

PERSONAL INFORMATION Bianca Maria Colosimo



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WORK EXPERIENCE

Since 2014	Full Professor Department of Mechanical Engineering, Politecnico di Milano (Italy) ING-IND/16 Manufacturing and Production Systems
2003-2014	Associate Professor Department of Mechanical Engineering, Politecnico di Milano (Italy) ING-IND/16 Manufacturing and Production Systems (with tenure since 2006)
1999-2003	Assistant Professor Department of Mechanical Engineering, Politecnico di Milano (Italy) ING-IND/16 Manufacturing and Production Systems

EDUCATION AND TRAINING

2001	Visiting Scholar Department of Industrial and Manufacturing Engineering of the Pennsylvania State University (Penn State) – USA
Jan 2001	Ph.D. in Manufacturing and Production Systems Ph.D. thesis title: "Bayesian approaches for Statistical Quality Control", Politecnico di Milano.
July 1996	M.S. in Management and Industrial Engineering (cum Laude) Thesis title: "Proposal of an approach for tooling system configuration in Flexible Manufacturing Systems", Politecnico di Milano- mark: 100/100 e Lode Awarded as the best M.S. thesis in Manufacturing and Production systems by UCIMU (Italian Industrial Association of Manufacturing Systems and Machine tools).

WORK ACTIVITIES

<u>Current active projects and grants</u>	<ul style="list-style-type: none">▪ 2023-2026 – MICS – “Made in Italy - Circular and Sustainable” – PNRR PE Role: PI for Polimi▪ 2022-2026 BIOPROS: BIO-Intelligent PROduction Sensor To Measure Viral Activity - HORIZON-CL4-2021-DIGITAL-EMERGING-01- Role: PI for POLIMI unit. Budget Polimi - 1.178.197 Euro –A project where Polimi is developing new solutions for Intellignent high resolution bioprinting to develop a novel platform to measure viral activity.
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	<ul style="list-style-type: none"> ▪ 2022 CARIPLO- project Elucidating the molecular mechanisms underlying Pitt-Hopkins syndrome through the generation of 3D printed vascularized cortical organoids - Politecnico di Milano and HUMANITAS - The project deals with bioprinting of vascularized tissues starting from organoids to study cortical activities with reference to a specific syndrome - budget Polimi: 125000 KE ▪ 2023-2026 MISTI funding “I_AMSPACE – In-situ Additive Manufacturing for SPACE” - Massachusetts Institute of Technology & Politecnico di Milano – prof. Cem Tasan and Bianca M Colosimo ▪ 2023-2026 MISTI funding “AMBItiOuS – Additive Manufacturing for BIOlogy and life Sciences” Massachusetts Institute of Technology & Politecnico di Milano- Prof. John Hart and Bianca Maria Colosimo - ▪ 2022 ESA project – Titanium for AM - Development of new metallic alloys for additive manufacturing - ESA/ESTEC ref n° AO/1-10435/20/NL/AR - CRM (B), SABCA (B), ANY-SHAPE (B), UCL (B), POLIMI (IT), CSM (IT) ▪ 2018- 2033 - Accordo ASI-POLIMI n. 2018-5-HH.0, Leader of the WP4 activities on Additive manufacturing for Space applications ▪ 2020- Project ASSARTA - Bando Agenzia Spaziale Italiana (ASI) - Tecnologie Abilitanti Trasversali – Role: PI for POLIMI ▪ 2020 – 2022 – Project IAMSPACE: Italy for Additive Manufacturing in Space – ESA - AO10042 (BUILDING BLOCKS): AM PROCESS MONITORING AND STRUCTURAL INTEGRITY. ROLE: Prime contractor ▪ 2021 IAREPAM (subcontracted by LIMA corporate) – in situ-monitoring in additive manufacturing of implants: Role: PI ▪ 2021 - EIT Manufacturing - AMAI - “Additive Manufacturing and Artificial Intelligence” With Chalmers University of Technology; Avio Aero; Beamit Spa; CNR-STIIMA. 