ABSTRACT

In this paper we report on synthesis and electrocatalytic behavior of cobalt (II)-tris(benzyl-mercaptopo)-monoaminophthalocyanine–single walled carbon nanotube nanorods towards the oxidation of amitrole. SWCNTs that were terminally functionalized with carboxylic acid groups were chemically linked to cobalt (II)-tris(benzyl-mercaptopo) monoaminophthalocyanine (CoMAPc) via an amide bond to form nanorods. UV-vis, FTIR, TEM, Raman and XRD spectroscopies were used in characterization of the nanorods (CoMAPc–SWCNT-linked), while cyclic voltammetry and chronoamperometry were used during the characterization of amitrole on the modified glassy carbon electrode. The linear dynamic range for the amitrole was from $1.0 \times 10^{-6}$ M to $1.2 \times 10^{-4}$ M, with a sensitivity of $6.76$ A mol$^{-1}$ L cm$^{-2}$. The estimated limit of detection for amitrole was $0.10$ μM, using the $3\delta$ criterion. The catalytic rate constant was found to be $1.09 \times 10^5$ M$^{-1}$ s$^{-1}$.