

## DEVELOPMENT OF NONENZYMATIC AMPEROMETRIC SENSOR FOR DETECTION OF HYDROGEN PEROXIDE BASED ON MANGANESE(II) CARBONATE THIN FILMS

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The present study contributes to the development of nonenzymatic amperometric sensors for detection of hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>) based on manganese(II) carbonate thin films and has a potential application for glucose detection in biological systems. The thin films are deposited on electroconductive FTO-coated glass substrates using chemical bath deposition method. Thin film chemical composition and structural analysis were studied using XRD and FTIR, and their electrochemical properties and sensitivity towards H<sub>2</sub>O<sub>2</sub> were examined using cyclic voltammetry and amperometry. Thin films with three different thicknesses of 80, 125 and 200 nm were used. The experiments were carried out in a phosphate buffer with  $c(\text{K}_2\text{HPO}_4/\text{KH}_2\text{PO}_4) = 0.1 \text{ mol/L}$  and pH = 7.5. Wide concentration range of hydrogen peroxide from 5 to 1000 ppm was probed and the most stable electrochemical response was obtained at potential of +0.40 V when using 200 nm thick MnCO<sub>3</sub> film. The calibration plot is associated with a linear regression line and coefficient of  $R^2 = 0.99$ .

**Keywords:** hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>), non-enzymatic amperometric sensors, MnCO<sub>3</sub> thin films.

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