Electrochemical Behaviour of Iron in Simulated Acid Rain in Presence of *Achillea Millefolium* L.

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doi: 10.20964/2018.06.29

Received: 10 February 2017 / Accepted: 24 March 2018 / Published: 10 May 2018

The effect of the aqueous extract of *Achillea millefolium* L. (AM) on the electrochemical behaviour of iron in a simulated acid rain solution (pH 4.5) was studied by electrochemical techniques cyclic voltammetry, potentiodynamic polarization and electrochemical impedance spectroscopy. Experiments were carried out over a wide range of AM concentrations. The results of all techniques showed that AM extract contributes to iron passivation. The films formed in the presence of AM extract were thinner and more resistive than the films formed in pure simulated acid rain solution. The AM extract adsorbed on the iron according to the Freundlich isotherm. The thermodynamic data indicated physical adsorption of the AM extracts on the iron surface. The concentration of the metallic ions released into solution, measured by atomic absorption spectroscopy, was in accordance with the results obtained from the electrochemical techniques.

Keywords: Iron; *Achillea millefolium* L. extract; Simulated acid rain; Electrochemical methods; Atomic absorption spectrometry

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