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Evaluation of WC-9Co-4Cr laser surface alloyed coatings on stainless steel

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In order to examine the effect of Cr on the microstructure and hardness behaviour of WC cermet, coatings have been obtained by laser surface alloying technique. WC-9Co-4Cr particulate was injected into the surface of AISI 304L stainless steel under different processing variables. The morphologies and microstructures of the composite coatings were investigated using optical microscopy and high resolution scanning electron microscopy, while the phase changes were observed using x-ray diffraction. The surface hardness was determined using the Vickers microhardness tester. The excessive heat from the laser beam partially melted the WC-Co which results in carbon deficiency and precipitation of carbon as graphite to form CO₂ pores within the coatings. 4

**Level (Hons, MSc,
 PhD, other)?**

MTech

**Consider for a student
 award (Yes / No)?**

Yes

**Would you like to
 submit a short paper
 for the Conference
 Proceedings (Yes / No)?**

Yes

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