FEMS EUROMAT 23

03 - 07 Sep 2023 (Frankfurt am Main)
euromat2023.com

FEMS EUROMAT is the most important international congress in materials science and technology in Europe. It continues a successful congress series promoting the transfer of knowledge and the exchange of experience between academia and industry. **Submission deadline: 31 January 2023**

Area C: Processing
C01: Metal Additive Manufacturing

Additive manufacturing (AM) is widely acknowledged to be revolutionary. Metal AM techniques have attracted significant attention over the last decade, both in industry and academia. The dominant metal AM techniques are Powder Bed Fusion – Laser Beam (PBF-LB), Powder Bed Fusion -Electron Beam (PBF-EB), Directed Energy Deposition (DED), and Binder Jetting (BJT), to name some, Metal AM offers new opportunities to manufacture parts in unique shapes with outstanding mechanical properties. The industrial application of these technologies is boosting during the last decade with a demonstrated huge potential in mostly all industrial sectors (aerospace, medical/dental, automotive, etc.). Due to the high cooling rate, the high temperature gradient, the inherent process complexity, and numerous interlinked process parameters, the microstructure and hence the mechanical properties of the metal AM components differ substantially from the properties of the same component produced by conventional techniques. At the same time, exploitation of these advantages opens new dimensions in material synthesis with tailored properties. This symposium aims to tackle all aspects of metal additive manufacturing, from powder production, material development, latest advances in processing to final part qualification and characterization via process optimization. In particular, the following topics are addressed:

- Powder manufacturing process, characterization, and effect on the AM process robustness
- Development of AM processed materials with novel composition or microstructure
- Relationships between process parameters and final part properties (microstructure, physical and mechanical properties)
- Standardization and final part qualification strategies
- Development of advanced machine concepts (new printing principles, automation, multiple materials printing, large-scale printing, hybrid technologies, etc.)
- Surface integrity of AM parts
- Design rules for AM and topological/multi-physics optimization
- Modeling and simulation applied to process and design (multi-functionality)
- Post-treatment processes (surface engineering, heat treatment, machining, etc.)
- Machine learning in AM
- NDT, on-line process monitoring and control
- Life Cycle Assessment, sustainability aspects

Selected abstracts will be considered for publication at the **FEMS European Journal of Materials-EJM**. More information will be communicated to the authors soon.

Symposium Organizer

Prof. Dr. Eduard Hryha
Chalmers University of Technology

Dr. Eric Jägle
Universität der Bundeswehr München

Prof. Dr. Nikolaos Michailidis
Aristotle University of Thessaloniki

DGM