

ABSTRACT

One of the pollutants that is often found in aquatic environments is heavy metals. The presence of heavy metals can pose a health threat to living things, one of which is cadmium, a heavy metal with the highest level of toxicity. The use of SPE as a heavy metal detector has been widely studied because of its ease of fabrication and the use of small amounts of samples. In this experimental study, SPE with the basic material working electrode carbon, or SPCE, has been successfully fabricated using modified ZnO/PVA nanocomposite materials, ZnO/PVA/Graphene Nanopowder, and ZnO/PVA/CNC, due to its good electrical properties and electron mobility. With the addition of doping material, the mechanical properties of the material also increase. Tests on the heavy metal cadmium with varying concentrations of 0-80 ppm have been successfully carried out using the square wave voltammetry method and obtained parameters for each material, ZnO/PVA, ZnO/PVA/Graphene Nanopowder, and ZnO/PVA/CNC, as follows: successively followed by coefficients of determination of 88%, 85.9%, and 96%; sensitivity of 1.7×10^{-4} A/ppm; 5.57×10^{-5} A/ppm; 1.02×10^{-4} A/ppm at 0-80 ppm linear measurement; and LOD of 0.112 ppm, 0.113 ppm, and 0.107 ppm. So based on the experimental studies that have been done, the ZnO/PVA nanocomposite with the addition of CNC as a doping material has a better ability to detect cadmium heavy metal.

Kata kunci: Cadmium, Nanocomposite ZnO/PVA, SPCE.