

Abstract

In this study, we demonstrated a highly sensitive electrochemical sensor for the simultaneous detection of Pb (II) and Cd (II) in aqueous solution using carbon paste electrode modified with *Eichhornia crassipes* powder by square wave anodic stripping voltammetry. The effect of modifier composition, pH, preconcentration time, reduction potential and time, and type of supporting electrolyte on the determination of metal ions were investigated. Pre-concentration on the modified surface was performed at open circuit. The modified electrode exhibited well-defined and separate stripping peaks for Pb (II) and Cd (II). Under optimum experimental conditions, a linear range for both metal ions was from 10 to 5000 $\mu\text{g L}^{-1}$ with the detection limits of 4.9 $\mu\text{g L}^{-1}$, 2.1 $\mu\text{g L}^{-1}$ for Cd(II) and Pb (II), respectively. The modified electrode was found to be sensitive and selective when applied to determine trace amounts of Cd (II) and Pb (II) in natural water samples.