

Received date: 03-11-2021 | Accepted date: 05-11-2021 | Published date: 24-05-2022

Investigation of the anticorrosive activity in aggressive environment of new Schiff bases based on Imidazo[1,2-a]pyridine

Daoudi Walid

University Mohamed I, Morocco

In this work, we report a study on the synthesis and characterization of a new series of Schiff bases based on imidazo[1,2-a]pyridine (IMP) scaffold, and the evaluation of their ability to inhibit the corrosion of mild steel in 1M HCl. Several techniques were employed such as mass loss techniques, Potentiodynamic polarization, and electrochemical impedance spectroscopy (EIS). The obtained results showed that these inhibitors, namely (E)-N-(2-phenylimidazo[1,2-a]pyridin-3-yl)-1-(1H-pyrrol-2-yl)methanimine (IMP1), (E)-N-(2-phenylimidazo[1,2-a]pyridin-3-yl)-1-(thiophen-2-yl)methanimine (IMP2) and (E)-1-(5-nitrothiophen-2-yl)-N-(2-phenylimidazo[1,2-a]pyridin-3-yl)methanimine (IMP3), acted only by reducing the cathode area without changing the mechanism of the cathodic reaction. Also, the effectiveness of the inhibition increases with increasing concentration of the inhibitors. The adsorption of the studied compounds on the surface of mild steel follows the Langmuir isotherm model. Finally, we highlighted the existence of a correlation between the molecular structure of the tested inhibitors and their anticorrosion activity.

Recent Publications

1. Aatiaoui, Abdelmalik & Daoudi, Walid & badri, Asmaa & Salhi, Amin & El Massaoudi, Mohamed & Boutaybi, Ali & Guo, Lei & Loutou, Mohamed. (2022). Anticorrosive potential of essential oil extracted from the leaves of Calamintha plant for mild steel in 1 M HCl

medium. Journal of Adhesion Science and Technology. 1-24.

2. Aatiaoui, Abdelmalik & Daoudi, Walid & el Boutaybi, Ali & Guo, Lei & Benchat, Nour-Eddine & Aouinti, Abdelouahad & Adyl, Oussaid & Loutou, Mohamed. (2022). Synthesis and anticorrosive activity of two new imidazo[1, 2-a]pyridine Schiff bases. Journal of Molecular Liquids. 350. 118458
3. Bouklah, M. & Daoudi, Walid & Hammouti, Belkheir & Touzani, Rachid & Radi, Smaail & Ramdani, Mohamed & Bouyanzer, A. & Aouniti, A. & Salghi, Rachid. (2020). Inhibitor adsorption processes in mild steel/new bipyrazole derivatives/hydrochloric acid system. Materials Today: Proceedings.
4. Ech-chihbi, E., Nahlé, A., Salim, R., Oudda, H., El Hajjaji, F., El Kalai, F., Taleb, M. (2019). Novel triazole derivatives as ecological corrosion inhibitors for mild steel in 1.0 M HCl: experimental & theoretical approach, Journal of Bio-and Tribo-Corrosion. 5(1)
5. El Aatiaoui A., Koudad M., Chelfi T., Erkan S., Azzouzi M., Aouniti A., Savaş K., Kaddouri M., Benchat N., and Oussaid A. (2020). Experimental and theoretical study of new Schiff bases based on imidazo(1,2-a)pyridine as corrosion inhibitor of mild steel in 1M HCl, Journal of Molecular Structure, p. 129372.

Biography

Walid Daoudi is a Ph.D. Graduate from the University of Mohamed I, Morocco. His research interest includes nanoscience, nanochemistry, and nanotechnology. He has participated in various international conferences and published many articles.

walid.daoudi@ump.ac.ma