

1. [Home](#)
2. [Advanced Manufacturing in Biological, Petroleum, and Nanotechnology Processing](#)
3. Chapter

## Corrosion Inhibitive Behaviour of *Moringa Oleifera* in Acidic Medium

- Chapter
- First Online: 04 May 2022
- pp 175–184
- [Cite this chapter](#)

### [Advanced Manufacturing in Biological, Petroleum, and Nanotechnology Processing](#)

- [A. A. Ayoola,](#)
- [S. C. Okwuonu,](#)
- [B. M. Durodola,](#)
- [E. E. Alagbe,](#)
- [O. Oladokun,](#)
- [O. Agboola &](#)
- [R. Babalola](#)

Part of the book series: [Green Energy and Technology](#) ((GREEN))

- 383 Accesses

### Abstract

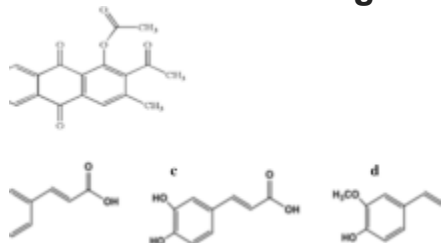
---

Due to the toxic nature of some inorganic corrosion inhibitors, attention is now being shifted to the use of organic inhibitors that are eco-friendly and effective

at slowing down the corrosion rate of the metals. This research work investigated the corrosion inhibitive performance of *Moringa oleifera* on A36 mild steel in 1M H<sub>2</sub>SO<sub>4</sub> medium, using gravimetric and potentiodynamic tests at different temperatures. The results obtained showed the corrosion rate of A36 mild steel decreased with an increase in *Moringa oleifera* inhibitor concentration (1–4 vol/vol%), and increased with increase in temperature (for both gravimetric and potentiodynamic polarisation tests). Also, the inhibitor efficiency of the *Moringa oleifera* inhibitor increased with an increase in inhibitor concentration, but decreased as the temperature increased (for both gravimetric and potentiodynamic polarisation tests). Langmuir adsorption isotherm accurately predicted the adsorption behaviour of the *Moringa oleifera* inhibitor on the surface of the A36 mild steel (with coefficient of regression,  $R^2$ , of 1).

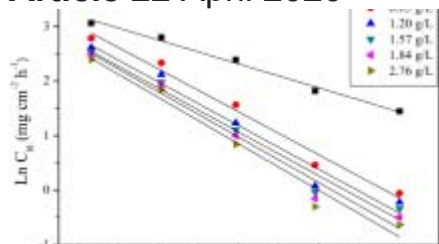
This is a preview of subscription content, [log in via an institution](#) to check access.

### Similar content being viewed by others



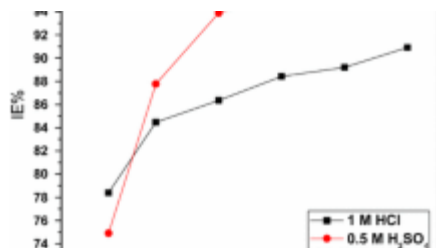
### Inhibitive Corrosion Performance of the Eco-Friendly Aloe Vera in Acidic Media of Mild and Stainless Steels

Article 22 April 2020



### Corrosion Inhibition of Mild Steel in 0.5 M H<sub>2</sub>SO<sub>4</sub> Solution by *Artemisia herba-alba* Oil

Article 19 November 2018



## **Rothmannia longiflora extract as corrosion inhibitor for mild steel in acidic media**

Article Open access 12 August 2015

## **References**

- Ayoola, A. A., Obanla, O. R., Abatan, O. G., Fayomi, O. S. I., Akande, I. G., Agboola, O., Ayeni, O. A., Oyekunle, D., Olawepo, V. A., & Ayo-Aderele, O. O. (2020). Corrosion inhibitive behaviour of the natural honey in acidic medium of A315 mild and 304 austenitic stainless steels. *Analytical and Bioanalytical Electrochemistry*, 12(1), 21–35.

### **CAS Google Scholar**

- Dass, P., Onen, A., Maitera, O., & Ushahemba, G. (2015). Corrosion inhibition of zinc in acid medium by moringa oleifera and mangifera indica leaves extracts. *International Journal of Sustainable Development*, 4(9), 944–950.

