# ICAM 2024

**ASTM INTERNATIONAL CONFERENCE ON ADVANCED MANUFACTURING**

Research to Application through Standardization

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Atlanta, GA

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## Value Chain: Environmental and Corrosion

Additive manufacturing (AM) has evolved over the past decade. While research has primarily focused on the evaluation of microstructure characterization and mechanical performance, limited emphasis was placed on environmentally induced degradation modes. Hence, it is critical to understand environmental effects (e.g., corrosion, environmental assisted cracking, etc.) on AM alloys to enable informed use in structural components for engineering applications. Numerous studies demonstrated significant differences in both microstructure and corrosion properties between AM alloys and conventionally processed alloys. It is of significant importance to understand the mechanism of such phenomena and thus be able to model their linkages. It is also reported that post-processing techniques such as heat treatment, surface treatment, or coating may influence the performance of AM alloys against environmental effects. On the characterization side, most studies have utilized legacy standards for corrosion testing. While these legacy standards may be applicable, further considerations may still be required.

**Topics of interest include but are not limited to:**
- Quantification and characterization of corrosion in AM alloys
- Environmental cracking of AM alloys (e.g., HE, SCC, corrosion-fatigue, etc.)
- Linking microstructure features to corrosion and environmental cracking properties
- Identification of AM specific environmental degradation modes
- Effects of processing parameters on environmental degradation (both build and post-processing)
- Methods to prolong the life of AM parts against environmental effects (e.g., coatings, etc.)
- AM specific standardization/characterization issues and challenges
- Simulation of environmental effects on AM parts with new methods that incorporate machine learning/artificial intelligence approaches

## Symposium Organizers
- **Jiadong Gong,** QuesTek Innovations, USA
- **Rajeev Gupta,** North Carolina State University, USA
- **Michael Melia,** Sandia National Laboratories, USA
- **Matt Sanders,** Stress Engineering, USA
- **Nicole Tailleart,** U.S. Naval Research Laboratory (NRL), USA

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