

Prof. Eng. Stefano Rossi PhD

PROFILE

Full professor of Materials Science and Engineering. Teacher of Product Design and Protection of Materials and Structures courses. The research took place in science and engineering of materials in particular considering the interaction between materials and environment. In particular, the corrosion behaviour and mechanical degradation of materials are considered. The methods to improve the surface properties were evaluated. The main topics are the following: - Study of the electrochemical behaviour of materials and their surfaces considering different treatments; - Study of surface treatments to improve surface characteristics, in particular considering the adhesion of organic coatings; - Protective properties (corrosion and degradation produced by mechanical action) and methods to improve the resistance properties: metallic, ceramic and organic coatings; - natural and accelerated weathering of materials surface; - The relationship between materials and design considering the aesthetical – perception properties.

WORK EXPERIENCE

Current position: full professor (area 09 SSD ING IND 22 - materials science and technology); from 4/2021 head of the Coatings and Industrial Anticorrosion laboratory. Department of Industrial Engineering, University of Trento, Trento, Italy

Academic career

1992- 1994	Scientific collaborator Materials Engineering Department of University of Trento.
1993/94- 1995/96	PhD student in "materials science and technology" University of Florence.
1996- 1997	Scientific collaborator Materials Engineering Department of University of Trento
1997-1999	Post-doctoral Materials Engineering Department of University of Trento
01/2000 - 01/2005	Researcher (RTD) Materials Engineering Department of University of Trento.
01/2005 -09/2014	Assistant Professor Department of industrial engineering.
10/2014– 2023	Ass. Professor Department of Industrial Engineering, University of Trento, Trento, Italy
2024 – present	full professor Department of Industrial Engineering, University of Trento, Trento, Italy
2000-2007	Adjunct Professor Polytechnic of Turin and Free University of Bozen, Bozen, Italy
2008-present	Adjunct Professor Free University of Bozen, Bozen, Italy
2007 and 2009	Adjunct Professor Accademia delle Belle Arti (art collage) Cignaroli, Verona, Italy
1999-2001	Visiting Professor Aix Marseille Université, CNRS UMR 7246, Marseille – France
2002	Visiting Professor Depto Ingenieria de Materiais, ETS Enxenoires Indust., Universidade de Vigo, Vigo, Spain
2003-2008	Visiting Professor Aix Marseille Université CNRS UMR 7246, Marseille – France
2024	Visiting professor at Univesitate de La Laguna – Tenerife Spain

EDUCATION AND TRAINING

Materials Engineering (5-year degree)

University of Trento [1986 – 1991]

PhD in “materials science and technology” University of Florence.

University of Florence [years 1993/94- 1995/96]

LANGUAGE & COMMUNICATION SKILLS

Language

first language (s): **italian**

English

LISTENING: fairly good **SPOKEN INTERACTION:** fairly good **WRITING:** good

French

LISTENING: very good **SPOKEN INTERACTION:** very good **WRITING:** --

RESEARCH ACTIVITY AND SCIENTIFIC PUBLICATIONS

Topics

- The research activity is in the field of materials science and engineering with particular attention to their durability. Materials damage due to corrosive phenomena and mechanical actions was one of the main topic. The methods for improving these surface qualities have therefore been considered. Research work used a wide range of experimental techniques, from industrial corrosion tests to electrochemical characterization, from optical and electronic microstructural to X ray and FTIR diffraction techniques. The main topics are comprised in the following classification:
- Electrochemical behavior of materials and their surfaces as a function of different treatments;
- Evaluation of surface treatments to improve surface characteristics (adhesion of organic coatings);
- Protective capacities (both towards corrosion and degradation by mechanical action) of different types of coatings deposited by different technologies: metallic, ceramic and organic coatings;
- Site more than 10 years, part of the research has focused on the relationship between materials and design, considering, in addition to the technical design, the aesthetic-perceptive aspects, in particular the study of color and the aspects connected to the surface.

