Voltammetric Studies of Catechol Behavior in Presence of 4,4'-bipyridine via Convulsive Voltammetry, Chronoamperometry and Digital Simulation

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Voltammetric studies of catechol behavior with and without 4,4'-bipyridine was performed via cyclic, convulsive voltammetry, chronoamperometric and digital simulation at gold electrode in 0.5 M KNO₃ aqueous solution as background electrolyte. This study aims to explain the catechol behavior in case of existence of 4,4'-bipyridine in 0.5 M KNO₃ aqueous solution. Voltammetric studies revealed that the electrooxidative process of catechol yields active, o-benzoquinone as intermediate, which reacts with 4,4'-bipyridine to produce the derivative of catechol substance. The electrochemical parameters were determined experimentally and confirmed via generation of theoretical voltammograms. Based on the voltammetric behavior of the investigated compound, the electrode mechanism was proposed.

Keywords: Convulsive voltammetry, EC process, Chronoamperometry, 4,4'-bipyridine

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