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# Investigation of Microstructure, Mechanical Properties and Anti-Corrosive Behavior of Al2O3/Cr2O3 Nanocomposite on Zn Rich Bath

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**Abstract :** Zn-Al2O3 and Cr2O3 nanocomposite coatings were successfully produced by electrodeposition technique from chloride acidic bath. Particle loading of Al2O3 (50nm) particles were varied from 5-10 g/L and for Cr2O3(100nm) was 10-20 g/L. Scanning electron microscope (SEM) affixed with energy dispersive spectrometry was used to study the surface morphology and content of the nanoparticles incorporated into the coatings. Microhardness, thermal stability, wear and corrosion behavior of the coatings were also evaluated to study the effect of these nanoparticles on these properties. Zn-Al2O3 nanocomposite was found to exhibit good surface properties especially corrosion resistance. On the other side, Cr2O3 incorporation resulted in the improvement of only mechanical properties. Therefore, Zn-Al2O3 proved to be a better coating for most industrial applications where both chemical and mechanical properties are required.

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