Bibliometric data (from Scopus database, 17/06/2024)

- Total documents: 249;
- Books number: 4
- Book chapters: 15
- Citations number: 5848
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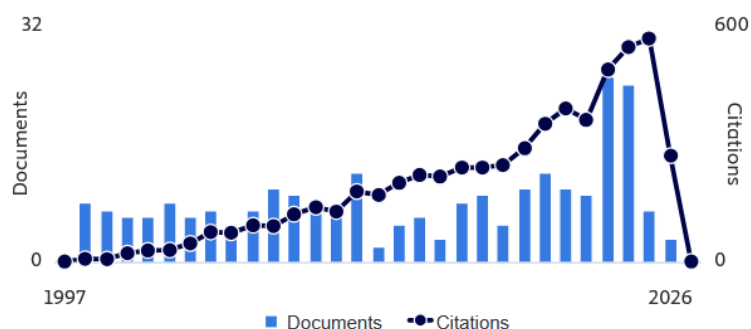
249

Documents

43

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Document & citation trends



Publications on international journals, books and books chapters

journal publications in the last 10 years (since 2016)

2026

- U. Mukkati Praveena, M. Fedel, S. Rossi, Rational Design of ZnGa-Sebacate/Graphene Nanoribbon Synergy for Effective Anticorrosive Polyurethane Coatings, Processes MDPI 2026, 14, 400 <https://doi.org/10.3390/pr14030400>,
- M. Macht, M. Fedel, M.B. Valcarce, M. Vazquez, G. Speranza, M.C. Prestifilippo, D. Vaccari, S. Rossi, Electrochemical Behaviour of Steel in Low carbon Cement Mixtures: Insights into Corrosion and Passivation Dynamics., Journal of Building Engineering, 122 (2026) 115790
- Büşra Karakaş, Nicolò Mattei, Luca Benedetti, Stefano Rossi, Chemical resistance of vitreous enameled cast iron, Ceramics International, 52 (2026) 17714–17731 doi.org/10.1016/j.ceramint.2026.02.353,
- S. Rossi, et al., Enrichment of the surface of an organic coating with silver and copper particles for antimicrobial activity, proc. Symposium on surface Science 2026, St. Christoph am Arlberg, Austria, February 22 - 28, 2026, Editor F.Aumayr, A. Niggas, U. Diebold and C. Lemell, publisher: TU Wien, pag. 141;

2025

- L.Henrique de Oliveira Souza, A. Cristoforetti , F. Cotting , W. Reis da Costa Campos, S. Rossi , M.Fedel, Sebacate intercalated CaAl-LDHs pigments for corrosion protection of aluminum alloy, ACS Omega 2025, 10, 59771–59781, , <https://doi.org/10.1021/acsomega.5c09717>
- A. Malandrucolo, S. Rossi, C. Menapace, Surface Characterization of hot-rolled AISI 440C round Wire at the different Steps of the typical Production Process, Metals MDPI 2025, 15, 1102. <https://doi.org/10.3390/met15101102>
- T. Ramdé, M. Ouedraogo; B. Guel; S. Rossi, Evaluation of corrosion protection performance and color stability of environment-friendly pigmented polyurethane coating, International journal of electrochemical science, 20 (2025) 100923, doi.org/10.1016/j.ijoes.2024.100923
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- Nikodmose Moges Gebre, Pasquale Gallo, Stefano Rossi, Design for Sustainability by Additive Manufacturing: A Study of PLA-Based Door Handle Redesign sustainability; Sustainability 2025, 17, 4969 <https://doi.org/10.3390/su17114969>

- N. Mattei, L. Benedetti, S. Rossi, Corrosion Behavior of Porcelain Enamels in Water Tank Storage, *Coatings MDPI*, 15(8), 934; <https://doi.org/10.3390/coatings15080934>
- C. Lusenti, R. Spaggiari, S. Rossi, Environmental sustainability of vitreous enamel coatings in architectural application, *Journal of Building Engineering* 112 (2025) 113930, doi.org/10.1016/j.jobbe.2025.113930,
- S. Rossi, n. Khongsay, L. Benedetti, A. Cristoforetti, N. Mattei. Study of Waterborne Eco-Sustainable Paint with Plant, Shells and Cuttlefish Bone Powder Based Additives / - (2025), pp. 1-17. (C&P25 Melbourne, Australia 9 - 13 November 2025).

