MSE 2024

24 - 26 Sep 2024 (Darmstadt)

dgm.de

Topic S: Structural Materials

S08: Process-Microstructure-Property Relationships in High-Performance Alloys produced by Additive Manufacturing

Additive manufacturing (AM) of metals has strongly gained scientific and industrial importance during the last decades due to the geometrical flexibility and increased reliability of parts, as well as reduced equipment costs. Although metal AM parts are already in use for many applications in various industries, the complex interactions between a number of influencing factors such as energy source, processing environment and feedstock that govern the microstructure evolution are not fully understood. Therefore, prediction of the final properties, which is extremely desired for wide-spread industrial applicability of AM parts, still cannot be readily accomplished.

This symposium will address recent advances in improving the understanding of material-process-microstructure-property relationships in additively manufactured high-performance alloys. In addition to experimental characterization, submission of studies focusing on simulation and/or data-driven approaches is highly encouraged. Topics of interest include but are not restricted to:

- process and microstructure design for metals and metallic alloys
- high performance alloys, such as Ti-, Ni-, Fe-, Al-based alloys, as well as new alloys for AM produced by main AM techniques (e.g. PBF, DED, BJ, etc.)
- metal-matrix multimatial AM
- correlation between feedstock, process and microstructure evolution
- sustainability aspects in metal AM
- correlation between microstructure and mechanical properties under static and cyclic loading conditions in different environments
- fracture, fatigue and failure analysis of AM parts

Symposium Organizer


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