ChemistrySelect

Research Article
doi.org/10.1002/slct.202203592

Chemistry Europe
European Chemical Societies Publishing

www.chemistryselect.org

Electrografting a *p*-Propylaniline/L–Cys Nanofilm onto a Glassy Carbon Electrode Resulting in Enhanced Electrosensing of Cd(II), Pb(II) and Hg(II)

Jonathan J. Calvillo Solís,[a] Mónica Galicia García,*[a] Felipe J. González Bravo,[b] and César A. Ortiz-Ledón[c]

A glassy carbon electrode (GCE) was chemically modified with *p*-propylaniline/L–Cys molecules for the sensitivity determination of Cd(II), Pb(II) and Hg(II) in aqueous medium. Cyclic voltammetry (CV) and electrochemical impedance spectroscopy (EIS) characterized passivation of the electrode and 97.4% surface coverage with *p*-propylaniline/L–Cys molecules. Nanofilm coating was characterized by cyclic voltammetry (CV), atomic force microscopy (AFM), and Fourier transform infrared coordinate and preconcentrate the three metal ions. Under the optimized conditions (deposition potential: −1 V vs. SCE, deposition time: 90s), square wave anodic stripping voltammetry (SWASV) electroanalysis results indicated the linear increment of electrochemical signals with an increase in the concentration of Cd(II), Pb(II) and Hg(II) in range of 2.5 to 30 $\mu g\,L^{-1}$. Based on the calibration plot, limit of detection (LOD, $3\sigma/m$) are 0.103 $\mu g\,L^{-1}$, 0.055 $\mu g\,L^{-1}$ and 0.01 $\mu g\,L^{-1}$ respectively