

## **Influence of Graphene Content on Corrosion Behavior of Electrodeposited Zinc-Graphene Composite Coatings**

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**Abstract :** Zinc coating as a sacrificial protection plays an important role in the traditional steel anticorrosion field. Adding second-phase reinforcement particles into zinc matrix is an interesting approach to further enhance its corrosion performance. In this paper, pure Zn and Zn-graphene composite coatings of different graphene contents were prepared by direct current electrodeposition on 304 stainless steel substrate. The coatings were characterized by XRD, SEM/EDS, and Raman spectroscopy. Tafel polarization and electrochemical impedance spectroscopic methods were used to study their corrosion behavior. Result obtained have shown that the concentration of grapheme oxide (GO) in zinc sulfate bath has an important effect on textured structure and surface morphology of Zn-graphene composite coatings. The coating prepared with 1.0g/L GO has shown the best corrosion resistance compared to other coatings prepared in this study.

**Keywords :** Zn-graphene coatings, electrodeposition, microstructure, corrosion behavior

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