12 months – ROLE: PI ▪ 2021- EIT Manufacturing - AM HLP “Additive Manufacturing for Hospitals - Learning Program” Project coordinator: Fraunhofer - 12 months ROLE: PI ▪ 2019-2022 National project - <i>SIADD</i>- Soluzioni Innovative per la qualità e la sostenibilità dei processi di ADDitive manufacturing (Novel solutions for quality and sustainability of AM processes)- MIUR PON MIUR “Ricerca e Innovazione” 2014 – 2020. Role: PI ▪ 2016-2022 <i>A.MA.THO.</i> - <i>A.dditive MA.nufacturing T.iltrotor HO.using</i> - https://www.amatho.org ▪ 2020- CleanSky 2 - http://cordis.europa.eu/project/rcn/206580_en.html - Total budget POLIMI 1.250.000 Euro – Role: Leader of WP3 ▪ 2018-2023 Erasmus+ (EAC/A05/2017) <i>SAM- Sector Skills Strategy in Additive Manufacturing</i> (48 months) – Role: leader of activities on AM ▪ 2020-2022 FISVAL - Filiera Integrata e Sostenibile per la produzione di VALvole smart ▪ 2020-2022 National project - <i>CONTACT</i>- CustOm-made aNTibacterial/bioActive/bioCoated prosTheses - MIUR PON MIUR “Ricerca e Innovazione” 2014 – 2020 Role: member of the Polimi group ▪ 2019-2022 MIT Seeds funds – <i>UAM Unmanned Addictive Manufacturing</i> – joint research project POLIMI-Massachusetts Institute of Technology (MIT) - principal investigators: BM. Colosimo (POLIMI), John Hart and Cem Tasam (MIT).
Awards	<ul style="list-style-type: none"> ▪ 2023 Award from the Royal Swedish Academy of Engineering Sciences - The Jacob Wallenbergs Foundation Award for Research and Development in the field of Material Science – for the contribution on green additive manufacturing. ▪ 2023 Box Medal Award from ENBIS (European Network in Business and Industrial Statistics) - for Outstanding Contributions to Industrial Statistics ▪ 2023 ASQ Brumbaugh Award (American Society for Quality) for the paper "Complex Geometries in Additive Manufacturing: A New Solution For Lattice Structure Modeling And Monitoring" published on the Journal of Quality Technology 2022 ▪ 2023 - awarded as International Process Engineer Powder Bed- Fusion Laser Beam (I MAM PE PBF-LB) by European Welding Foundation (EWF) ▪ From 2017- Selected among the top 100 Italian experts in STEM - https://100esperte.it ▪ 2008, Top downloaded paper of the year - B.M. Colosimo, M. Pacella and Q. Semeraro, 2008, <i>Statistical Process Control for Geometric Specifications: on the Monitoring of Roundness Profiles</i>, Journal of Quality Technology, vol. 40, No. 1, January 2008, pp. 1-18. ▪ 2003, Best Young Researcher Award in Manufacturing and Production Systems, AITeM (Italian Association of Manufacturing) for the paper “<i>Service Quality Control using Bayesian Networks</i>”. ▪ 1996, Award of the UCIMU (Italian Association of Manufacturing Systems and Machine Tools producers) for the best M.S. thesis in Manufacturing and Production systems. ▪ 2010-2020 – Supervisor of three thesis awarded with the Best Thesis Award by UCIMU and one thesis award from AITEM

