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Development of Welding Consumables for Allegheny Ludlum's AL6XN Stainless Steel

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Abstract

In this work, collaborative research will be conducted by Lehigh University and Allegheny Ludlum (Brackenridge, PA) to develop and optimize welding consumables, specifically for AL6XN. Advanced microstructural models will be used to design consumables that provide the right sequence of phase transformations that produce a fully austenitic weld with a uniform distribution of alloying elements in order to meet the required properties. Experimental validation will be conducted by preparing alloys using a novel arc button melter recently purchased through ONR funding. Allegheny Ludlum will provide various materials for experimentation and participate in the interpretation and application of results for the development of a commercial welding consumable for the alloy AL6XN.