



Nigella Sativa Oil as Green Corrosion Inhibitor for Aluminum in Na₂CO₃ Solution

E. Azzouyahr^{1,2}, L. Bazzi^{1,*}, M. Essahli², M. Belkhaouda¹ and A. Lamiri²

1.Laboratoire Matériaux et Environnement-faculté des sciences d'Agadir.

2. Laboratoire de chimie physique appliquée et environnement-faculté des sciences et techniques de Settat.

Email: l.bazzi@uiz.ac.ma

Accepted on 5th June 2014

ABSTRACT

Nigella Sativa Oil was investigated as the corrosion inhibitor of aluminum in Na₂CO₃ solution using weight loss measurements, potentiodynamic polarization, and electrochemical impedance spectroscopy (EIS) methods. The results revealed that Nigella sativa oil was a good inhibitor, the corrosion inhibition efficiency increases on increasing plant oils concentration. The inhibition efficiencies obtained from different methods were in good agreement. The effect of temperature on the corrosion behavior of aluminum in Na₂CO₃ with and without addition of nigella sativa oil was studied in the temperature range 278–318 K. The adsorption of this oil on the aluminum surface obeys the Langmuir adsorption isotherm.

Keywords: EIS, Polarization Curves, weight loss, corrosion inhibition, aluminum, Nigella Sativa Oil, 0.1 M Na₂CO₃.
