Marco Freschi

MATERIALS ENGINEER
MFRESCHI@BERKELEY.EDU | +1 510 229 21 02

EXPERIENCE

Postdoctoral Fellow — **University of California Berkeley** (USA), 2023 - present
"*Bioinspired Design of Sustainable Seeding Methods to Improve Forest Regeneration"*
Advisor: Prof. Lining Yao

Research Fellow — **Politecnico di Milano** (Italy), 2022 – 2023
"*Sustainability strategies in the sector of materials for industrial packaging"*
Supervisor: Prof. Giovanni Dotelli - *in collaboration with BCube*

EDUCATION

PhD — **Materials Engineering**
Politecnico di Milano (Italy), 2018 – 2022
"Production and characterization of self-lubricating metal matrix composites for sliding electrical contact in aerospace applications"
Supervisor: Prof. Giovanni Dotelli - *in collaboration with Logic S.p.A.*
Visiting period at Oulu University (Finland) - Supervisor: PhD O. Haiko, Prof. J. Kömi

Master's degree — **Materials Engineering and Nanotechnology**
Politecnico di Milano (Italy), 2016
"*Experimental investigation of the air path in timber frame wall assembly"*
Internship at Université Savoie Mont Blanc – Chambéry (France)

Bachelor's degree — **Materials Engineering and Nanotechnology**
Politecnico di Milano (Italy), 2013
"*Anodization of titanium alloy – effect of the operative conditions on the optical and corrosion properties"*

PUBLICATIONS

[1] M. Freschi, M. Di Virgilio, O. Haiko, M. Mariani, L. Andena, N. Lecis, J. Kömi, G. Dotelli
"*Analysis of ball milling time to produce self-lubricating copper-tungsten disulfide composite: Best trade-off between tribological performance and electrical properties*" Next Materials, **2024**, 2, 100083. DOI: 10.1016/j.nxmate.2023.100083

[2] M. Freschi, L. Dragoni, M. Mariani, O. Haiko, J. Kömi, N. Lecis, G. Dotelli
"*Tuning the Parameters of Cu-WS_2 Composite Production via Powder Metallurgy: evaluation of the effects on tribological properties*" Lubricants, **2023**, 11(2), 66. DOI: 10.3390/lubricants11020066

[3] M. Freschi, A. Paniz, E. Cerqueni, G. Colella, G. Dotelli
"*The twelve principles of green tribology: studies, research, and case studies-a brief anthology*" Lubricants, **2022**, 10, 129. DOI: 10.3390/lubricants10060129

[4] M. Freschi, A. Arrigoni, O. Haiko, L. Andena, J. Kömi, C. Castiglioni, G. Dotelli
"*Physico-Mechanical Properties of Metal Matrix Self-Lubricating Composites Reinforced with Traditional and Nanometric Particles*" Lubricants, **2022**, 10, 35. DOI: 10.3390/lubricants10030035

[5] M. Freschi, M. Di Virgilio, O. Haiko, M. Mariani, L. Andena, N. Lecis, J. Kömi, G. Dotelli
"*Investigation of second phase concentration effects on tribological and electrical properties of Cu–WS_2 composites*" Tribology International, **2022**, 166 (107357). DOI: 10.1016/j.triboint.2021.107357

[6] C. Moletti, M. Freschi, L. Primavesi, G. Dotelli
"*Comparative Life Cycle Assessment of aluminum electrolytic capacitors*" 3rd PCNS Passive Components Networking Symposium Proceedings, **2021**, 84-89. ISBN: 978-80-907447-1-4

[7] M. Freschi, M. Di Virgilio, G. Zanardi, M. Mariani, N. Lecis, G. Dotelli
"*Employment of Micro- and Nano- WS_2 Structures to enhance the tribological properties of copper matrix composites*" Lubricants, **2021**, 9(5), 53. DOI: 10.3390/lubricants9050053

[8] N. Hurel, M. Freschi, M. Pailha, M. Woloszyn
"Innovative use of fluorescein for the air path study within light-weight wall assemblies" Experimental Thermal and Fluid Science, 2018, 92. DOI: 10.1016/j.expthermflusci.2017.10.007

SUPERVISING AND TEACHING ASSISTANCE

Co-supervisor at Politecnico di Milano (Italy) for thesis projects in
Materials Engineering – 6 master's and 23 bachelor's students
Chemical Engineering – 1 master's student

Teaching assistant at Politecnico di Milano (Italy) for the courses

School of Architecture

Sustainable Materials for Architecture	[2021-2022]
Environmental Sustainability and LCA of Building Materials	[2020-2021]
Innovative Materials for Architecture	[2019-2021]
Science and Technology of Materials	[2018-2019]

School of Design

Product Performance in Fashion Design	[2018-2022]

INSTITUTIONAL ACTIVITIES

2024 – present **Berkeley Postdoc Association Board Member -** University of California Berkeley
2021 – 2022 **Research Fellows Representative of the Department of Chemistry, Materials and Chemical Engineering** - Politecnico di Milano, Italy
2018 – 2021 **PhD School Representative** - Politecnico di Milano, Italy

CONFERENCES

Tribology 2022 – Barcelona (Spain), 2022
Oral: *Investigation of experimental production parameters effects on the wear behavior of copper-tungsten disulfide composite*

3rd PCNS–Passive Components Networking Symposium – Milano (Italy), 2021
Organizing Committee Member

AIMAT 2021 – XVI Convegno Nazionale – Cagliari (Italy), 2021
Poster: *Effect of second phase concentration on tribological properties of metal matrix self-lubricating composite materials*

K-Trib 2020: 2nd Korea-Tribology International Symposium – Online, 2020
Oral: *Employment of micro- and nano-WS_2 structures to enhance the tribological properties of copper-matrix composites*

Materials in the next decade – Favignana (Italy), 2019
Oral: *How to extend the lifetime of electrical sliding contacts through the material design*

Young Materials and Surface Engineers – Roma (Italy), 2019
Poster: *Analysis of the dependence of tribological performances on the properties of the pristine materials*

FUNDED PROJECTS AND FELLOWSHIPS

University of California Berkeley - "Berkeley Climate Action Proof-of-Concept Program", 2025

Harvard Visiting Postdoc Fellowship - "Faculty of Art and Science Research and Academic Exchange", 2025

University of California Berkeley Postdoc Fellowship - "Enel Foundation Energy Accelerator", 2023-2025

European Institute of Innovation and Technology - "Raw Matters Ambassadors at Schools", 2016-2021

European Institute of Innovation and Technology - "ADMA2 – Practical Training Between Academia and Industry During Doctoral Studies", 2018-2021