List of peer-reviewed publications

First author

1. T.M. Kelsy Green, Niyanth Sridharan, Xiang Chen, Kevin G. Field, Effect of N_2- and CO_2-Containing Shielding Gases on Composition Modification and Carbonitride Precipitation in Wire Arc Additive Manufactured Grade 91 Steel, Additive Manufacturing, ***Under Review***
2. T.M. Kelsy Green, Li He, Lingfeng He, Brandon Miller, Todd Allen, Heat Treatment and Composition Effects on Precipitation in Irradiated HT9 Steel, ***Paper in Progress***

Non-first author

1. Pengyuan Xiu, Caleb P. Massey, T.M. Kelsy Green, Stephen Taller, Dieter Isheim, Niyanth Sridharan, Kevin G. Field, Microchemical evolution of irradiated additive-manufactured HT9, Journal of Nuclear Materials, Volume 559, 2022, 153410, ISSN 0022-3115, https://doi.org/10.1016/j.jnucmat.2021.153410. (https://www.sciencedirect.com/science/article/pii/S0022311521006309)

   Abstract: The microstructural responses under 5 MeV Fe2+ single-ion-beam irradiation of three conditions of additive-manufactured (AM) HT9 steel using a powder-based directed energy deposition (DED) technique with and without postbuild heat treatments were investigated. Besides the observed dislocation loop formation and the absence of cavities at the irradiation condition of 50 dpa at 460 °C, Ni/Si/Mn-rich precipitates are found to form in all three conditions of AM-HT9, whereas Cu-rich clusters that arise from Cu uptake from the DED process are only observed in the heat-treated conditions, and not in the as-built (ASB) condition. Coprecipitation of the Cu- and Ni/Si/Mn-rich clusters occur near defect sinks such as line dislocations and grain boundaries in the heat-treated AM-HT9. The variation in microchemical evolution can be directly linked to the starting sink strength of the 3 AM-HT9 conditions, and the ASB condition with higher sink strength suppressed the responses observed in the post-build heat-treated specimens.