

APRICOT CAKE EXTRACT AS SELF-ASSEMBLED LAYERS CORROSION INHIBITOR OF STEEL: CHEMICAL COMPOSITION AND ANTI-CORROSION PROPERTIES

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Abstract. The protection performance of self-assembled layers (SALs) formed by apricot cake extract (ACE) on the surface of steel has been studied. Characterization of the apricot cake extract was carried out using Fourier transform infrared spectroscopy (FTIR) and gas chromatography-mass spectrometry (GC-MS) analysis. The anti-corrosion effect of the self-assembled layers was determined by weight loss experiments, scanning electron microscopy and electrochemical methods. It was revealed that the protection ability of the SALs is determined by the time of film formation on the steel surface. The maximal corrosion inhibition efficiency (about 93%) was obtained after 48 h process of film formation in the vapour phase of the apricot cake extract. The results of the polarization test revealed that the ACE acted as mixed type inhibitor and retarded both anodic and cathodic reactions rates. The results of the electrochemical analysis revealed that the ACE modified steel showed better corrosion protection in conditions of periodic condensation of moisture.

Keywords: self-assembled layers, apricot cake extract, green corrosion inhibitor, steel, organic coatings.