.
DOI: 10.1016/j.ceramint.2016.10.117

Book chapters

Discepoli, G., Barbi, S., Montorsi, L., Montorsi, M., Milani, M. Environmentally and economically sustainable materials for AEM electrolyzers Proceedings of 8th International conference on Material Science & Smart Materials "MSSM 2022" – Key Enginering Materials (**2023)**

Du, J., Montorsi, M., Barbi, S., Lu, X.
Rare Earth and Transition Metal Containing Glasses (**2022**) in Atomistic Simulations of Glasses: Fundamentals and Applications, Wiley, pp. 367-438.
DOI: 10.1002/9781118939079.ch12

Bertacchini, A., Barbi, S., Montorsi, M.
Improved heat sink for thermoelectric energy harvesting systems (**2020**) in Advances in Intelligent Systems and Computing, 1131 AISC, pp. 803-809.

DOI: 10.1007/978-3-030-39512-4_122

Barbi, S., Cattani, L., Manfredini, T., Montorsi, M.
Design and Optimization of the Thermo-Mechanical Behavior in Glass Reinforced Polyamide 6 for Automotive Application (**2020**) in Lecture Notes in Mechanical Engineering, pp. 528-539.
DOI: 10.1007/978-3-030-31154-4_45

Conference proceedings publications

*Barbi S., Venturelli M., Montagneretto Olivari A., Montorsi M., Musicco N., Gelfi M. Milani M., Montorsi L., Experimental campaign on the chemical composition of aluminium powders for hydrogen production In: JOURNAL OF PHYSICS. CONFERENCE SERIES. - ISSN 1742-6588. - 3143:1(**2025**). (ATI 2025 Benevento Italy 10/09/2025 - 12/09/2025) [10.1088/1742-6596/3143/1/012017].*

Discepoli, G., Barbi, S.,Venturelli, M., Montorsi, M., Montorsi, L., Milani, M. Enhancing PEM Electrolyzer Performance through Electrochemical Impedance Spectroscopy: A Review. - In: JOURNAL OF PHYSICS. CONFERENCE SERIES. - ISSN 1742-6588. - 2893:1**(2024).** (Paper presented at the 79th Conference of the Italian Thermotechnical Association, ATI 2024, held in Genoa on 4-6 September 2024) [10.1088/1742-6596/2893/1/012072].

Butturi, M.A., Barbi, S., Marinelli, S., Montorsi, M., Gamberini, R.
Circular design options for wearables integrated sportswear to be employed in adverse outdoor conditions (**2021**) Proceedings of the 26th Summer School Francesco Turco, 7 p.
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Maistrello, L.; Macavei, L. I.; Antonelli, A.; Montevecchi, G.; Masino, F.; Barbi, S.; Montorsi, M.; Pini, M.; Ferrari, A. M.; Caligiani, A.; Sforza, S.; Pasotti, P.; Amadori, D.; Altamura, V.; Tommasini M., G
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*High-quality bioproducts from plant waste and insects - WASTE. - April-June (**2019**), pp. 22-25.*

List of journals for which reviewer or editor activities have been performed

Editor:

- In 2022, Topical Advisory Panel member for Applied Sciences (MDPI)

- Since 2023, Review Editor for “Ceramic and Glass” in the “Frontiers in Materials” group

Reviewer:

- International Journal of Applied Ceramic Technology (Wiley)
- Journal of the American Ceramic Society (Wiley)
- International Journal of Applied Glass Science (Wiley)
- Journal of Non-Crystalline Solids (Elsevier)
- Ceramics International (Elsevier)
- Journal of Alloys and Compounds (Elsevier)
- Journal of Physics and Chemistry of Solids (Elsevier)
- Materials (MDPI)
- Coatings (MDPI)
- Recycling (MDPI)
- Applied Sciences (MDPI)
- Sustainability (MDPI)
- Resources (MDPI)
- Fibers (MDPI)
- Techologies (MDPI)
- Metals (MDPI)
- Journal of Manufacturing and Materials Processing (MDPI)

List of participation in national and international conferences and workshops

Barbi S., Lo Faro E., Barbieri F. , Patrizia F. , Montorsi M.“Statistical evaluation of the degradation mechanism of bio-based materials for sustainable food-packaging” 15th INSTM Conference, 7-10 June **2026** Genoa, IT (Oral)

Barbi S., Barbieri F., Monica S. , Gambarelli F. , Bertacchini A., Montorsi M. “Data Analysis and predictive modeling of Vineyard soil properties using machine learning” *15th INSTM Conference, 7-10 June **2026** Genoa, IT (Poster)*

Lo Faro E., Barbi S., Fava P., Montorsi M. “Natural-based coatings for food-packaging paper: statistical correlation of the formulations’ effect on diffusion mechanism, grease resistance and mechanical properties” Paint and Coatings, 8-9 October **2025**, Milan, IT (Oral)

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Barbi S., Barbieri, Gullo M., Montorsi M $FeSO_4$ AND $FeCl_2$ FUNCTIONALIZED BACTERIAL CELLULOSE THROUGH IN-SITU AND EX-SITU METHODS, 14th INSTM Conference, 9-12 June **2024**, Cagliari (Oral)

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Montorsi M., Barbi S, Barbieri F, Barbieri L., Bertacchini A., Sgarbi E. Rational design of new sustainable integrated system for indoor cultures AIMAT **2023** Catania, 28 May - 1 June (Oral)

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I consent to the processing of the personal data contained in my curriculum vitae pursuant to Italian Legislative Decree 196/2003, as amended by Italian Legislative Decree 101/2018, and Article 13 of the GDPR (EU Regulation 2016/679).

Modena, 07/08/2026