

PERSONAL INFORMATION

Sara Bagherifard

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PROFESSIONAL EXPERIENCE

- Since 2023 **Associate Professor**
Department of Mechanical Engineering – Politecnico di Milano
- 2017-2023 **Assistant Professor**
Department of Mechanical Engineering – Politecnico di Milano.
- 2014-2017 **Research Fellow**
Department of Mechanical Engineering – Politecnico di Milano
- 2013-2014 **Post-Doc Researcher**
Harvard-MIT Division of Health Sciences and Technology (HST), Cambridge, MA, USA
Massachusetts Institute of Technology, Koch Institute for Integrative Cancer Research (MIT)
Biomaterials Innovation Research Center, Department of Medicine, Brigham and Women's Hospital,
Harvard Medical School (HMS)
- 2012-2013 **Post-Doc Associate**
Department of Engineering – University of Cambridge
- 2011-2012 **Post-Doc Associate**
Department of Mechanical Engineering – Politecnico di Milano

EDUCATION

- 2011 **PhD in Mechanical Engineering**
Politecnico di Milano
- 2005 **MSc in Mechanical Engineering**
Iran University of Science and Technology
- 2003 **BSc in Mechanical Engineering**
Iran University of Science and Technology

HONOURS & AWARDS

- Best Talk Award, 1st European Conference on Structural Integrity of Additively Manufactured Materials (ESIAM19), Trondheim, Norway, 2019.
- 2019- 3D Multi Metal Additive Cold Deposition Printer, Electrolux Corporate award from Switch2Product, Innovation Challenge program, organized by Politecnico di Milano, Deloitte Italia and PoliHub - Innovation District & Startup Accelerator (highlighted on Forbes.it, Corriere della Sera and Innovationpost.it)
- Young Scientist Lecture Gold Prize, 10th International Conference on Surfaces, Coatings and Nanostructured Materials (NANOSMAT), Manchester, UK, 2015.
- PIF International Post-doctoral Fellowship, Polytechnic University of Milan, 2014.
- Roberto Rocca Post-doctoral Fellowship, MIT-Italy Program, 2013-2014.
- International Schlumberger Fellowship: Faculty for The Future 2012, Schlumberger Foundation.
- International Schlumberger Fellowship: Faculty for The Future 2011, Schlumberger Foundation.
- Young researcher's award, 20th National IGF conference, Italian Group of Fracture (IGF), Turin, Italy, 2009.
- Best presentation, 14th International Seminar of Ph.D. Students (SEMDOC), Žilina, Slovak Republic, 2009.
- Full PhD scholarship, Polytechnic University of Milan, 2008-2011.

SKILLS

- Solid state Additive Manufacturing

- Design and characterization of mechanical surface treatments
- Mechanical and microstructural characterization of metallic materials
- Finite element simulations

RECENT SELECTED PROJECTS

2025-ongoing	CoRe- A Multi-fidelity Approach Enabling Automated High Precision in Cold Spray Repair, ERC-POC (2025-2026), €150K funding, Role: PI (individual project).
2023-ongoing	ArcHIDep: A revolutionary solid state deposition system to obtain heterogeneous materials, ERC-Consolidator, (2023-2028), €2M funding, Role: PI (individual project).
2022-ongoing	ThermoDust: A paradigm shift for the future's thermal management devices through radical innovation in new materials and additive manufacturing, Horizon-EIC-2021-PathfinderOpen-01-01, (2022-2026), €630K funding, Role: PI for Polimi unit and Technical Manager.
2021-ongoing	ATLAS- Advanced Design of High Entropy Alloys Based Materials for Space Propulsion, H2020- JTF-2018/20-33, (WP leader)
2019-ongoing	COSMEC- Cold Spray of Metal-to-Composite, Research Projects of National Interest (PRIN) for Young Researchers funded by the Italian Ministry of Scientific and Technological Research and Education (MIUR), (Researcher)
2019-2020	FREUD SpA-Bosch: Comparative analysis of residual stresses induced by circumferential rolling and multi-spot shot peening on steel saws and cutters, Contract number 049/19 PC, (Co-PI)
2019-2020	Aperam Stainless France: Determination of the surface roughness induced by shot peening by means of finite element simulations, Contract number 031/18CR, (Co-PI)
2018-2019	Rolls-Royce Deutschland Ltd. & Co.KG: Shot Peening modelling of aerospace gears, Contract number 042/18PC, (Co-PI)
2018	DFG grant (BO 4961/2-1) – Deutsche Forschungsgemeinschaft, (Co-PI)
2016	CERIC-ERIC- Surface nanocrystallization of Mg alloy for improved spinal fusion, (PI)
2013-2016	CORSAIR- Cold Spray Radical Solutions for Aeronautic Improved Repairs, (Researcher)

