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Guest seminar

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# Green Corrosion Inhibitors - Research in Physical Chemistry Field

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The terms green inhibitor or eco-friendly inhibitor describe substances that are naturally biocompatible. Plant extracts, for example, are considered biocompatible because they originate from biological sources. Like conventional inhibitors, green inhibitors are broadly classified into two main groups: organic green inhibitors and inorganic green inhibitors.

The author has so far investigated the application of plant extracts. One of them is Caesalpinia spinosa plant, known as Tara, was used to prepare a green corrosion inhibitor solution using hot solid–liquid (Soxhlet extraction, Tara-SE) and cold solid–liquid extraction (maceration, Tara-ME) techniques. Their anticorrosive protection ability was tested on mild steel in a 0.1 M $HNO_3$ solution. The effect of different concentrations of the green inhibitors on the mild steel in acidic solutions was determined by weight loss (WL), potentiodynamic polarization (PP), and electrochemical impedance spectroscopy (EIS) measurements, allowing the estimation of the inhibitor efficiency (IE%).

Another study was to investigate the corrosion inhibition of the Carbon steel in 3.5 wt.% NaCl solution, as simulated seawater, containing Citronella oil extract. The eco-friendly inhibitor, Citronella oil extract, was evaluated for corrosion inhibition action by a set of electrochemical experiments: Open Circuit Potential (OCP) measurements, Tafel plots and Electrochemical Impedance Spectroscopy (EIS). Atomic Force Microscopy (AFM) has been used to analyze the topography surface characteristics of the unmodified and modified electrodes based on Carbon steel. Also, the surface evaluation of the Carbon steel specimens subjected to the inhibitor loaded solution was examined by SEM and EDS.

**Short Bio**

Nicoleta Ignat is University Lecturer at Babes-Bolyai University of Cluj-Napoca, Romania, Faculty of Chemistry and Chemical Engineering, Department of Chemical Engineering. Her research activity/experience covers tasks in field of corrosion protection and electrochemistry, mainly regarding synthesis, characterization and testing of new materials.

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**Webinar Host**

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