Proceedings of Iran International Aluminium Conference (IIAC2018)
April 24-25, 2018, Tehran, I.R. Iran

The Effect of the Chromate Inhibitor on the Aluminium Alloy Superhydrophobic Surfaces

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Abstract: Due to the extensive applications of aluminium and its alloys, the analysis of its corrosion properties of this metal and its alloys is of the essence. One of the methods of improving the corrosion resistance of these metals is to fabricate a superhydrophobic surface, and the results of the previous research indicated that the corrosion resistance of superhydrophobic surfaces is twice that of the untreated surfaces. Another method is to use corrosion inhibitors. Therefore, the effect of inhibitors on the superhydrophobic surface of an aluminium alloy was examined in this research and the results of the polarization tests and impedance spectroscopy revealed that the inhibitor in use had a smaller positive effect on the superhydrophobic surface of aluminium. Moreover, the research results indicated that the corrosion resistance of untreated surfaces is approximately 10 times that of the superhydrophobic surfaces under the influence of inhibitors.

Keywords: Superhydrophobic, Polarization Test, Impedance Spectroscopy.