Petrochemistry-2013

OMICS Group Conferences
Accelerating Scientific Discovery

World Congress on
Petrochemistry and Chemical Engineering

November 18-20, 2013 Hilton San Antonio Airport, USA

Thermodynamic, adsorption and electrochemical studies for corrosion inhibition of carbon steel by henna extract in acid medium

Nour Sh. El-Gendy

Egyptian Petroleum Research Institute, Nasr City 11727, Cairo, Egypt.

Abstract

Corrosion inhibition of carbon steel in the presence of different concentrations of aqueous extract from henna leaves in 1 M HCl solution has been studied using the weight loss and potentiodynamic polarization techniques. The effect of temperature on the corrosion behavior of carbon steel was studied in the temperature range 293–333 K. The inhibition efficiency increases with increasing inhibitor concentration but decreases with increasing temperature. The activation and free energies for the inhibition reactions support the mechanism of physical adsorption. The adsorption of henna extract on C-steel surface is endothermic, spontaneous and consistent with the Langmuir adsorption isotherm. The potentiodynamic polarization measurements indicate that henna extract acts as a mixed inhibitor. Surface and protective film analysis have been carried out using; energy dispersive X-ray (EDX), scanning electron microscopy (SEM), Fourier transforms infrared (FT-IR) spectroscopy and X-ray diffraction (XRD) analysis.

Biography

Nour Sh. El-Gendy Ass. Professor in the field of Environmental Biotechnology field and Head manger of Petroleum Biotechnology Lab, Egyptian Petroleum Research Institute, Cairo, Egypt. Ph.D. Degree in the field of biodesulfurization of petroleum and its fractions, Cairo University, refereed in University of Exeter, England and Gas Technology Institute, USA. MSc Degree in the same field, Cairo University, refereed in University of Westminster, England. Bachelor of Science Degree in Chemistry, Cairo University, Honor Roll, Very Good. More than fifteen years of experience in areas associated with (1) petroleum industry, (2) oil pollution, (3) bioremediation of oil polluted environment, (4) production of biofuels, (5) macro- and micro-corrosion, (6) biosorption (7) green chemistry, (8) nano-bio-technology and its application in petroleum industry and biofuels. Author of 50 scientific manuscripts published in international journals and editor for Energy Sources. Part A: Recovery, Utilization, and Environmental Effects and 4 more international scientific journals. Participated in 27 international scientific conferences and seminars and 11 international scientific workshops related to biotechnology and petroleum industry. Participated in different research projects in the field of bioremediation, biofuels and biodesulfurization. Supervised 16 MSc and PhD thesis in the field of biofuels, microbial corrosion, bioremediation, waste water treatment and biodesulfurization. Her biography is recorded in Who's Who in Science and Engineering ninth edition 2006-2007.