### **Google Scholar**

- Gupta, J., Gupta, A., & Gupta, K. (2014). Preliminary phytochemical screening of leaves of moringa oleifera lam. *Journal Chemtracks*, 16(1), 285–288.

### **CAS Google Scholar**

- Loto, A. C., Loto, R. T., & Popoola, A. P. I. (2011). Effect of neem leaf (*Azadirachta indica*) extract on the corrosion inhibition of mild steel in dilute acids. *International Journal of Physical Sciences*, 6(9), 2249–2257.

### **CAS Google Scholar**

- Olasehinde, E. F., Olusegun, S. J., Adesina, A. S., Omogbehin, S. A., & Momoh-Yahayah, H. (2013). Inhibitory action of *Nicotiana tobacum*

extracts on the corrosion of mild steel in HCl: Adsorption and thermodynamic study. *Natural Sciences*, 11, 83–90.

### [Google Scholar](#)

- Singh, A., Ahmad, I., Yadav, D., Singh, V., & Quraishi, M. (2011). The effect of environmentally benign fruit extract of shajan on the corrosion of mild steel in HCl acid solution. *Chemical Engineering Communications*, 199(1), 6377–6386.

### [Google Scholar](#)

- Singh, A. K., Mohapatra, S., & Pani, B. (2016). Corrosion inhibition effect of aloe vera gel: Gravimetric and electrochemical study. *Journal of Industrial and Engineering Chemistry*, 33, 288–297.

### [Article CAS](#) [Google Scholar](#)

[Download references](#)

## Acknowledgement

---

Publication of this conference paper is made possible through the financial commitment of CUCRID Covenant.

## Author information

---

### Authors and Affiliations

- 1. Chemical Engineering Department, Covenant University, Ota, Ogun State, Nigeria**  
A. A. Ayoola, S. C. Okwuonu, E. E. Alagbe, O. Oladokun & O. Agboola
- 2. Chemistry Department, Covenant University, Ota, Ogun State, Nigeria**  
B. M. Durodola
- 3. Chemical/Petrochemical Engineering Department, Akwa Ibom State University, Akpaden, Mpat Enin, Nigeria**  
R. Babalola

### Corresponding author

Correspondence to [A. A. Ayoola](#).

## Editor information

---

### Editors and Affiliations

- 1. Department of Chemical Engineering, Covenant University, Ota, Nigeria**  
Augustine O. Ayeni
- 2. Department of Chemical Engineering, Covenant University, Ota, Nigeria**  
Olagoke Oladokun
- 3. Department of Chemical Engineering, Covenant University, Ota, Nigeria**  
Oyinkepreye David Orodu

## Rights and permissions

---

[Reprints and permissions](#)

## Copyright information

---

© 2022 The Author(s), under exclusive license to Springer Nature Switzerland AG

## About this chapter

---

### Cite this chapter

Ayoola, A.A. *et al.* (2022). Corrosion Inhibitive Behaviour of *Moringa Oleifera* in Acidic Medium. In: Ayeni, A.O., Oladokun, O., Orodu, O.D. (eds) Advanced Manufacturing in Biological, Petroleum, and Nanotechnology Processing. Green Energy and Technology. Springer, Cham.  
[https://doi.org/10.1007/978-3-030-95820-6\\_15](https://doi.org/10.1007/978-3-030-95820-6_15)

### Download citation

- DOI [https://doi.org/10.1007/978-3-030-95820-6\\_15](https://doi.org/10.1007/978-3-030-95820-6_15)
- Published 04 May 2022
- Publisher Name Springer, Cham
- Print ISBN 978-3-030-95819-0
- Online ISBN 978-3-030-95820-6

- eBook Packages EnergyEnergy (R0)

## Publish with us

---

[Policies and ethics](#)

## Access this chapter

---

[Log in via an institution](#)

---

## Subscribe and save

Springer+ Basic  
€32.70 /Month

- Get 10 units per month
- Download Article/Chapter or eBook
- 1 Unit = 1 Article or 1 Chapter
- Cancel anytime

[Subscribe now](#)

## Buy Now

### Chapter

**EUR 29.95**

Price includes VAT (Nigeria)

---

- Available as PDF
- Read on any device
- Instant download
- Own it forever

Buy Chapter

**eBook**

**EUR 139.09**

**Softcover Book**

**EUR 169.99**

**Hardcover Book**

**EUR 169.99**

Tax calculation will be finalised at checkout  
**Purchases are for personal use only**



© 2025 Springer Nature