

表面与界面工程

聚天冬氨酸对铜缓蚀作用的光电化学研究

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摘要

用电化学方法研究了绿色水处理药剂聚天冬氨酸对铜的缓蚀作用, 铜在硼酸-硼砂缓冲溶液 (pH=9.2) 中, 表面的Cu₂O膜显p-型光响应, 添加适量缓蚀剂聚天冬氨酸 (PASP) 后, PASP吸附在铜电极表面成膜促使Cu₂O膜增厚, 体现在电位在负向扫描过程中Cu₂O膜的p-型光电流增大。p-型光电流越大, 缓蚀性能越好。当PASP浓度为3 mg·L⁻¹时, Cu₂O膜的p-型光电流最大, 缓蚀性能最好。Cl⁻的存在会阻止PASP在铜电极表面的吸附, 使Cu₂O膜暴露而受侵蚀, 导致了PASP的缓蚀性能变差。

关键词 [聚天冬氨酸](#) [光电化学](#) [缓蚀剂](#) [铜](#)

分类号

Photoelectrochemical study of inhibition mechanism of PASP on copper

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Abstract

The inhibition mechanism of polyaspartic (PASP) on copper electrode in a borax buffer solution was studied by the photocurrent response method. The copper electrode in a borax buffer solution showed p-type photocurrent response which came from Cu₂O layer on its surface. The photocurrent response during cathodic polarization became bigger when inhibitor PASP which could be adsorbed on the Cu electrode and make Cu₂O layer thicker was added. The bigger the photocurrent response, the better the inhibition effect. When adding PASP with a concentration of 3 mg·L⁻¹, the photocurrent response was the biggest and inhibition of copper corrosion was the best. Cl⁻ could prevent PASP from being adsorbed and make Cu₂O layer unprotected, resulting in worse inhibition.

Key words

[PASP](#) [photoelectrochemistry](#) [inhibitor](#) [copper](#)

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