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Cyclic Voltammetry may be a Special Form of Potentiodynamic Analysis

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INTRODUCTION

In electrochemical corrosion studies, the Working Electrode (WE) is that the material under investigation, which is oxidized during a controlled way. The complementary reactions to take care of charge balance take place at a usually inert Counter Electrode (CE) (e.g., platinum). A Reference Electrode (RE) is employed to control the potential close to the WE surface. Various techniques are wont to measure corrosion resistance. In potentiostatic measurements, the potential of the WE is constant and therefore the current is monitored as a function of time. In potentiodynamic measurements, the potential is typically ramped up slowly and the current as a function of voltage is measured. The current-voltage curve round the corrosion potential (the potential where current is zero) can be fitted (Tafel analysis), giving the corrosion rate in equilibrium. Scans to higher voltage are often used to determine passivation and passivation breakdown. Cyclic Voltammetry (CV) may be a special form of potentiodynamic analysis, where the voltage is swung up and down repeatedly. Electrochemistry is that the study of techniques that use electrical stimulation to analyse the chemical reactivity of a system.

DESCRIPTION

More specifically, it analyses the loss and gain of electrons i.e., the oxidation and reduction mechanisms during a reaction. Oxidation and reduction reactions are called redox reactions these provide vital information associated with the kinetics, concentration, mechanism of reaction, and chemical status of the reactants in solution. Electrochemical analysis is extremely helpful in many applications including the study of neurotransmitter behaviour and polymerizations reactions. Electrochemistry is different from spectroscopy as electrochemical techniques analyse a special set of parameters. Electrochemical techniques were extensively wont to measure 'free' Cd in waters. Within the case of MTs and related molecules, the aminoalkanoic acid chain is electro active due to the presence of thiol groups. Moreover, the reduction of Cd2+ is electrochemically reversible at the mercury electrode and, therefore, it's possible to obtain two different responses simultaneously for a given sample. Additionally, the electrochemical response depends on the chemical sort of the element and allows one to easily monitor changes of the different species in solution. At present many studies on the electrochemical behaviour of Cd-thioneins are reported.

CONCLUSION

Most of them used mercury because the working electrode and so the polarograms of MTs exhibit one peak that is attributed to the oxidation of the mercury electrode in the presence of the Cd-thionein complexes. The measurement uses a tool known as a potentiostat, which is an electronic component which will run a three electrode cell. The potentiostat maintains the potential of the working electrode at a continuing level with respect to the reference electrode. In some cases, it'll be important that there be no current running through the reference electrode, which is achieved by having the system at high impedance.

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CONFLICT OF INTEREST

The author's declared that they have no conflict of interest.

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