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研究报告

水溶性壳聚糖及其磷酸酯在海水中对碳钢的缓蚀作用

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摘要:

对水溶性壳聚糖进行磷酸酯化改性。采用静态失重实验与电化学测试相结合, 研究了水溶性壳聚糖及其磷酸酯对Q235低碳钢在海水中的腐蚀抑制作用, 并探讨缓蚀机理。结果表明, 水溶性壳聚糖对碳钢具有一定的缓蚀作用, 随其浓度的增加缓蚀率升高; 壳聚糖磷酸酯在300 mg/L时缓蚀率达到88.71%, 高温下仍保持较高的缓蚀效率, 且持久保持高效。壳聚糖磷酸酯为抑制阴极型缓蚀剂。

关键词: 水溶性壳聚糖 碳钢 缓蚀 缓蚀率 极化

CORROSION INHIBITION PERFORMANCE OF CHITOSAN AND PHOSPHONIC CHITOSAN FOR MILD STEEL IN SEAWATER

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Abstract:

Water soluble chitosan was modified by phosphonation. The inhibitive properties of chitosan and phosphonic chitosan for Q235 mild steel in seawater were studied by mass loss method and electrochemical measurement, and the inhibitive mechanism was analyzed. The results showed that chitosan had corrosion inhibitive effect for mild steel, and with the increasing of dosage of chitosan the inhibition efficiency was increased. The inhibition efficiency of phosphonic chitosan reached to 88.71 % when the concentration was 300 mg/L, and it had good inhibition effect at high temperature and inhibition efficiency kept high for long period of time. Polarization curves indicated that phosphonic chitosan is a cathodic corrosion inhibitor.

Keywords: water soluble chitosan mild steel inhibition inhibition efficiency polarization

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