Review of: "Experimental and theoretical study on the corrosion inhibition of mild steel by nonanedioic acid derivative in hydrochloric acid solution"

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1. According to the article “The corrosion inhibition efficacy displayed by these heteroatoms increases in the order: P > S > N > O”. But the order showed is decreasing. However the reference cited in the article conclude that “Experimental and theoretical results show that the inhibition efficiencies are highest for thiazole rings that contain extra hetero atoms apart that of the thiazole ring” but does not explain any comparison on any heteroatoms ;(Ref: Berisha, A., Podvorica, F., Mehmeti, V., Syla, F. & Vataj, D. Theoretical and experimental studies of the corrosion behavior of some thiazole derivatives toward MS in sulfuric acid media. Macedonian J. Chem. Chem. Eng. 34, 287–294. https://doi.org/10.20450/mjcce.2015.576 (2015))

Again “ The presence of many heteroatoms may show better inhibition” Ref: Dinh Quy Huong, Nguyen Thi Lan Huong, Tran Thi Anh Nguyet, Tran Duong, Dinh Tuan, Nguyen Minh Thong, and Pham Cam Nam., Pivotal Role of Heteroatoms in Improving the Corrosion Inhibition Ability of Thiourea Derivatives).

2. According to the article “ It was then investigated as a green and inexpensive effcient inhibitor of MS corrosion in an HCl environment ”. However the article doesnot support any results that show the inhibitor to be green or inexpensive.

3. The electronegativity of carbon is 2.55 and that of iron atom is 1.83. But according to the research article “ the inductive effect of methylene groups, which improves the inhibitor’s ability to shift electron pairs to (from inhibitor molecules) the unoccupied d-orbitals of iron atoms on the MS surface” is not possible. Is transfer of electrons from the methylene inhibitor takes place towards Fe or oxidised Fe namely Fe 2+ or Fe 3+ ions.

4. According to the research article “ The assessed inhibitor has a low dipole moment value, suggesting a firmer coating of the metal surface”. But the explanation for the low dipole moment value correlated with good inhibition performance is not found in this article

5.In the article "The inhibition efficacy of the synthesised nonanedihydrazide was compared to other corrosion inhibitors having nitrogen atoms to protect against MS corrosion" was done. However the suggestion is if the comparison with few more hydrazide derivatives was done then the correlation of the inhibition efficiency with the size of the molecule as stated in the proposed mechanism could have been more relevant.