phase composition changes of the electrode during the reaction. Different versions of discharge mechanism are suggested for the iron oxide electrode which are based on the principle of orientational succession and the Franck–Condon principle.

9 pp., bibliography (10 refs.): p. 7.

Original article filed at VINITI (No. 177-77) January 17, 1977.

DETERMINATION OF THE PARAMETERS OF REACTIONS OCCURRING WITH TWO CHARGE TRANSFER STEPS AND ONE ADSORBED STATE (Part III of a series)

V. N. Pautov

UDC 541.13

With the aim of defining the physical parameters of an electrode reaction in terms of numerical values of frequency-independent quantities called groups, these values being known from experiment, equations have been obtained which link the partial derivatives of the flows with respect to potential and reactant activities which are contained in these groups to the reaction parameters under equilibrium conditions and with dc flow. The application of dc leads to more complicated expressions for the derivatives, but the impedance equation in its general form which gives the impedance as a function of frequency is not changed under these conditions. It is shown that the transition of the capacitive impedance component to an inductive one which is discussed in the literature is not possible at any combination of parameters.

12 pp., bibliography (3 refs.): p. 12.

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ELECTROCHEMICAL OXIDATION OF SOLVATED ELECTRONS AND OF BIELECTRON-CONTAINING COMPLEXES IN HEXAMETHYLPHOSPHORAMIDE

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The anodic oxidation of solvated electrons is studied in the hexamethylphosphoramide–sodium perchlorate system. It is possible in this solution to realize conditions where practically all solvated electrons are bound in $Na^+...e_2^{2-}$ complexes. Two limiting-current waves are seen on the anodic polarization curve. The first wave corresponds to the oxidation of solvated electrons; the limiting rate of this process is controlled by the rate of dissociation of the $Na^+...e_2^{2-}$ complexes into solvated electrons. The second wave corresponds to the oxidation of $Na^+...e_2^{2-}$; the limiting rate of this process is controlled by diffusion of the $Na^+...e_2^{2-}$ species to the electrode.

13 pp., bibliography (12 refs.): p. 13.

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