Ultra-sensitive Electrochemical Determination of Mercury Ions Based on the Dithizone Modified Electrode

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Mercury-ion pollution in water is very dangerous to human health and ecological environments. It is necessary to propose a simple, fast and low-cost testing method for mercury-ion detection. Cold atomic spectrophotometers are often used for the detection of mercury ions, but because the instruments are expensive and cumbersome to operate, the method is only suitable for laboratories. In this work, we propose a simple electrochemical method for the determination of mercury ions based on a dithizone-modified glassy carbon electrode. The dithizone modification can significantly enhance the sensing performance of the electrode. Under optimized conditions, the proposed electrochemical sensor can linearly detect Hg(II) between 0.1 and 100 µg/L with a low detection limit of 17 ng/L.

Keywords: Heavy metal ion; Water pollution; Mercury ions; Dithizone modification; Electroanalytical determination

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