2024

- S. Rossi, L. Benedetti, M. Benedetti, V. Fontanari, Electrochemical Conditions to Evaluate the Corrosion Fatigue Behavior of Friction-Welded Stainless and Carbon Steel, *ECS Meeting Abstracts*, 2024, DOI: 10.1149/MA2024-02171707mtgabs
- Michele Fedel, Stefano Rossi, Luca Benedetti, Flavio Deflorian, Unravelling the Mechanism of Filiform Corrosion on Painted Carbon Steel *ECS Meeting Abstracts*, 2024, vol MA2024-02, n 15, DOI: 10.1149/MA2024-02151622mtgabs,
- R. Sesia, P. P. I. Rodríguez, M. Calovi, M. Hakkarainen, S. Rossi, S. Ferraris, S. Spriano, M. Sangermano, "Microwave-Functionalized Natural Tannic Acid as an Anticorrosive UV-Curable Coating", *Polymer (Elsevier)* 315, 127824, doi.org/10.1016/j.polymer.2024.127824,
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- F. Russo, E. Rustighi, R. Mušálek, T. Tesař, V. Fontanari, S. Rossi, "Study of damage evolution in 316L stainless steel composite enamel coatings by in situ scanning electron microscopy and acoustic emissions analyses", *Ceramics International*, 2024, 50 (2024) 38304–38313; IF:5.1. doi.org/10.1016/j.ceramint.2024.07.194,
- R. Sesia, S. Spriano, M. Sangermano, M. Calovi, S. Rossi, S. Ferraris, Natural tannin layers as a possible sustainable strategy in the corrosion protection of steel; *Coatings*: 2024, 14, 965 IF 2.9 doi.org/10.3390/coatings14080965
- M. Calovi, S. Rossi "Exploiting Turmeric's Coloring Capability to Develop a Functional Pigment for Wood Paints: Sustainable Coloring Process of Polyamide 11 Powders and their Strengthening Performance", *Coatings*, 2024, 14, 858, doi.org/10.3390/coatings14070858;
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- A. Cristoforetti, S. Rossi, F. Deflorian, M. Fedel, "Unlocking the Potential of Sebacate: Investigating Its Role in the Inhibition of Filiform Corrosion on Organic Coated Steel, *Metals MDPI* 2024, 14(6), 623 doi: 10.3390/met14060623
- M Calovi, S Rossi, Enhancing wood coatings with red beetroot-derived pigments: Investigating synergy with UV absorber and composite filler for improved durability and aesthetics, *Progress in Organic Coatings* 192 (2024) 10852 <https://doi.org/10.1016/j.porgcoat.2024.108529>
- Andrea Cristoforetti; Stefano Rossi; Flavio Deflorian; Michele Fedel, Recent Progress in Understanding Filiform Corrosion on Organic Coated Steel: A Comprehensive Review, *Progress in Organic Coatings* 192 (2024) 108469, doi.org/10.1016/j.porgcoat.2024.108469,
- T. Ramdé, M. Fedel, S. Rossi; "The Effect Spray Testing Condition on the Corrosion Performance of Hydrothermally Sealed Anodic Oxide on a 5005 Aluminum Alloy: Comparison between Neutral Salt Spray, Acetic Salt Spray and Prohesion Testing Methods" *Journal of The Electrochemical Society*, 2024; 171, 4, 041501; DOI 10.1149/1945-7111/ad367c;
- Stefano Rossi Sergio Maria Leso, Massimo Calovi; Study of the Corrosion Behavior of Stainless Steel in Food Industry; *Materials MDPI*; 2024, 17(7), 1617; <https://doi.org/10.3390/ma17071617>
- Condini, A., Trentalange, C., Giuliani, A., Cristoforetti, A., Rossi, S. "Advancing Corrosion Protection in Confined Spaces: A Solvent-Free UV LED-Curable Coating for Steel Pipelines with Enhanced Barrier Properties and Harsh Environment Performance" *Journal of Coatings Technology and Research (JCTR)* 2024, 21, 2009–2022 doi: 10.1007/s11998-024-00950-3
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- A. Cristoforetti; F. Parola; F. Parrino; J. Izquierdo; R. M. Souto; S. Rossi; F. Deflorian; M. Fedel "Sebacate intercalated CaAl layered double hydroxide pigments for corrosion protection of low carbon steel: Anion exchange and electrochemical properties" *Applied Clay Science* 250 (2024) 107300; doi.org/10.1016/j.clay.2024.107300
- M. Calovi, S. Rossi, "Assessing the Impact of Sepiolite-Based Bio-Pigment Infused with Indigo Extract on Appearance and Durability of Water-Based White Primer"; *Materials*; 2024, 17, 941. doi.org/10.3390/ma17040941
- M. Calovi, S. Rossi, "Evaluating the versatility of stainless steel flakes and magnetite powder as polyvalent additives for wood paints" *Journal of Materials Research and Technology* 29 (2024) 1010–1024; doi.org/10.1016/j.jmrt.2024.01.171
- Massimo Calovi, Alessia Zanardi and Stefano Rossi, "Recent Advances in Bio-Based Wood Protective Systems: A Comprehensive Review" *Appl. Sci.* 2024, 14, 736. <https://doi.org/10.3390/app14020736>
- M. Calovi, S. Rossi Exploring polyamide 11 as a novel bio-based filler in wood paint: investigating aesthetic aspects and durability impact of the composite coating, *Progress in Organic Coatings* 188 (2024) 108262; <https://doi.org/10.1016/j.porgcoat.2024.108262>;
- A. Cristoforetti, J. Izquierdo, R.M. Souto, F. Deflorian, M. Fedel, S. Rossi "In-situ measurement of electrochemical activity related to filiform corrosion in organic coated steel by scanning vibrating electrode technique and scanning micropotentiometry", *Corrosion Science* 227 (2024) 1116 doi.org/10.1016/j.corsci.2023.11166969
- Massimo Calovi, Stefano Rossi, The impact of stainless steel flakes as a novel multifunctional pigment for wood coatings; *J. Coat. Technol. Res.*; 2024; 21,1031–1047; doi.org/10.1007/s11998-023-00870-8