RECENT SELECTED PAPERS

1. H. Lee, A. Ardeshiri Lordejani, L. van Goor, A. Jurov, A. Koutsoukis, S. Ruan, N. M. Santhosh, F. Zarei, C. Barreneche, U. Cvelbar, S. Dosta, B.J. Geurts, M. Guagliano, D. Jafari, V. Nicolosi, S. Yin, J. Zavašnik, S. **Bagherifard**, Rocco Lupoi, W.W. Wits, Review on properties, physics, and fabrication of two-dimensional material-based metal-matrix composites (2DMMCs) for heat transfer systems, Renewable and Sustainable Energy Reviews, 217, 115700 (2025).
2. R. Ghanavati, H. Naffakh-Moosavy, M. Moradi, F. Mazzucato, A. Valente, S. **Bagherifard**, A. Saboori, Design optimization for defect-free AISI 316 L/IN718 functionally graded materials produced by laser additive manufacturing, Materials Characterization, 220, 114697 (2025).
3. D. Vanerio, M. Guagliano, S. **Bagherifard**, Machine learning image-based analysis for bead geometry prediction in fused granulate fabrication for large format additive manufacturing, npj Advanced Manufacturing, 2 (2025).
4. R. Falco, S. **Bagherifard**, Cold Spray Additive Manufacturing: A Review of Shape Control Challenges and Solutions, Journal of Thermal Spray Technology, 1-19(2025).
5. R. Falco, M. Jalayer, S. **Bagherifard**, Enhanced geometrical control in cold spray additive manufacturing through deep neural network predictive models, Virtual and Physical Prototyping, e2472388 (2025).
6. R. A. Wicaksono, A. Ardeshiri Lordejani, S. **Bagherifard**, Current Trends and Future Perspective for Cold Spray Metal-Ceramic Composites, Advanced Engineering Materials, 2401657 (2025).
7. P. Wu, A. Kardani, M. Liu, Z. Lin, S. **Bagherifard**, Exploring the bonding mechanism in cold spray deposition of engineered graphene nanoplates-Ni nanocomposite powder, Composites Part A: Applied Science and Manufacturing, 108741 (2025).
8. F. Zarei, A. Ardeshiri Lordejani, S. Ruan, S. Yin, M. Guagliano, R. Lupoi, S. **Bagherifard**, Evaluating the Application of Cold Spray Technology for the Deposition of Copper–Graphene Composite Coatings, Coatings 15 (2), 153 (2025).
9. S.A.A. Alem, M.H. Sabzvand, P. Govahi, P. Poormehrabi, M. Hasanzadeh Azar, S. Salehi Siouki, R. Rashidi, S. Angizi, S. **Bagherifard**, Advancing the next generation of high-performance metal matrix composites through metal particle reinforcement, Advanced Composites and Hybrid Materials, 8-3, (2025).
10. R. Ghanavati, H. Naffakh-Moosavy, M. Moradi, F. Mazzucato, A. Valente, S. **Bagherifard**, A. Saboori, Design optimization for defect-free AISI 316 L/IN718 functionally graded materials produced by laser additive manufacturing, Materials Characterization, 220, 114697 (2025).

