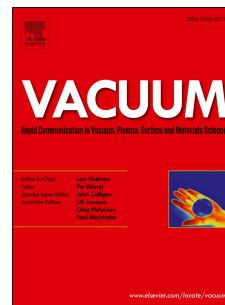


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Corrosion resistance improvement of 45 steel by Fe-based amorphous coating

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Abstract

Due to its good comprehensive mechanical properties and low cost, 45 steel has long been widely used for the manufacture of various components. However, the relatively low corrosion resistance of 45 steel has negative effect on its application and should be further improved. In this work, a crack-free Fe_{37.5}Cr_{27.5}C₁₂B₁₃Mo₁₀ amorphous coating was successfully obtained on 45 steel by laser cladding method. The amorphous-coating coated 45 steel exhibited much higher corrosion resistance than that of bare 45 steel. The microstructure and the morphology of the amorphous coating were also examined.

Keywords: amorphous coating; corrosion resistance; 45 steel

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