Document Type : Thesis

Document Title : الاختزال البولاروجرافي لثلاثي سيانوفينيل الهدرازون وبعض مشتقاته

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Document Language : Arabic

Abstract : The polarographic behaviour of tricyanovinyl hydrozone and some of its derivatives have been studied at DME in buffer solutions containing 40% DMF in the pH range 3-12. Two waves were observed in the acidic medium. The first wave is due to the reduction of the double bond >C=C< where the second wave is due to the reduction of the hydrazono group >C=N-NH- . It was observed that E1/2 shifts to more negative potentials as the pH increases. This denotes that H+ ions are involved in the reduction process. It was observed that the wave which is due to the reduction of hydrazo group disappeared in the alkaline medium. This denotes that hydrazo center is hydrolyzed in the alkaline medium. In case of nitro derivatives, we obtained three waves the first wave is due to nitro group. The effect of concentration was studied . A straight line passing through the origin was obtained, when the current was plotted vs the concentration of the depolarizer. This indicates that the current in mainly diffusion-controlled. Cyclic voltammetric technique using the hanging mercury electrode (HME) as indicator electrode was utilized. The analysis was performed using different scan rates. Cathodic peaks only were obtained without anodic peaks. This indicates that the electrode process is totally irreversible. This was confirmed by shifting the peak potential to more negative potential by increasing the scan rate. The kinetic parameters diffusion coefficient D , the activation energy ?G*and the rate constant K?f,h were calculated at pH~3 and pH~9. Shifts of E1/2 of parent compound due to the substituent effects were correlated with Hammett substituent constants ?p-x . A mechanism for the electroreduction pathway of these compounds has been suggested. These compounds have applications in the filed of dying , electro-optic devises and data storage.

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Publishing Year : 2006