

**FACULTY OF ENGINEERING**

**DEPARTMENT OF TEXTILE AND GINNING ENGINEERING**

**FINAL YEAR PROJECT REPORT**

**PROJECT TITLE**

**INVESTIGATING THE EFFECT OF MULBERRY LEAF DYE  
EXTRACTS TOWARDS STAINLESS STEEL CORROSION.**

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*A research project report submitted to the Department of Textile and Ginning  
Engineering in partial fulfillment for the award of a bachelor of science in  
polymer, textile and industrial engineering*

## DECLARATION

I **AKELLO PROSCOVIA** Reg. No. **BU/UG/2017/5** hereby declare that this project work is my original work and that the information contained in this project work is out of my research except where explicit citation has been made and it has not been presented to any institution of higher learning for any academic award.

Signature.....

Date.....

## APPROVAL

This project report entitled ‘Investigating the inhibition efficiency of mulberry leaf dye extracts towards stainless steel corrosion has been written under the supervision of;

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## DEDICATION

I dedicate this report to my lecturers, course mates and family.

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## ABSTRACT

Plant extracts from leaves, roots, stems, flowers and many other parts have become very vital in the eco-system as corrosion inhibitors to various metals because they are less toxic, accessible, cheap and have simple developing processes. In this study, the effect of mulberry leaf dye extracts containing 10% HCL, on stainless steel corrosion was studied using the weight loss method. Fourier Transform Spectroscopy (FT-IR) was used to characterize the mulberry leaf extracts to examine the adsorptive functional groups of the phytochemicals and phytochemical screening was carried out using reagents. The morphological structure of the stainless-steel coupons was studied using the Scanning Electron Microscope (SEM). The inhibition efficiency was found to depend on temperature and concentration of both HCL and the dye. The results from characterization confirmed the formation of a protective layer through chemisorption bonding on the stainless-steel surface. The inhibitory effect of the mulberry leaf extracts was higher at high concentration of the dye with 98% which confirmed the dye as a corrosion inhibitor of stainless-steel.

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