Approche expérimentale et théorique de l'inhibition de la corrosion de l'aluminium en milieu alcalin

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Abstract: The objective of this thesis is the study of the properties of the cocamidopropyl betaine surfactant. The CPAB has been evaluated as a corrosion inhibitor of the aluminum used in the AL-Air batteries in KOH 1M, by means of the open circuit potential (OCP), of curves dynamic potential polarization of TAFEL and measurements by electrochemical impedance spectroscopy. The results revealed that the processus is limited by pure activation, that the CPAB inhibitor behaves as an effective cathodic inhibitor and that the inhibitory efficiency obtained from the different methods increases with increasing inhibitor concentration. The adsorption of the inhibitor on the aluminum surface follows Langmuir adsorption indicating monolayer adsorption. The theoretical study showed that the Cocamidopropyl betaine could serve as an effective corrosion inhibitor for aluminum in an alkaline solution.

Keywords : inhibitor, corrosion, aluminum, curves dynamic potential polarization of TAFEL, EIS, CPAB.