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HEAVY METALS MEASUREMENT: A SUITABLE SOLUTION TO IMPROVE ONLINE MEASUREMENT CELERITY

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Abstract

This article presents a low-cost, voltammetry-based measuring system to identify heavy metals dissolved in water and to evaluate their concentrations. The main

objective of the proposed measurement system is related with measurements' celerity. A segmented voltage sweep mode is proposed to overcome the slowness that is inherent to the use of the traditional continuous voltage sweep mode used in anodic stripping voltammetry. The segmented voltage sweep is performed around the voltammetric current peaks that are associated with the heavy metals with higher concentrations or around voltage ranges that are associated with specific metals' redox potentials. A solution to improve measurement celerity by reducing the time needed to remove the dissolved oxygen contained in the water sample is also presented. The article also includes the presentation of two self-test modes and several experimental results to evaluate the performance of the proposed measurement method.

Q Keywords: electrochemical analysis heavy metals measurement measurement celerity self-test voltammetry

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