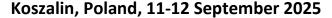


15th IFAC Workshop

Intelligent Manufacturing Systems (IMS 2025)





https://ims2025.pl/

This proposal is endorsed by TC 5.1

Invited Session Proposal:

Intelligent Additive Manufacturing

Proposed by: Marcos de Sales Guerra Tsuzuki (Brazil), Ahmad Barari (Canada), Yaoyao Fiona Zhao (Canada). Jill Urbanic (Canada), Franz-Josef Villmer (Germany), Jay Jumyung (South Korea)

Keywords: Additive Manufacturing; Artificial Intelligent; Machine Learning; Digitalization; Smart manufacturing; Cyber-Physical Systems

Code: s12c3

ABSTRACT

Additive Manufacturing (AM) is highly susceptible for digitalization in its various stages including Design for Additive Manufacturing, Additive Manufacturing Pre-Processing, Additive Manufacturing Process, and Additive Manufacturing Post-Processing. The created digitalized environment in AM successively results in great capabilities to add intelligence.

This session provides an excellent forum for scientists, researchers, engineers and industrial practitioners to meet and share experiences, theoretical knowledge or application examples based on the latest trends in developing intelligent solutions, methodologies, and approaches to various decision making tasks in additive manufacturing stages, as well as future directions and trends aimed to use artificial intelligence

and machine learning to deal with the growing demand for new materials, geometric representation, part design, in-process monitoring, decision-making, etc.

Authors are invited to submit full papers describing original research work associated with different additive manufacturing problems in areas including, but not limited to:

Artificial Intelligence in design for AM

Artificial Intelligence in AM Pre-Processing

Artificial Intelligence in AM Process Control

Artificial Intelligence in AM Post-Processing and downstream applications

Intelligent Computer Aided Design (CAD) for AM

Computational Geometry for AM

Design and modelling of Lattice Structures

Intelligent Topology Optimization for AM

Verification & Validation of Computational Models for AM

Tolerance analysis and representation for AM products

Dimensional and geometric measurement of AM products

Surface integrity of additive manufacturing parts

Development of new materials for AM

Intelligent design for additive manufacturing

3D packing of parts in the printing workspace

Finite element analysis applied to additive manufacturing

Evolutionary computation in optimizing additive manufacturing processes

From 3D scan to additive manufacturing

Intelligent decision-making in additive manufacturing processes

Transition of AM from prototyping to industrial production

Timeline:

• **December 16, 2024:** Deadline for paper submission

March 03, 2025: Notification of acceptance/rejection

• April 07, 2025: Final paper submission

• September 11-12, 2025: 15th IFAC IMS Workshop (IMS 2025), Koszalin, Poland

Manuscript Preparation

For Manuscript Preparation please look at https://www.ifac.papercept.net/conferences/support/support.php
For Manuscript submission please look at https://ifac.papercept.net/conferences/scripts/start.pl
Upon submission, make sure to use the Invited session identification code: to be announced latter

For any further information, please contact the Special Session Technical Committee

Guest Editors	
Prof. Marcos de Sales Guerra Tsuzuki mtsuzuki@usp.br Department of Mechatronics and Mechanical Systems Engineering, University of São Paulo, São Paulo, Brazil	Prof. Ahmad Barari Ahmad.Barari@ontariotechu.ca Department of Mechanical and Manufacturing Engineering, University of Ontario Institute of Technology, Oshawa, Canada
Prof. Yaoyao Fiona Zhao yaoyao.zhao@mcgill.ca Department of Mechanical Engineering, McGill University, Montreal, Canada	Prof. Jill Urbanic jurbanic@uwindsor.ca Department of Mechanical, Automotive and Materials Engineering, University of Windsor, Windsor, Canada
Prof. Franz-Josef Villmer franz-josef.villmer@th-owl.de Department of Mechanical Engineering and Mechatronics, OWL University of Applied Sciences and Arts, Lemgo, Germany	Prof. Jay Jumyung Um jayum@khu.ac.kr Department of Industrial & Management System Engineering, Kyung Hee University, Yongin-si, Gyeonggi-do, South Korea