

Monolithic and Bimetallic M250 Structures Via WAAM

Amit Bandyopadhyay¹, Aruntapan Dash¹, Lile Squires¹, Jose D. Avila¹, Susmita Bose¹, Victor Champagne²

¹School of Mechanical and Materials Engineering, Washington State University, Pullman, WA 99164, USA.

²US Army Research Laboratory, Weapons and Materials Research Directorate, Aberdeen Proving Ground, MD, USA.

Maraging 250 monolithic structures were produced using Wire Arc Additive Manufacturing on a state-of-the-art Cold Metal Transfer (CMT) welding system integrated with a 4-axis CNC mill. The structures were actively cooled with a substrate chill plate during deposition, then analyzed with various techniques. Microstructure, XRD, hardness, tensile, compression, Charpy impact, and fractography were all pursued in the as-processed condition from multiple locations and orientations within the deposition structures, with heat-treated specimens providing additional data. Bimetallic combinations of M250 and 304 stainless steel were produced in radial form, with additional mechanical and microstructural analysis. This poster will present the processing, microstructures, and properties of M250 via WAAM.