Invited Keynotes

- March 2023 - Invited keynote speaker at the 4th International Conference on Electron Beam Additive Manufacturing **EBAM 2023** on 22-24 March 2023 in Erlangen, Germany, "Zero-waste Additive Manufacturing via big data mining, modeling and monitoring: opportunities and challenges"
- March 2023 - Invited keynote speaker at the 3rd **ESA Workshop on Advanced Manufacturing** - 14 - 15 March 2023 | ESA-ESTEC Noordwijk, The Netherlands - "Towards zero-defect in Additive Manufacturing via in-situ monitoring and big data mining: current state and future perspectives"
- October 2022 - Invited keynote speaker at the 13th **German Conference of Mechanical Engineering (VDMA)**- "The age of science tech - the driving role of knowledge, information and learning for company strategy, economy and society. Berlin October 11-12 - 2022
- September 2022 - Invited keynote speaker "Statistical methods and models for complex data - 800 years of research to understand a complex world - **Università degli Studi di Padova**- "Big data mining for industry 4.0: the new pathway for the digital and green 'twin' transition" - September 21-23 2022.
- August 2022 – invited lecture **Massachusetts Institute of Technology** - "Big data mining, modeling and monitoring for zero-waste additive manufacturing"
- June 2022 - Invited keynote speaker at the 22nd Annual conference of Enbis - **European Network of Business and Industrial Statistics** - "Big data mining, modeling and monitoring for Manufacturing 4.0: opportunities and challenges"
- March 2022 – Invited Keynote speaker at **Peking University** - Data mining in Additive manufacturing: opportunities and challenges of digital manufacturing for zero-waste production.
- March 2022 – Invited Keynote speaker at the first International conference **ESA-NASA 1st International Conference on Advanced Manufacturing for Air, Space and Land Transportation** – 7-10 March 2022
- Oct 2021- Invited Lecturer CISM in the Advanced Course **Metal Additive Manufacturing: Fundamentals, Modeling, Materials, and Implementation** coordinated by A. J. Hart (Massachusetts Institute of Technology) and C. Meier (Technical university Munich) <https://www.cism.it/en/activities/courses/C2119/>
- Oct 2021 – Invited keynote speaker – **Florida University** – ISE department (at UF) seminar series- Big data mining for Industry 4.0: opportunities and challenges in additive manufacturing - Oct 15, 2021
- June 2021 – Invited keynote speaker **ENBIS workshop** - "Interpretability for Industry 4.0", 12-13 July, Naples
- April 2021 – Invited keynote speaker **EUSPEN** 21st International Conference & Exhibition – Complex Data as The "New Normal" in Precision Engineering: Opportunities and Challenges - <https://www.euspen.eu/events/21st-ice-virtual/?subid=21st-ice-virtual>- 7th – 10th June 2021
- Feb 2021 – Invited Keynote speaker – **Rutgers University** – Department of Industrial and Systems Engineering Big Data Mining, Modeling and Monitoring for Industry 4.0: Opportunities and Challenges in Additive Manufacturing – Feb 9, 2021
- Nov 2020 – Invited Keynote speaker - Annual Meeting of the Institute of Quality and Reliability, **Tsinghua University**.
- Feb 2019, invited seminar at the **Max-Planck-Institut** – Dusseldorf – "In-situ sensing and monitoring of metal additive manufacturing processes", Feb 11, 2019.
- 2018: Panel leader of the **EU-US** workshop "Integrated Mechanistic Data-Driven Modeling for Additive Manufacturing", organized by the The National Academies of Sciences, Engineering, and Medicine (www.nas.edu), Nürnberg, Germany, October 24-26, 2018.
- July 2018 and July 2017 invited speaker at the **Massachusetts Institute of Technology (MIT)** - professional course "From 3D Printing to the Factory Floor" – title of the lecture "In-situ monitoring of metal AM"
- 2017 plenary talk at the **Stu Hunter Research Conference** "Modeling and Monitoring Methods for Complex Data" (90-minute presentation followed by 90-minute discussions), , March 5-8, 2017, Copenhagen, Denmark.
- 2016 invited research seminar at **Georgia Tech** (Atlanta - USA). Zero-defect advanced manufacturing via statistical data modeling and monitoring. 17/11/2016
- 2016 invited research seminar at **Massachusetts Institute of Technology** (Boston - USA) Department of Mechanical Engineering - Zero-defect advanced manufacturing via statistical data modeling and monitoring 4/08/2016.
- 2015 invited research seminar – **University of South California** (Los Angeles - USA) USC Viterbi School of Engineering – Daniel J. Epstein Department of Industrial and Systems Engineering - Title: Statistical Quality Monitoring of Advanced Manufacturing Processes: Open Challenges and Possible Solutions. 3/11/2015.
- 2013 Invited presentation to the session entitled: "A Decade of Profile Monitoring: What's Next?" of the **Joint Statistical Meeting** 2013, Montreal (Canada) August 3-8 2013.
- From 2011 to 2018 several invited presentations at **INFORMS** (twice in the Session of Journal of Quality Technology)

