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Simone Stülp
Tatiana Rocha
Leandro Machado de Carvalho
Daniel Ricardo Arsand
Daiane Dias
Pedro Hernandez Jr.
Fernanda Trombetta
Alexandre Schneider
(Orgs.)

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Nome dos autores: Rafael do Prado Kawanishi, Suysia Ramos D'Almeida, Rafael Martos Buoro

Nome dos Apresentadores: Rafael do Prado Kawanishi, Suysia Ramos D'Almeida, Rafael Martos Buoro, Suysia Ramos D'Almeida

Instituição de Ensino: Instituto de Química de São Carlos, Universidade de São Paulo

GREEN SYNTHESIS OF SILVER NANOPARTICLES IN DEEP EUTECTIC SOLVENT AND ITS APPLICATION IN THE MODIFICATION OF CARBON PASTE ELECTRODE FOR DETECTION OF BISPHENOL A IN BOTTLED WATER

Resumo: The investigation of the applicability of Deep Eutectic Solvent (DESs) in the field of nanoparticle synthesis has of great interest due to DES unique properties. DESs can be defined as a mixture of two compounds when at a particular molar ratio, having a melting point significantly lower than that of either individual component [1]. In this work, a DES-silver nanoparticle modification (RE-AgNPs) was proposed for the modification of carbon paste electrodes [2]. Reline was synthesized adapting the method proposed by Abbott [1]. Choline chloride (HBA) and Urea (HBD) were mixed simultaneously in a 1:2 (nHBA/nHBD) ratio under vigorous stirring and controlled temperature (80˚C). The AgNPs was synthesized adapting the method proposed by Lemes [3]. A mixture of 3.0 mL of reline previously heated to 105 °C, 0.5 mL of tri sodium citrate solution (14.6 mg) was added and 0.250 mL of $AgNO_3$ solution (91.1 mg) was prepared and kept under heating until a yellow color appeared. The carbon paste composite was prepared by substituting a fraction (10%) of the binder (mineral oil) by the RE-AgNPs. The electroanalytical performance of the electrodes was evaluated and characterized using cyclic and square wave voltammetry. The modified carbon paste electrodes (CPE/RE_AgNPs-10%) showed the increased peak values for the oxidation of BPA when compared to CPE and CPE/RE demonstrating a synergistic interaction between the DES and AgNP Due the higher sensitivity of proposed sensor, this electrode was successfully applied to quantify *BPA* in bottled water, in both carbonated and non-carbonated samples.

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