

Effect of ZrB₂ Functionalized Nanoparticles Growth on Microstructural and Corrosion Resistance on Mild Steel through Electrodeposition Route

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Abstract:

In order to have a better performance of Ni-P-Zn multifunctional applications, crystallite-like Ni-P-Zn-ZrB₂ composite was actively fabricated by electrodeposition principle. The corrosion, structural evolution and surface active phenomena were investigated by various techniques. The influence of ZrB₂ particulate on the morphology and corrosion properties was examined. The outcomes show an inclusive flower-like doped ZrB₂ phase constituent and is uniformly distributed Ni-P-Zn-ZrB₂ improved strengthening effect. The corrosion progression of the developed metal alloy was compared with other coating matrix from 10-25 minutes interval. The integration of ZrB₂ on Ni-P-Zn phase especially for 25 min deposits significantly enhances corrosion resistance due to good grain refinement. **Keywords:** Ni-based composite, electrodeposition, time difference, coating, corrosion

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