



## ABSTRACT SUBMISSION

# Evaluating the Efficiency of a Green Corrosion Inhibitor Extracted from Rice Husk on Corrosion Coupons and Sassanid Iron Pin in indoor/outdoor polluted Environments

*SAFARI S. <sup>1\*</sup>, MONTAZER ZOHOURI M. <sup>2</sup>, JAVERI M. <sup>3</sup>*

<sup>1</sup> M.Sc student, Archaeology Department of Literature and Humanities Faculty, Tehran University. (M.Sc graduated, Material Science and Engineering Faculty, Sharif University), Tehran, Iran

<sup>2</sup> Assistant Professor, Archaeology Department of Literature and Humanities Faculty, Tehran University., Tehran, Iran

<sup>3</sup> Associate Professor, Archaeology Department, Kashan University., Kashan, Iran

\*Corresponding author

## Abstract

Nowadays, the protection and preservation of metallic archaeological artefacts face significant challenges due to corrosion caused by indoor pollutants in museum environments. Additionally, the conservation of endangered archaeological sites is even more challenging because of atmospheric contaminants, acidic rain and other environmental factors. Recently, a new generation of corrosion inhibitors, known as green inhibitors, has been introduced to provide an eco-friendly solution for mitigating cultural heritage degradation. Green inhibitors not only effectively protect historical artefacts but can also preserve their authenticity due to lack of adverse effects on the surface, and their simple removal process. In this study, firstly, an efficient green inhibitor was extracted from rice husk, the hard protective covering of rice grains, through complex and multi-step processes. Then, this inhibitor was applied to the surface of corrosion coupons at various concentrations, and electrochemical tests were conducted to investigate the corrosion behaviour and determine the optimal inhibitor concentration. Finally, to examine the anticorrosive performance of extracted green inhibitor on real conditions, the surface of a metallic pin belong Sassanid dynasty, discovered during an archaeological excavation at Vigole & Haraskan site (Iran), was coated by optimal concentration of inhibitor and the corrosion progression was studied by using SEM images.

## Keywords

Conservation, Endangered Heritage, Corrosion, Green Inhibitor

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