11. M. Kumaravel, **S. Bagherifard**, M. Guagliano, Advancements in Deposition of High Entropy Alloys Using Cold Spray Technology, *Journal of Thermal Spray Technology*, (2024).
12. J. Kondas, M. Guagliano, **S. Bagherifard**, R. Singh, J. Cizek, P. Konopik, R. Prochazka, M. Kachlik, Cold spray additive manufacturing of Ti6Al4V: deposition optimization, *Journal of Thermal Spray Technology*, 1-14 (2024).
13. E. Maleki, **S. Bagherifard**, O. Unal, M. Guagliano, Hybrid Intelligence approach to study post-processing impact on the mechanical performance of notched additively manufactured AISi10Mg, *Materials & Design* (2024).
14. E. Maleki, O. Unal, M. Doubrava, L. Pantelejev, **S. Bagherifard**, M. Guagliano, Application of impact-based and laser-based surface severe plastic deformation methods on additively manufactured 316L: Microstructure, tensile and fatigue behaviors, *Materials Science and Engineering: A* 916, 147360 (2024).
15. M. Ebrahimi, A. Kermanpur, M. Kharaziha, **S. Bagherifard**, Engineering of multilayered coating on additively manufactured Ti-6Al-4V porous implants to promote tribological and fatigue performances, *Surface and Coatings Technology* 494, 131400 (2024).
16. G. Di Frisco, R. Yousefi Nooraie, M. Guagliano, **S. Bagherifard**, Structural design and characterization of hybrid hierarchical lattice structures based on sheet-network Triply periodic Minimal surface topology, *Materials & Design* 246, 113336 (2024).
17. A. Heydari Astaraee, K. Tulasagiri Raddi, **S. Bagherifard**, C. Colombo, Exploiting small punch test for mechanical characterization of cold sprayed deposits, *Theoretical and Applied Fracture Mechanics* 133, 104561 (2024).
18. M. Kumaravel, Y. Eynolghozzat, J. Gussone, F. Yan, A. Ardeshiri Lordejani, J. Haubrich, G. Requena, I. Berglund, M. Guagliano, **S. Bagherifard**, Elucidating the challenges in the development and deployment of refractory complex concentrated alloys for additive manufacturing, *Additive Manufacturing* 89, 104286 (2024).
19. D. Vanerio, M. Guagliano, S. Bagherifard, Emerging trends in large format additive manufacturing processes and hybrid techniques, *progress in Additive Manufacturing*, 10, 1945–1972, (2025).
20. J. Kondas, M. Guagliano, **S. Bagherifard**, R. Singh, J. Cizek, F. Lukac, P. Konopik, S. Rzepa, Importance of feedstock powder selection for mechanical properties improvement of cold spray additively manufactured Ti6Al4V deposits, *Additive Manufacturing Letters* 9, 100199 (2024).
21. A. Ardeshiri Lordejani, L. Romanenghi, A. Pollastri, M. Guagliano, **S. Bagherifard**, Deposit shape control for local repair and welding by cold spray, *Journal of Manufacturing Processes* 112, 45-59 (2024).
22. N. Razavi, **S. Bagherifard**, S. Hafnor, S. Spiller, M. Guagliano, F. Berto, Fatigue analysis of as-built and heat-treated severely notched AISi10Mg alloy specimens made by laser powder bed fusion technology, *International Journal of Fatigue* 179, 108041 (2024).
23. E. Maleki, **S. Bagherifard**, N. Ahmad, S. Shao, O. Unal, M. Guagliano, N. Shamsaei, Effects of chemical and thermal post-treatments on surface, microstructure, stress concentration, and fatigue performance in additively manufactured AISi10Mg U-notched parts, *Additive Manufacturing Letters* 7, 10175 (2024).