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Schiff Base modified on CPE electrode and PCB gold electrode for selective determination of silver ion

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The Schiff base was synthesized by 2,5-thiophenedicarboxaldehyde and 1,2,4-thiadiazole-3,5-diamine with condensation method. There was modified on Carbon paste electrode (CPE) and Printed circuit board (PCB) gold electrode for determination silver ion. The Schiff base film of modified electrodes was characterized by atomic force microscopy (AFM) and scanning electron microscopy (SEM), respectively. The electrochemical study was reported by cyclic voltammetry method and impedance spectroscopy using modified electrode as working electrode, platinum wire and Ag/AgCl as counter electrode and reference electrode, respectively. The modified electrodes have suitable detection for Ag⁺. The determination of silver using the modified electrodes depended linearly on Ag⁺ concentration in the range 1x10⁻¹⁰ M to 1x10⁻⁷ M, with cyclic voltammetry sensitivity were 2.51x10⁸ μA M⁻¹ and 1.88x10⁸ μA M⁻¹ for PCB gold electrode and CPE electrode, respectively, limits of detection were 5.33x10⁻⁹ M and 1.99x10⁻⁸ M for PCB gold electrode and CPE electrode, respectively. The modified electrodes have high accuracy, inexpensive and can applied to detection Ag⁺ in real samples.

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