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Analysis of 1-Amino anthra-9,10-quinone with the copolymer poly(2-octylthiophene-co-3,4- ethylenedioxythiophene) for oxygen reduction

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Abstract: Polymers play a vital role in every field. 1-Amino anthra-9,10-quinone combined with the copolymer poly(2-octylthiophene-co-3,4- ethylenedioxythiophene) was used to study the oxygen reduction reaction. This investigation reports the electrochemical characterisation of the combination of anthraquinone compound with the copolymer. From the cyclic voltammograms, the stability of the copolymer poly(2-octylthiophene-co-3,4-ethylenedioxythiophene) was studied. From the chronoamperometric and chronocoulometric data's, the diffusion coefficient values of anthraquinone at the copolymer modified electrode, influence of pH on the electrochemical behaviour and the number of electrons involved in anthraquinone reduction were determined. 1-Amino anthra-9,10-quinone combined with the conducting copolymer poly(2-octylthiophene-co-3,4- ethylenedioxythiophene) showed excellent electrocatalytic ability for the reduction of oxygen. Scanning electron microscopy images were included to show the excellent modification of the modified electrodes.
Keywords: Copolymer, modified electrode, 1-Amino anthra-9,10-quinone, Oxygen reduction.

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