	<ul style="list-style-type: none"> ▪ 2013 Invited discussant at the First Stu Hunter Conference 12-15 March 2013 - NH Marquette Netherlands (discussant of the paper <i>Latent structures based-multivariate Statistical process control: A paradigm shift</i> presented by A. Ferrer). ▪ 2008: invited research seminar - Universidad Carlos III (Madrid) to PhD students in Statistics – Title: Statistical Monitoring of Manufactured Profiles and Surfaces. ▪ Invited 2007 - IXth International Workshop on Intelligent Statistical Quality Control – three-year meeting of invited attendants. Beijing, September 12-14, 2007 ▪
Scientific and Editorial activities	<ul style="list-style-type: none"> ▪ Since 2021: Senior Editor of the INFORMS Journal of Data Science ▪ Since 2021: Department Editor of IISE Transactions ▪ Since 2021: Associate Editor: Progress in Additive manufacturing ▪ 2018-2021: Editor-in-Chief - Journal of Quality Technology – Taylor&Francis ▪ Since 2006, Member of the Editorial Board of Journal of Quality Technology ▪ Since 2020: Member of the Editorial Board of Additive manufacturing Letters ▪ Since 2012 member of the Editorial Board of the PolIMI SpringerBriefs (http://www.springer.com/series/11159) ▪ Since 2021: Member of the Publications Management Council with the American Society for Quality ▪ Since 2021: member of the Technometrics Management Committee ▪ 2017-2020 member of the QSR Advisory Board at INFORMS (http://connect.informs.org/qsr/officers/leadership) ▪ 2017-2021 - Council member of ENBIS (European Network of Business and Industrial Statistics) - four elected people - http://www.enbis.org/about/organisation/index ▪ 2020: Co-Editor of the Special Issue on Machine Learning in Dimensional Metrology of Precision Engineering (with Richard Leach and Samanta Piano - University of Nottingham; Benjamin Haefner - Karlsruhe Institute of Technology; Robert Schmitt - RWTH Aachen and Fraunhofer IPT) ▪ 2016: Co-Editor of the Special Issue on Additive Manufacturing of IISE Transactions (with Q. Huang - University of Southern California; Z. Kong - Virginia Tech; X. Qian - University of Wisconsin-Madison) ▪ 2016: Co-Editor of the Special Issue on Quality Engineering in Advanced Manufacturing of the Journal of Quality Technology (with T. Dasgupta - Rutgers University; and Q. Huang - University of South California). ▪ 2016: Co-Editor of the Special issue on 2016 ENBIS conference (European Network of Business and Industrial Statistics) of <i>Quality and Reliability Engineering International</i> (with B. Bergquist). <p>Ad-hoc referee for many scientific journals in industrial statistics, industrial engineering and manufacturing</p> <p>□</p>
Commitments in national and international boards	<ul style="list-style-type: none"> ▪ Since 2020 – Member of the Board of Directors EIT manufacturing – CLC south ▪ Since 2020– CDA Member of MADE, the competence center funded by the Italian Ministry of Industry, constituted by 40 companies and 4 universities to foster innovation and research in Industry 4.0. ▪ 2018- Member of the Implementation Support Group of the <i>Manufuture</i>-EU (http://www.manufuture.org)– the platform of the European Commission aimed at designing the strategic agenda of Europe in Manufacturing ▪ 2016: Member of the Steering Committee of the EU Vanguard initiative on 3D printing- (http://www.s3vanguardinitiative.eu/cooperations/high-performance-production-through-3d-printing) ▪ Since 2020 – Member of the Steering Committee of the World Manufacturing Forum (WMF) - https://www.worldmanufacturingforum.org/ ▪ 2016 – 2018 Member of the Italian Board on Smart Manufacturing (Fabbrica Intelligente) – the national cluster on Industry 4.0 manufacturing
Other commitments in University	<ul style="list-style-type: none"> ▪ 2017-2022, member of the Politecnico di Milano Rector's Board POLIMI 2040, a team of 7 Faculty Professors selected by the Rector to design long-term strategies for the university. ▪ 2017-2022, Deputy Head of the Department of Mechanical Engineering. ▪ 2013-2022, Member of the Board of the Department of Mechanical Engineering of Politecnico di Milano. The Board is a team of 8 Faculty members and two administrative people in charge of managing the Department. ▪ 2012-2017, Head of the Ph.D. Programme in Mechanical Engineering of Politecnico di Milano. The main role is coordinating the PhD Faculty and managing research activities of about 90 PhD candidates attending the PhD in Mechanical Engineering. ▪ 2004-2011, Head of the Ph.D. Programme in Manufacturing and Production Systems, Politecnico di Milano (about 15 students overall).

