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Abstract

Voltammetric Detection of Mercury Ions at poly(azulene-EDTA) Like Screen Printed Modified Electrodes †

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Abstract: The use of modified electrodes for trace metals analysis from soft water samples represent a modern approach, which can provide accurate, fast results with high accuracy and sensitivity. Therefore, many applications were developed for different toxic metals, such as As, Cd, Cu, Hg, Ni, Pb. The classic analytical methods (ICP-MS, AAS with graphite furnace, ICP-EOS with ultrasonic nebulizer) require a longer analysis time (pretreatment of the sample and analysis). In addition, the costs involved are higher than electrochemical analysis as result of expensive equipment, costs associated with method validation process, qualified staff.-Thus, here we present the development of the previously obtained modified electrodes based on poly(2,2'-(ethane-1,2-diylbis((2-(azulen-2-ylamino)-2-oxoethyl)azanediyl))diacetic acid, (polyL) to laboratory-scale studies and physically validate the analytical predictions by developing an assembly system made of screen printed modified electrodes (SPEs) with polyL selective complexing polymeric films coupled with a low-cost, small, portable, stand-alone, hand-held, single-technique, potentiostat to analyze the Hg(II) ions content from environmental water samples. The purpose these modified electrodes is to provide real-time reliable information about the chemical composition of its surrounding environment.

Keywords: complexing polymer; modified electrode; voltammetric detection; mercury analysis