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- M. Calovi, S. Rossi, "Eco-Friendly Multilayer Coating Harnessing the Functional Features of Curcuma-Based Pigment and Rice Bran Wax as a Hydrophobic Filler" *Materials* 2023, 16, 7086. doi.org/10.3390/ma16227086
- A. Zanardi, M. Calovi, S. Rossi, Porcelain Enamel Coatings for Building Façades, *Applied Sciences* *Appl. Sci.* 2023, 13, 9952. doi.org/10.3390/app13179952
- A. Condini, V. Morozov, C. Trentalange, S. Rossi "Modeling LEDs radiation patterns for curing UV coatings inside of pipes" *Optical Materials* 144 (2023) 114275 doi: 10.1016/j.optmat.2023.114275
- M. Calovi, V. Coroneo, S. Rossi "Antibacterial efficiency over time and barrier properties of wood coatings with colloidal silver" *Applied Microbiology and Biotechnology*, 2023 Doi: 10.1007/s00253-023-12710-1
- M. Calovi, A. Zanardi, S. Rossi, "Improvement of the thermal efficiency of organic roof-coatings through design aimed at increasing the durability of thermochromic pigments" *Progress in Organic Coatings* 185 (2023) 107928, doi: 10.1016/j.porgcoat.2023.107928 IF 6.6,
- M. Calovi, S. Rossi, "Comparative Analysis of the Advantages and Disadvantages of Utilizing Spirulina-Derived Pigment as a Bio-Based Colorant for Wood Impregnator, *Coatings* 2023, 13, 1158, doi: 10.3390/coatings13071158
- A. Cristoforetti, S. Rossi, F. Deflorian, M. Fedel "Comparative study between natural and artificial weathering of acrylic-coated steel, aluminum, and galvanized steel" *Materials and Corrosion* Wiley 2023, DOI:10.1002/maco.202313858
- M. Calovi, S. Rossi "Synergistic contribution of bio-based additives in wood paint: The combined effect of pigment deriving from spirulina and multifunctional filler based on carnauba wax" *Progress in Organic Coatings*; Volume 182, September 2023, 107713; doi.org/10.1016/j.porgcoat.2023.107713;
- M. Fedel, A. Rosati, M. Bertasini, S. Rossi "Cu doped YInO₃-ZnO green colored NIR reflective pigments: synthesis and application in PMMA based cool-roof coatings" *Progress in Organic Coatings* 182 (2023) 107708; doi.org/10.1016/j.porgcoat.2023.107708
- Massimo Calovi, Stefano Rossi "Impact of high concentrations of cellulose fibers on the morphology, durability and protective properties of wood paint" *Coatings* 2023, 13, 721. doi.org/10.3390/coatings13040721
- Massimo Calovi, Stefano Rossi, "From wood waste to wood protection: new application of black bio renewable water-based dispersions as pigment for bio-based wood paint" *Progress in Organic Coatings* 180 (2023) 107577, doi.org/10.1016/j.porgcoat.2023.107577
- Massimo Calovi, Stefano Rossi, "Durability and thermal behavior of functional paints formulated with recycled-glass hollow microspheres of different size" *Materials* 2023, 16, 2678, doi.org/10.3390/ma16072678

