

## Education and work experience

- 18/12/2003: Graduated cum laude in Materials Engineering (5 years' course) at the Faculty of Engineering (MO) of the University of Modena and Reggio Emilia.
- 1/2004 – 12/2007: Ph.D. student in Materials Engineering at the University of Modena and Reggio Emilia – final defence on 3/03/2008.
- 4/02/2008 – 29/10/2019: Various research grants, research fellowships and collaboration contracts with the Department of Materials and Environmental Engineering, the INTERMECH MO.RE. Interdepartmental Centre and the Department of Engineering “Enzo Ferrari” of the University of Modena and Reggio Emilia.
- 18/11/2019 – 17/11/2022: Assistant Professor of Materials Science and Technology (Ricercatore t.d. l. 240/10 art. 24 c. 3 lett. B, SSD ING-IND/22) at the Department of Engineering “Enzo Ferrari”, University of Modena and Reggio Emilia.
- Since 18/11/2022: Associate Professor of Materials Science and Technology at the Department of Engineering “Enzo Ferrari”, University of Modena and Reggio Emilia.

## Research activities

The main research interests are in the fields of surface engineering, coatings, and tribology:

- Fundamental and applied research on the development and optimization of coatings for:
  - o Mechanical engineering and energy production applications: friction and wear control, corrosion mitigation, protection against oxidation and hot corrosion, etc.
  - o Functional applications, e.g. catalyst coatings for electrolytic hydrogen production
- Development of critical materials-free coatings:
  - o Replacement of critical raw materials (CRMs) in metallic and hardmetal coatings, e.g. development of Co- and W-free hardmetals.
  - o Replacement of toxic materials, e.g. replacement of cobalt in coating materials, replacement of hexavalent chromium electroplating.
- Tribology of industrial systems, e.g. characterization of the tribological behaviour of polymers and polymer-based composites sliding against various counterparts.
- Microstructural, micromechanical and functional testing of coatings and surface treatments.
- Finite element modelling of the thermomechanical behaviour of coatings and of particle-based coating deposition processes (e.g. thermal spraying).

## Teaching activities

- Since 2019/2020: Co-holder of the course “**Selezione dei Materiali e Tribologia**” (“Materials Selection and Tribology”) – Bachelor’s degree in Mechanical Engineering, curriculum “Materials”, 3rd year: 6 credits.
- Since 2020/2021: Co-holder of the course “**Caratterizzazione strumentale dei materiali**” (“Instrumented Characterization of Materials”) – Master’s degree in Materials Engineering, 2<sup>nd</sup> year: 1 credit.
- Since 2022/2023: Co-holder of the course “**Scienza e Tecnologia del Processo Ceramico**” (“Science and Technology of the Ceramic Process”) - Master’s degree in Materials Engineering, 1<sup>st</sup> year: 3 credits.

- Since 2022/2023: Co-holder of the course “**Polimeri e Compositi**” (“Polymers and Composites”) - Bachelor’s degree in Mechanical Engineering, curriculum “Materials”, 3rd year: 6 credits.

## **Funded research projects**

- **Coordinator of the national project (PRIN, 2022 call)** entitled “Graded EbcS for Next gEneration gaS turblne engineS (GENESIS)” – proj. n. 2022Y7K7FS, funded through decree n. 104 del 02-02-2022, ERC sector PE11 “Materials Engineering”, **duration – 24 months**, start date: 28/09/2023.
- **Coordinator of the Horizon Europe (HE) project** n° 101092211, entitled “Integrated Computational-Experimental material Engineering of Thermal Spray coatings (CoBRAIN)”, call topic HORIZON-CL4-2022-RESILIENCE-01-19, **duration – 48 months**, start date 1/01/2023.
- **Local unit coordinator in the national project (PRIN, 2020 call)** entitled “Multiscale modelling/characterisation and fabrication of nanocomposite ceramics with improved toughness (CONCERTO)” – proj. n. 2020BN5ZW9, funded through decree n. 2436 of 20/10/2021 (national coordinator Prof. Marco Sebastiani – University of Rome 3), **duration – 36 months**, start date 25/04/2022.

## **Main editorial tasks**

- **Lead Editor** of the international peer-reviewed scientific journal “*Journal of Thermal Spray Technology*” (Editor: Springer Nature, ISSN: 1059-9630) since 01/2023; Associate Editor of the same journal since 09/2016.