TRACE DETECTION OF Cr(VI) VIA ASSEMBLY OF METALLIC NANOPARTICLES/CHITOSAN/MULTIWALLED CARBON NANOTUBES AS NOVEL ELECTROCHEMICAL SENSOR

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This work aims the development of a novel electrochemical method for the sensitive detection of Chromium VI which is a highly toxic heavy metal ion, which exhibits high oxidation potential, high mobility in the environment, bioaccumulation, and biodegradability. Derivative hexavalent chromium compounds can induce carcinogenic and mutagenic disorders The World Health Organization (WHO) establishes a maximum permissible for Cr(VI) of 0.05 mg$\cdot L^{-1}$ in drinking water. Official Mexican regulation NOM-127-SSA establishes the maximum permissible limits of Cr(VI) in drinking water at 0.05 mg$\cdot L^{-1}$. In this work, an electrochemical sensor for the detection of Cr(VI) in wastewater was fabricated by modifying a glassy carbon electrode via assembly of metallic nanoparticles/chitosan/multiwalled carbon nanotubes, which made possible a greater sensitivity in the detection of Cr(VI). The differential pulse voltammetry technique was an optimal resource for the detection and subsequent quantification of Cr(VI) in an acid medium. The fabricated sensor achieved optimal performance with a of detection (LOD) for hexavalent chromium at 0.007 µg L^{-1} and a of quantification (LOQ) of 0.02 µg L^{-1}

Keywords: Chromium(VI), electrochemical sensor, aqueous trace detection

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