- Andrea Cristoforetti, Stefano Rossi, Flavio Deflorian, Michele Fedel, "On the limits of the EIS low-frequency impedance modulus as a tool to describe the protection properties of organic coatings exposed to accelerated aging tests" *Coatings* 2023, 13(3), 598; doi.org/10.3390/coatings13030598
 - Andrea Cristoforetti, Michele Fedel, Stefano Rossi, An electrochemical study on the mechanism of filiform corrosion on acrylic-coated carbon steel. *Progress in Organic Coatings* Volume 179, June 2023, 107525, doi.org/10.1016/j.porgcoat.2023.107525;
 - F. Russo, V. Fontanari, E. Rustighi, M. Lekka, L. Hernandez, S. Rossi "Composite vitreous enamel coatings with the addition of 316L stainless steel flakes: novel insights on their behaviour under mechanical stresses" *Surface & Coatings Technology* 459 (2023) 129393 doi.org/10.1016/j.surfcoat.2023.129393
 - Massimo Calovi, Stefano Rossi, "Functional Olive Pit Powders: The Role of the Bio-Based Filler in Reducing the Water Uptake Phenomena of the Waterborne paint" *Coatings* 2023, 13, 442. Doi: 10.3390/coatings13020442
 - Massimo Calovi, Stefano Rossi, "Olive pit powder as multifunctional pigment for waterborne paint: influence of the bio-based filler on the aesthetics, durability and mechanical features of the polymer matrix" *Industrial Crops & Products* 194 (2023) 116326; doi: 10.1016/j.indcrop.2023.116326
 - H.U. Rehman, F. Russo, M. Calovi, O. Massidda, S. Rossi, "Antimicrobial Performance of Innovative Functionalized Surfaces Based on Enamel Coatings: The Effect of Silver-Based Additives on the Antibacterial and Antifungal Activity" *International Journal of Molecular Sciences*, 2023, 24(3), 2364, doi 10.3390/ijms24032364
 - M. Calovi, V. Coroneo, S. Palanti, S. Rossi, "Colloidal silver as innovative multifunctional pigment: the effect of Ag concentration on the durability and biocidal activity of wood paints" *Progress in Organic Coatings* 175 (2023) 107354, https://doi.org/10.1016/j.porgcoat.2022.107354
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2021

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2020

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Books

- S. Rossi; "Gocce distillate di product design", Logo Fausto Lupetti Editore, Bologna, (2018; printed april 2019); ISBN 9788868742409 Collana: Design e Comunicazione. Total pages 265
 - S. Rossi, E. Scrinzi, A. Compagnoni, A. Gallucci, Y. Gjata; "Il design non perde lo smalto – Le potenzialità dei materiali smaltati" a cura di S. Rossi, Logo Fausto Lupetti Editore, Bologna, September 2011, (versione bilingue italiano/inglese); ISBN-13: 9788895962832.
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- S. Rossi, "I Rivestimenti - la pelle del design" Alinea Editrice – Firenze; aprile 2008; ISBN 978-88-6055-254-9
 - S. Rossi, "I Rivestimenti metallici per la protezione contro la corrosione", ed. ASSIM Associazione Italiana Ingegneri dei Materiali, Amorth, Trento 2003 pagine 101; suppl. al n. di dicembre 2002 di "Materiali e ingegneria" ISBN: IT\ICCU\PUV\0922088),

Academic conferences

More than 170 presentations at national and international conferences including the following most important invitations:

