

# MSE 2024

24 - 26 Sep 2024 (Darmstadt)

dgm.de

Topic S: Structural Materials

## S05: Wire-Arc-Additive-Manufacturing of multi-metal-composites

Wire-Arc-Additive-Manufacturing (WAAM) is an enabling technology in order to build up big parts for different applications. The material to be processed is a metal wire, which melts as an electrode in the arc. Even though there are investigations on processing and properties for different steels and metals, there is a lack of knowledge, when combining different materials during the building process creating a multi-metal-composite. The local heat input leads to formation of transition zones between different layers and beads. Understanding the influence of these interaction areas on the properties of macro structures is one milestone, in order to describe the global and local properties of the generated material on the one hand and to create relationship between heat input and resulting microstructure on the other hand.

Characterisation and relationship of the transition area on the overall part properties is a multi-scale challenge and important in order to describe the new generated material, as they provide an understanding of the processing conditions. Additive manufacturing. The current focus of Wire-Arc-Additive-Manufacturing is on the building process of one-material parts, whereas the combination of different steels or metals in one part would - for example - increase the material related interest towards new materials with multi-metal-composite characteristics and local properties. Contributions regarding these topics and related challenges towards modeling and numerical simulation are of great interest.

This symposium should wrap up the potential of the approach and point out challenges.

### Symposium Organizer



Prof. Dr. Jean Pierre Bergmann  
Technical University of Ilmenau



Prof. Dr. Volker Wesling  
Technische Universität Clausthal

