

## Numerical simulation of cyclic voltammetry for multi-functional electrochemical reaction using MATLAB

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Cyclic voltammetry has become one of the most important method in electroanalytical studies. Cyclic voltammetry provides means for mathematical analysis of an electron transfer process at an electrode, for examining the reaction mechanism and providing information for thermodynamic data about a heterogeneous electron transfer process. In this study, the ionic transport phenomena near the electrode have been analyzed and the computational program to simulate the electrical signal of cyclic voltammetry has been written by using MATLAB. For the numerical simulation for the multi-functional electrochemical reaction, the Butler-Volmer equation was confined to semi-infinite diffusion model based on the explicit finite difference method. The calculated CV curves for the multi-functional electrochemical reaction are in good agreement with the experimental values.