Tutoring	<ul style="list-style-type: none"> ▪ Currently acting as supervisor of 7 PhD candidates ▪ She has been acting as supervisor of more than 100 MSc students in Industrial Engineering
Patents	<ul style="list-style-type: none"> ▪ Colosimo, B. M., Previtali, B., Grasso, M. L. G., Demir, A. G., & Grossi, E. G. (2022). A device for removing flaws in situ during the additive printing of metal parts -U.S. Patent Application No. 17/295,540 - National patent application n. 102018000010598, 27/11/2018. with International extension. ▪ Colosimo, B. M., Grasso, M. L. G., & Fogliazza, G. (2022). Monitoring apparatus for the identification of anomalies and degradation paths in a machine tool U.S. Patent Application No. 17/440,012. - National patent application n. 102019000004617, 27/03/2019 with International extension.

ADDITIONAL INFORMATION

Publications Scientific documents (scopus): 144
H index: 33 (Scopus)

10 selected papers:

1. Colosimo, B. M., Garghetti, F., Pagani, L., & Grasso, M. (2022). A Novel Method for In-process Inspection of Lattice Structures via In-situ Layerwise Imaging. *Manufacturing Letters*. Volume 32, April 2022, pp 67-72
2. Vasileska, E., Demir, A. G., Colosimo, B. M., & Previtali, B. (2022). A novel paradigm for feedback control in LPBF: layer-wise correction for overhang structures. *Advances in Manufacturing*, 1-19.
3. Bugatti, M., Semeraro, Q., & Colosimo, B. M. (2022). Effect of overhanging surfaces on the evolution of substrate topography and internal defects formation in laser powder bed fusion. *Journal of Manufacturing Processes*, 77, 588-606.
4. Demir, A. G., Kim, J., Caltanissetta, F., Hart, A. J., Tasan, C. C., Previtali, B., & Colosimo, B. M. (2022). Enabling multi-material gradient structure in laser powder bed fusion. *Journal of Materials Processing Technology*, 301, 117439.
5. Bugatti, M., & Colosimo, B. M. (2021). Towards real-time in-situ monitoring of hot-spot defects in L-PBF: a new classification-based method for fast video-imaging data analysis. *Journal of Intelligent Manufacturing*, 33(1), 293-309.
6. Colosimo, B. M., del Castillo, E., Jones-Farmer, L. A., & Paynabar, K. (2021). Artificial intelligence and statistics for quality technology: an introduction to the special issue. *Journal of Quality Technology*, 53(5), 443-453.
7. Pfeiffer S., Florio K.; Puccio D. Grasso M., Colosimo B.M., Aneziris C. G., Wegener K., Graul T. (2021) Laser additive manufacturing of high performance oxide ceramics: a state-of-the-art review, submitted to *Journal of the European Ceramic Society*
8. Grasso M., Remani, Dickins, Leach, Colosimo, (2021) In-situ measurement and monitoring methods for metal powder bed fusion – an updated review, *Measurement Science and Technology* 32-11 pp.1-46 (2021)
9. Colosimo B.M., Grasso M., Garghetti F., Rossi, (2021) Complex geometries in additive manufacturing: A new solution for lattice structure modeling and monitoring, *Journal of Quality Technology*, 1-23.
10. Yan, H., Grasso, M., Paynabar, K., Colosimo, B.M., (2021), Real-Time Detection of Clustered Events in Video-Imaging Data with Applications to Additive Manufacturing, *IISE Transactions* - 021/1/29, p. 1-22