

Influence of pre-strain on corrosion behavior of additively manufactured CoCrFeMnNi high-entropy alloy

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Abstract In the present study, pre-straining was performed on an equiatomic CoCrFeMnNi high-entropy alloy (HEA) fabricated by laser melting deposition technology (LMD). The effect of pre-strain levels on the corrosion behaviors in 0.6 M NaCl solution was carefully examined. Compared with LMD-fabricated HEA, the pre-strained one exhibited a wider corrosion potential (E_{corr}) and a lower corrosion current density (I_{corr}). The enhanced corrosion resistance induced by pre-straining is reasonably interpreted from the perspective of structural change. The obtained results can shed more insights into widening the industrial applications of additively manufactured HEAs in extreme conditions.