ELECTROCHEMISTRY CONFERENCE - 2019

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Anticorrosion Properties of Zn3(PO4)2/Ppy Coatings on Steel

Yeldana BAKHYTZHAN, G.s RAKHYMBAY, Y.n YESSALY, A ARGIMBAYEVA, B BURKITBAYEVA, A TURLYGAZIEVA

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Electrochemical polymerization of conductive polymers is the most convenient and simple method of obtaining coatings on the surface of metals. In the process of synthesis, it is possible to control the properties of the obtaining films [1-2]. In the work, polypyrrole composite zinc-phosphate coatings on mild steel grade St3 were successfully synthesized. Electropolymerization of polypyrrole occurs with the previous passivation of the surface of the steel with a tartrate protective layer. The corrosion properties (film resistance and corrosion rate) of the synthesized coatings with the composition Zn3(PO4)2/polypyrrole were determined by two methods, linear voltammetry and impedance spectroscopy. These results were used to analyze the protective effect of the obtaining film, LV (97%) and EIS (80%). The morphology of the synthesized coatings was also investigated. According to the results of scanning electron microscopy, polypyrrole shows a globular morphology of various sizes. The deposition of polypyrrole on the surface of zinc phosphate, leads to the formation of a homogeneous and compact sediment and, consequently, leads to an increase in the protective properties of this coating.


Keyword: electrropolyperization, film, polypyrrole, corrosion, steel