Preparation of Cu-PVC membrane electrochemical membrane sensor based on β -Cyclodextrin

M.M. Zareh^{1,*}, Kh. Elgendy¹, A. A. Keshk², M. Zaky¹, A. Abd-Alhady¹

¹ Department of Chemistry, Faculty of Science, Zagazig University, Zagazig 44519, Egypt

² Department of Chemistry, Faculty of Science, University of Tabuk, Tabuk, Saudi Arabia

*E-mail: mohsenzareh2@gmail.com, mmzareh@zu.edu.eg

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The assembly and characteristics of a copper(II) electrochemical sensor (CuES) based on β -cyclodextrin (β CD) doped into PVC was reported in this paper. The CuES was prepared by combining Ag/AgCl reference electrode plus the polyvinyl chloride (PVC) membrane electrochemical sensor. The CuES reveals a Nernstian behavior over a wide copper ion concentration range (1.0×10^{-2} to 5.0×10^{-6} mol L⁻¹) and a relatively low detection limit (0.32 ppm). The potentiometric response was independent of the pH of the solution above 3.9 whatever the used concentration. The CuES showed a very short response time (5 s for 10^{-3} and 10^{-2} M) and (15 s for 10^{-4} M) for all compositions. It exhibited very good selectivity relative to a wide variety of metal cations. The proposed CuES was used for the analysis of copper in Haematon-containing samples. This method was compared with traditional spectrophotometric techniques.

Keywords: copper determination, copper electrochemical sensor, β -cyclodextrin, Cu analysis.

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