Abstract

This Bachelor Thesis is devoted to the study of electrochemical behavior of 6-nitrochrysene (6-NCH) and to the finding of the optimum conditions for its determination using direct current voltammetry (DCV) and differential pulse voltammetry (DPV) at a mercury meniscus modified silver solid amalgam electrode (m-AgSAE). For measuring the concentration dependences of 6-NCH, the optimum medium methanol – BR buffer pH 9.0 (1:1) and the proper regeneration potentials $E_{reg,1}$ = 0 mV, $E_{reg,2}$ = –600 mV have been chosen for DCV at m-AgSAE and the medium methanol – BR buffer pH 10.0 (1:1) and the proper regeneration potentials $E_{reg,1}$ = 0 mV, $E_{reg,2}$ = –750 mV have been chosen for DPV at m-AgSAE. The concentration dependence was found to be linear only for the lowest concentration range of 10^{-7} mol·l^{-1}. In the concentration range of 10^{-6} mol·l^{-1}, the concentration dependences observed were polynomial. This result indicates a possible adsorption of 6-NCH on the surface of working electrode. Reached limits of quantification (L_Q) were $1 \cdot 10^{-7}$ mol·l^{-1} for DCV at m-AgSAE and $5 \cdot 10^{-8}$ mol·l^{-1} for DPV at m-AgSAE. For comparison, the concentration dependence of 6-NCH was measured in methanol using UV-VIS spectrophotometry. Reached $L_Q \sim 1 \cdot 10^{-7}$ mol·l^{-1} is comparable with L_Qs reached using DCV and DPV techniques.