- Rompaint'2001-Pintumed; Bucarest (Romania) 17-18/05/'01
- XXVII FATIPEC CONGRESS 19-21, Aprile 2004, Aix-en-Provence, France
- "2nd German-French Summer School" Lozari, Corsica 2-7 September 2007
- PPG Seminar 10 October 2008 Pittsburgh US
- Eurocoat2013, Piacenza, 22/24 October 2013, Urban requalification
- International Symposium on Corrosion & Materials Degradation ISCND2014 in "9th International Materials Technology Conference and Exhibition (IMTCE) 2014, 13-16 may 2014 Kuala Lumpur Malaysia
- Corrosion 2017 NACE, RIP New Orleans USA, 26-30/03/2017 (invited keynote); award-winning work
- International Conference on PROCESSING & MANUFACTURING OF ADVANCED MATERIALS Processing, Fabrication, Properties, Applications July 8-13, 2018, Paris – FRANCE
- 4th Topical Meeting of the International Society of Electrochemistry, Mar del Plata, Argentina 19/22 March 2023
- 12° Aluminium Two Thousand; Bologna 19-23 September 2023
- THERMEC'2025, International Conference on PROCESSING & MANUFACTURING OF ADVANCED MATERIALS Processing, Properties, Fabrication and Applications, June 30-July 4, 2025, Tours, France

Most important academic prizes/awards

- 1993 Luigi Grifone 1993 prize by SCI (Italian Chemical Society, Electrochemistry Division);
- 2008 prize AIZ Italian Association Galvanizing) and ACAI (Association of Italian Constructors Steel), for "Possible influence of the hot DIP galvanizing process on mechanical properties of steel" (student L. Redolfi; tutor S. Rossi, V. Fontanari, M. Benedetti)
- 2010-2011 best PhD University of Trento "Service life of organic coatings: strategies for improving aesthetic and protective durability" (student E. Scrinzi, tutor: S. Rossi)
- Award 2017 RIP Coatings Corrosion 2017 NACE International; New Orleans 26-30/03/2017
- 3rd prize among the oral presentations at ETCC2022 European Technical Coatings Congress Krakow (Poland) 12–14 July 2022.

Expert positions

- Material Expert of ETA-Danmark A/S (Göteborg Plads 1 DK-2150 Nordhavn; www.etadanmark.dk; European Union institution (Technical Assessment Body – TAB - in charge of the technical assessment of construction products and is entitled to issue European Technical Assessments - ETAs) year 2017-present.
- Reference laboratory for CISP (Centro Italiano Smalti Porcellanati) from 2021.

Most important memberships in academic organizations

- Member of AMMP (NACE Internation) (Houdston US) since 2016.
- ADI (Associazione per il Disegno Industriale) member since 2015.
- Member of AIM (Italian Association of Metallurgy) since 2019.
- Member ISE international Society of Electrochemistry since 2019

Names and institutions of key international cooperation partners in the last 5 years

- Faculté Polytechnique de Mons, Université de Mons, Belgium
- -, Aix Marseille Université, CNRS UMR 7246, Marseille – France.
- Université de Ouagadougou, Ouagadougou, Burkina Faso
- Université Toulouse III - Paul Sabatier – Toulouse, France
- UNAM Mexico City DC; Mexico
- Fontana Corrosion Centre at The Ohio State University, US
- Universidad de La Laguna, La Laguna – Tenerife – Spain
- Universidad Nacional de Mar del Plata, Mar del Plata, Argentina.
- Universidad de Las Palmas de Gran Canaria, Spain

Most important editorships

2006 – present Member of the Editorial Board of “Galvanotecnica e Finiture Superficiali” Editore A.I.F.M. Milano
2005 – present Member of the Editorial Board “European Coatings” Edizioni GPB Milano
2018- present guest editor of special issue Coatings MDPI (Open Access)
2019- 2020 guest editor of special issue Metals MDPI (Open Access)
2020 –present editorial board of Coatings MDPI (Open Access)
2019 – present editorial board of Cosmetics MDPI (Open Access)

According to law 679/2016 of the Regulation of the European Parliament of 27th April 2016, I hereby express my consent to process and use my data provided in this CV

Trento 17/06/2026

