

论文摘要

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ZFS共沉积促进剂在复合电沉积过程中的作用机理

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摘 要: 将阳离子型ZFS促进剂与SiO₂微粒加入Zn-Fe合金镀液中, 制备了Zn-Fe-SiO₂复合镀层, 研究了ZFS共沉积促进剂对镀层中SiO₂微粒沉积量的影响, 并分析了促进剂的作用机理。结果表明: ZFS共沉积促进剂可以明显提高SiO₂微粒在镀层中的沉积量, 并且无需对SiO₂微粒进行镀前特殊处理。其原因是该促进剂吸附在SiO₂微粒表面, 使微粒表面呈正电性, 在电场引力的作用下, SiO₂微粒容易吸附在阴极表面并与还原金属实现复合共沉积。

关键字: 复合电沉积; ZFS促进剂; 机理; 吸附

Action mechanism of cation-additive ZFS during composite electrodeposition

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Abstract: Cation-additive ZFS and SiO₂ particles were added into Zn-Fe alloy electrolyte, and Zn-Fe-SiO₂ composite coatings were obtained. Effect of additive ZFS on SiO₂ content in the coating was studied, and the action mechanism of additive ZFS during composite electrodepositing was analyzed. The results show that additive ZFS can markedly improve the SiO₂ content in the composite coating with no pre-treatment on SiO₂ particles because SiO₂ particles attached with additive ZFS show positive charge and the electric field gravitation between SiO₂ particles and cathode makes SiO₂ particles absorb onto the cathode and deposit with reductive metal easily.

Key words: composite electrodeposition; additive ZFS; mechanism; adsorption

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