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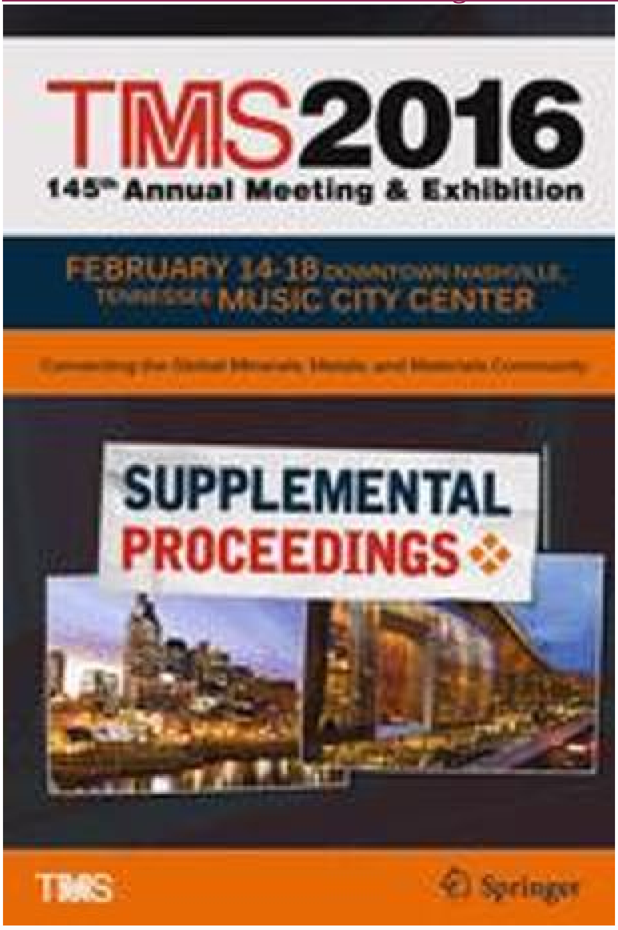

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Anticorrosion Performance of *Solanum Aethiopicum* on Steel-Reinforcement in Concrete Immersed in Industrial/Microbial Simulating-Environment

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Abstract

This paper investigates anticorrosion performance of *Solanum aethiopicum* leaf-extract on steel-reinforcement in concrete immersed in 0.5 M H_2SO_4, simulating industrial/microbial environment. For this, corrosion rate by linear polarisation resistance and corrosion potential as per ASTM C876-91 R99 were monitored from steel-reinforced concrete slabs admix ed with different *Solanum aethiopicum* leaf-extract concentrations and immersed in the acidic test-environment. Obtained test-data were subjected to statistical probability distributions for which compatibilities were tested using Kolmogorov-Smirnov goodness-of-fit statistics, as per ASTM G16-95 R04. These identified all datasets of corrosion test-data, from the steel-reinforced concrete samples, as coming from the Weibull probability distribution. Analysed results showed that *Solanum aethiopicum* leaf-extract reduced rebar corrosion condition from “high” to “low” corrosion risks of ASTM C876-91 R99. Also, the corrosion rate analyses identified 0.25% *Solanum aethiopicum* leaf-extract with optimal inhibition efficiency performance, η = 93.99%, while the other concentrations also exhibited good inhibition of steel-reinforcement corrosion in the test-environment.

Keywords

steel-reinforcement corrosion *Solanum aethiopicum* leaf-extract eco-friendly inhibitor statistical distribution analyses corrosion risk modelling inhibition efficiency

Preview

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