

intercepting the origin as the modulation frequency becomes high. The experimental curve further indicates that $(\partial R/\partial E)_\theta$ is small compared to $(\partial R/\partial \theta)_E(d\theta/dE)$.

The equivalent circuit in Fig. 2 takes into account diffusion within the solution phase and the kinetics of the Pb deposition and, either the surface diffusion of Pb, or the diffusion of Pb into the bulk Au. The low frequency response cannot be accounted for on the basis of just a simple charge transfer resistance and Warburg impedance in series with C_{ad} . The deviation can be explained if an additional impedance Z_2 of a Warburg type is introduced in parallel with C_{ad} . Such an impedance might arise from the presence of two different types of adsorption sites and hence states of Pb on the surface with surface diffusion control for the transfer of Pb from one type of sites to the other. Resolution of the problem awaits the development of apparatus for measurements at lower frequencies.

Many of the advantages associated with complex plane analysis in the examination of the impedance and admittance of electrode-electrolyte interfaces³ may also be realized with the electromodulation reflection coefficient. The plots of ρ_{im} vs ρ_{rea} can be extended to include such other parameters as concentration and potential.

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¹On leave from Institute of Chemistry, Technology, and Metallurgy, Belgrade, Yugoslavia.

²See e. g., Symp. Faraday Soc. 4 (1970).

³T. Takamura, K. Takamura, W. Nippe, and E. Yeager, J. Electrochem. Soc. 117, 626 (1970).

⁴See e.g., M. Sluyters-Rehbach and J. H. Sluyters, *Electroanalytical Chemistry*, edited by A. J. Bard, (Marcel Dekker, New York, 1970) Vol. 4, pp. 1-128.

Errata

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Erratum: Force constants of the metaborate ion in alkali halides

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The values of the force constants should be $f_{BO} = 10.37$ mdyne/Å and f' (interaction constant) = 1.12 mdyne/Å. This error was detected as a consequence of correspondence with Dr. D. Foss Smith, Jr., Science Research Laboratory, U.S. Military Academy, who we

understand is investigating the anharmonic potential function of the metaborate ion.

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