

Turkish Journal of Chemistry

Turkish Journal

of

Chemistry

Heterogeneous Electron Transfer Rate Constants of Viologen Monocations at a Platinum Disk Electrode

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Abstract: Experimental values of rate constants for the heterogeneous transfer of electrons to methyl viologen, diquat viologen, benzyl viologen and n-butyl viologen monocations were determined. The process was studied at the surface of a platinum disk in mixtures of water with different aprotic solvents at different temperatures. Theoretical rate constants were evaluated using Marcus' equation, which also contains barrier crossing probability and nuclear frequency. A comparison was made between the theoretical and experimental values of rate constants.

Key Words: Viologen monocations, experimental rate constant for heterogeneous electron transfer process, theoretical rate constant for heterogeneous electron transfer process

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Turk. J. Chem., **30**, (2006), 165-180.

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