



SDI Review Form 1.6

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| Journal Name: | International Research Journal of Pure and Applied Chemistry |
| Manuscript Number: | Ms_IRJPAC_27881 |
| Title of the Manuscript: | Corrosion Inhibition of Mild Steel in Sulphuric Acid Environment Using Millet Starch and Potassium iodide. |
| Type of the Article | Original Research Article |

General guideline for Peer Review process:

This journal's peer review policy states that **NO** manuscript should be rejected only on the basis of '**lack of Novelty**', provided the manuscript is scientifically robust and technically sound.

To know the complete guideline for Peer Review process, reviewers are requested to visit this link:

(<http://www.sciencedomain.org/page.php?id=sdi-general-editorial-policy#Peer-Review-Guideline>)



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PART 1: Review Comments

| | Reviewer's comment | Author's comment (if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here) |
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| Compulsory REVISION comments | | We are very glad that you criticized this research work positively. In fact, the minor corrections given were accepted and it will help us in preparing our subsequent research work. Due to your general comments and immense effort in reviewing this article, we will make this journal our first option in subsequent publications. Thanks. |
| Minor REVISION comments | <p>11 H2SO4 solution was investigated using gravimetric weight loss measurement, potentiodynamic</p> <p>12 polarization and theoretical chemical quantum computations.</p> <p>12 polarization and theoretical chemical quantum computations. The results obtained show that millet</p> <p>13 starch effectively reduced the corrosion of mild steel in 0.5 M H2SO4 solution with an inhibition</p> <p>14 efficiency of up to 87.14% and 94.03% in combination with potassium iodide.</p> <p>of the molecule-metal interaction via molecular dynamic simulation. Scanning electron microscop 54 y</p> <p>55 (SEM) was utilized to give evidence of protection effect of millet starch on the mild surface.</p> <p>147 damage effect showed more manifestation more in blank solution. In addition, the reduction in</p> <p>141 4.1. Weight Loss Measurements, Corrosion Rates and Inhibition Efficiency</p> <p>Hence, Langmuir</p> <p>212 adsorption isotherm showed the best fit and was obtained according to the following equations:</p> | <p>Comment [U1]: Accepted and corrected.</p> <p>Comment [U2]: Accepted and corrected.</p> <p>Comment [U3]: Accepted and corrected.</p> <p>Comment [U4]: Accepted. The statement was erroneously included in the manuscript, so it was removed in the corrected version because the results were not available.</p> <p>Comment [U5]: Accepted and corrected.</p> <p>Comment [U6]: Accepted and corrected</p> <p>Comment [U7]: Accepted and corrected.</p> <p>Comment [U8]: Accepted. The statement was erroneously included in the manuscript, so it</p> |



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| | <p>C is the 216 inhibitor concentration and g is the adsorbate interaction parameter.</p> <p>Experimental data estimated 217 from weight loss and polarization results were used for plots of C/θ against C presented in parts a and b of Figure 2.</p> <p>The values of Concentration at the x-axis of Figs. 2a – 2b are measured in what unit?</p> <p>The free energy of adsorption (ΔG_{ads}) and equilibrium constant (K_{ads}) in an adsorption-desorption 227 process are related by the expression as follows: 228 229 $\Delta G_{ads} = -RT \ln K_{ads}$ # 55.5_ 230 (6) 231 232 where R is the universal gas constant and T is the absolute temperature. The values of calculated 233 free energy of adsorption were found to be –15.422KJ/mol and –16.522KJ/mol for MS and MS+KI 234 respectively. The negative value of free energy of adsorption is an indication that millet starch is 235 spontaneously adsorbed onto mild steel surface whereas the value of ΔG_{ads} being lower than – 236 20KJ/mol means that millet starch is physically adsorbed onto mild steel surface [24].</p> <p>Figure 3: Variation inhibition efficiency versus temperature for mild 329 steel in 0.5 M H₂SO₄ in the presence different concentrations of MS. does 342 not change with variation in temperature. The plots log β against 1/2.303RT for the corrosion process</p> <p>Provide a Table of summary for the results obtained from the computational analysis.</p> | <p>was removed in the corrected version.</p> <p>Comment [U9]: Accepted and corrected.</p> <p>Comment [10]: Accepted and corrected.</p> <p>Comment [11]: Accepted and corrected.</p> <p>Comment [12]: Accepted and corrected. Plot of log β against 1/T was now used in the corrected manuscript.</p> <p>The summary Table for results obtained from computational analysis has been provided in the corrected version.</p> |
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| <u>AgOptional/General</u> comments | The present investigation well-suits for the current trends in corrosion science. The methodology is suitably chosen for the objective of the work. The interpretation of the results is also leading to the proposed conclusions. There are some grammatical/typographical errors in the work that needs to be given due attention. | |
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