

Área: FQ

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Obtaining electronic parameters of the molecule N,N,N',N'-tetramethyl-p-phenylenediamine (TMPD) using high-amplitude ac voltammetry technique.

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Palavras Chave: (ac Voltammetry, Electron transfer processes, N,N,N',N'-tetramethyl-p-phenylenediamine, Ionic liquid).

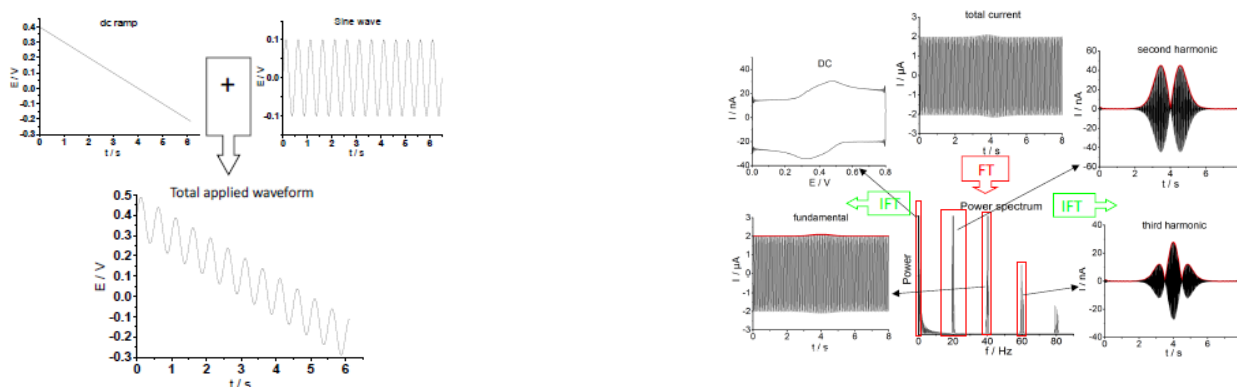
Highlights

In ac voltammetry, a waveform is superimposed onto dc ramped potential and the resultant potential can be analyzed that exploit the advantages of both dc cyclic voltammetry and impedance spectroscopy.

Resumo/Abstract

In this work, we studied one and two-electron transfer reactions, using the molecule N,N,N',N'-tetramethyl-p-phenylenediamine, TMPD, as an example, and the Fourier transform cyclic voltammetry technique. The electrode used to study the electron transfer of this molecule was the ionic liquid: 1-butyl-2,3-dimethylimidazolium bis(trifluoromethylsulfonyl)imide, [BDMIM][TF2N]. After transformation and delivery of harmonic data, it is possible to analyze electronic parameters such as the charge transfer rate constant, electric double layer capacitance, uncompensated solution resistance, charge diffusion coefficient.

Figure 1: Schematic representation of the waveform and data analysis used in high-amplitude ac voltammetry.

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