



POLITECNICO
MILANO 1863

Supervisor Expression of Interest MSCA - Marie Skłodowska Curie Action - (PF) Postdoctoral Fellowship 2024

Supervisor name: Serena Graziosi

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Link “Pagina docente”: [Serena Graziosi - POLIMI](#), [Serena Graziosi - SCHOLAR](#), [Serena Graziosi - LinkedIn](#)

Department Name: Department of Mechanical Engineering

Research topic: Design for Additive Manufacturing

MSCA-PF Research Area Panels:

- ECO_Economic Sciences
- ENG_Information Science and Engineering
- ENV_Environmental and Geosciences
- LIF_Life Sciences
- MAT_Mathematics
- PHY_Physics
- SOC_Social Sciences and Humanities
- CHE_Chemistry

Brief description of the Department and Research Group (including URL if applicable):

Prof. Graziosi is an Associate Professor at the Department of Mechanical Engineering of Politecnico di Milano. She is part of the Research Line “Methods and Tools for Product Design” of the Department, which includes 4 full professors, 8 associate professors, 4 assistant professors, 2 temporary researchers (research fellow and post-doc) and more than 15 Ph.D. students. Prof. Graziosi’s research activities are related to the Design for Additive Manufacturing (DfAM) field. Her main research interests include but are not limited to, metamaterial/architected material design, multi-material printing, 3D-printed phantom organs, and computational design strategies to unlock DfAM possibilities.



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TITLE of the project: Unlocking Complexity in Design for Additive Manufacturing

Brief project description:

This project proposal focuses on engineering design methods and tools in combination with the multifaceted and multidisciplinary design possibilities provided by Additive Manufacturing (AM). AM's transformative potential has revolutionised conventional design and manufacturing paradigms. This transformation transcends traditional boundaries by enabling the creation of intricate, porous, multiscale, and nature-inspired multifunctional shapes, inconceivable with traditional approaches, establishing significant paradigm shifts.

In such a context, this project aims to develop, test, and validate new design methods, tools, and approaches that can effectively support designers in exploring this expanded design space facilitated by AM. The project focuses on intelligent and generative design methods and tools, incorporating data- and algorithm-driven strategies, allowing mastering and leveraging this increased design complexity to develop groundbreaking solutions applicable across diverse fields. These fields include but are not limited to biomedical, aerospace, and fashion. The post-doctoral researcher will explore and further extend promising cutting-edge design approaches and tools, adopting a multidisciplinary perspective. This will involve identifying and analysing relevant case studies from diverse fields, providing a comprehensive understanding of the applicability of these innovative design strategies.

Upon the successful execution of the project, advanced design methods and tools that can tackle the challenges posed by this increased complexity in design will be the outcomes. They will not only contribute to academic knowledge but also hold the potential to revolutionise practical applications in various industries. This project represents an opportunity to be at the forefront of advanced design approaches, in combination with digital models, materials, and fabrication processes, to shape the development of the next generation of products. The impact of these research findings will extend beyond academics, offering valuable insights to industries seeking innovative and efficient design solutions.

This project calls for post-doctoral researchers passionate about pushing the boundaries of creativity and engineering design in the dynamic and multidisciplinary field of Additive Manufacturing.