

ABSTRACT

In this paper we report on the synthesis, characterization and use of monocarboxy-phthalocyanine-single walled carbon nanotube conjugates in the electrocatalysis of amitrole and diuron. UV-Vis, FTIR and XRD spectroscopies were used in the characterization of cobalt(II)-tris(benzyl-mercapto)-mono(carboxyphenoxy)-phthalocyanine conjugates (CoMCPc-PA-SWCNT(linked)), while AFM was used to show changes in surface morphologies of the modified electrodes. Cyclic voltammetry and chronoamperometry were used for the electrocatalytic oxidation of amitrole and diuron on the modified glassy carbon electrode. The catalytic rate constants for amitrole and diuron were found to be 1.83×10^6 and $1.99 \times 10^6 \text{ M}^{-1} \text{ s}^{-1}$, respectively. The linear range for both was 1.0×10^{-5} – $2.0 \times 10^{-4} \text{ M}$, with sensitivities of 5.10 and $3.70 \text{ A mol}^{-1} \text{ L cm}^{-2}$ for amitrole and diuron, respectively. The limits of detection were estimated to be 0.14 and 0.20 μM for amitrole and diuron, respectively, using the 3δ notation.