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## Novel polymeric membrane electrode for the potentiometric analysis of $\text{Cu}^{2+}$ in swimming pools using copper ionizers

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Novel and benign copper (II) selective electrode was investigated with 2-nitrophenyl octyl ether as a plasticizer, sodium tetraphenylborate ( $\text{NaTPB}$ ) as an ionic site in a polymeric matrix of polyvinyl chloride (PVC). The sensor was constructed using (the firstly introduced) 2-amino-4-chlorophenol (ACP) as a sulfur free ionophore. Linear response of  $\text{Cu}^{2+}$  within the concentration range of  $3.6 \times 10^{-6}$ – $1 \times 10^{-1} \text{ mol L}^{-1}$  with a detection limit of  $1.5 \times 10^{-7} \text{ M}$  were obtained. Nernstian slope of  $28.6 \pm 0.4 \text{ mV/decade}$  over the pH range of 4–7 were observed. The selectivity coefficient of the developed sensor indicated excellent selectivity for  $\text{Cu}^{2+}$  ions over interfering cations. The suggested sensor having ACP ionophore is more advantageous and showed best performances in comparison to the commonly used sulphur-containing ionophores based membranes. The proposed sensor showed successful applications to the direct determination of copper ions in water samples of swimming pools operated by copper ionization system as a chlorine alternative for disinfection, and also as indicator electrode for potentiometric titration of copper ions with EDTA solution. The obtained results were validated in compliance with USP guidelines and also, statistically compared to those obtained from the application of atomic absorption technique as a reference method.

### Biography

Hebat Allah Mohammed Essam, a lecturer and postdoctoral researcher in Analytical chemistry Dept., faculty of pharmacy, Cairo University, Egypt. I have completed my PhD at the age of 27 years from Cairo University with more than 10 training courses and workshops in the leader development centre. I have published 6 papers in international scientific journals and 2 posters in pharmaceutical conferences one of them won the best poster prize. Also, my PhD thesis won the best thesis in Cairo University for the year 2007. I have good participation as a reviewer in international pharmaceutical and chemical journals, a supervisor of MD theses.

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