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Kinetics of an Elementary Charge Transfer Act Involving Polyatomic Dipole Polarizable Species: A Spectroscopic Study

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Abstract

The possibilities of optical and radiowave spectral methods in investigating the kinetics of elementary acts of charge transfer and phototransfer in irregular condensed systems are studied. It is proposed to study the effect of the electrical double layer on the adsorption of dipole polarizable polyatomic species using the IR spectra of adsorbed species and theoretical quantum-mechanical calculations. An analytical equation is obtained for the extinction coefficient of outer-sphere electron phototransfer between species, which accounts for the interaction of intramolecular vibrations of reacting species with fluctuations of the environment polarization. A method based on the recording of nonlinear electromagnetic radiation and microcurrents of the electrochemical system is theoretically substantiated.

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