〔Bull. Chem. Soc. Jpn., **59**, 265 (1986)〕

Determination of the Equilibrium and Kinetic Parameters for the Surface-redox Reaction of Hydroquinone Moiety of Adsorbed Adriamycin by Means of Numerical Simulation of D.C. Voltammogram.

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Electrochemical equilibrium and kinetic paramaters for the redox reaction caused by the hydroquinone moiety of adriamycin adsorbed on a pyrolytic graphite electrode have been determined by means of a numerical simulation of the quasi-reversible d. c. voltammograms by using the theory regarding a two-step one-electron surface-redox reaction. The voltammogram was also analyzed from the viewpoint of a one-step two-electron surface-redox reaction mechanism taking into account the interaction parameters between adsorbed molecules. The analyses in terms of both the mechanisms mentioned above reveal that the redox system considered here occurs through the two-step process.

〔Bull. Chem. Soc. Jpn., **59**, 3299 (1986)〕

Electrochemical Properties of Adriamycin Adsorbed on Pyrolytic Graphite Electrodes Modified by Phospholipid Monomolecular Membranes.

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Electrochemical equilibrium and kinetic parameters have been determined by means of numerical simulation of d. c. voltammograms based on the theory of a two-step surface-redox reaction for the case of the redox system of adriamycin adsorbed on a basal-plane pyrolytic graphite electrode (BPGE) which is modified by a phospholipid monomolecular membrane. Comparison of these parameters with those obtained at a bare BPGE has shown that the semiquinone formation reaction is thermodynamically favorable and that the electron transfer rate constant decreases in these lipid membranes.

〔Anal. Sci., **2**, 507 (1986)〕

A New Electrochemical Immunoassay Using Polarographic Catalytic Current.

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A new electrochemical immunoassay that involves combination of the specific immuno-reaction with the electrochemical trace analysis of proteins using polarographic catalytic current has been designed and tested for a system of bovine insulin test solutions containing interfering substances such as bovine serum albumin and cysteine. Bovine insulin was separated from the test solution by adsorption on immunoadsorbents prepared from anti-bovine insulin antiserum-immobilized gel, followed by releasing by urea. The polarographic catalytic current (Brdička current) of the released-insulin solution was measured by differential pulse polarography. The detection limit of bovine insulin by this method was 40 ng. Analytical aspect of the method has been discussed