



Contribution ID: 7

Type: **Oral Presentation**

Investigation of 3D Plasma Metal Deposition with Aluminium powder

Wednesday, 18 September 2024 11:30 (20 minutes)

This study explores the potential of 3D Plasma Metal Deposition (3DPMD), a directed energy deposition variant, for manufacturing components using aluminium powder. The work aims to understand the unique process-structure-properties relationships for 3DPMD with aluminium. The research involved conducting test series with single and multilayer deposits, giving insights into different aspects of the process. The experiments revealed the influence of key process parameters on deposition geometry, such as height, width, and penetration depth. Different substrate plate configurations, e.g. increased heat dissipation and pre-heating, revealed correlations with the dimensional properties and porosity of the structures. The multilayer structures exhibited mostly long columnar dendritic grains. Cross-section densities ranged from 96% to 97%.

Speaker Country

Germany

Primary author: Mr VIEWEGER, Daniel (Technical University of Munich)

Co-authors: Mr TONG, Yiyun (Technical University Munich); Prof. MAYR, Peter (Technical University Munich)

Presenter: Mr VIEWEGER, Daniel (Technical University of Munich)

Session Classification: Laser Melting, Electron Beam Melting & Direct Energy Deposition Processes

Track Classification: Laser Melting, Electron Beam Melting & Direct Energy Deposition Processes