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Title: Effects of isothermal heat treatment on nanostructured bainite morphology and microstructures in laser cladded coatings

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Highlights

- Nanobainitic coatings under 200, 250 and 300 °C heat treatments are fabricated.
- The size of bainite sheaves increased with the isothermal temperature increasing.
- Textured and chaotic distribution are observed in 200 and 300 °C microstructures.
- The evolution model of nanobainite morphology is established and analyzed.
- The bainitic ferrite of 200 °C heat treatment has a true thickness of 45 nm.

Effects of isothermal heat treatment on nanostructured bainite morphology and microstructures in laser clad coatings

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Abstract:

Laser cladding and subsequent isothermal heat treatments have been used to fabricate nanostructured bainitic coatings. XRD has been used to determine the kinetics of bainitic transformation process. OM, SEM and TEM have been used to characterize the morphology and microstructures at different stages of transformation. The results showed that at the initial stage of bainitic transformation, the bainite sheaves are short and thin at a relatively low transformation

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