

## Synthesis and Application of 2'-(5-Bromo-2-hydroxybenzylidene) Toluenesulfonohydrazide as a Shift Base Ionophore for Highly Selective Copper(II) Membrane Electrode

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The construction of a potentiometric copper(II) ion electrode based on 2'-(5-bromo-2-hydroxybenzylidene) toluenesulfonohydrazide (5BrSALMeBSH) as an ionophore has been developed. The designed electrode having a different composition of poly(vinyl chloride) (PVC), plasticizers and ionophore showed that sensor with membrane composition 5BrSALMeBSH: PVC: DOP in the ratio of 7:40:56 (w/w) gave the best response. It exhibited a wide linear response with a Nernstian slope of 29.34 mV per decade over the concentration range of  $1.0 \times 10^{-5}$  –  $1.0 \times 10^{-1}$  M Cu(II) ions. Under the optimized conditions, the electrode has a detection limit of  $3.98 \times 10^{-6}$  M and the working pH range of 3.0 - 6.0 with response time less than the 20s. The proposed electrode is stable for about two months and exhibits good selectivity for Cu(II) ions over  $Zn^{2+}$ ,  $Co^{2+}$ ,  $Ni^{2+}$ ,  $Pb^{2+}$ ,  $Mg^{2+}$ ,  $Ba^{2+}$ ,  $Ca^{2+}$ ,  $Cd^{2+}$ ,  $Ce^{3+}$ ,  $K^+$ ,  $Na^+$ . Designation of this easy and inexpensive electrode was used to determine a copper ion in wastewater samples, and the results obtained shown a sync relation with spectroscopy method which is AAS method conducted.

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**Keywords:** Copper(II) selective electrode, 2'-(5-bromo-2-hydroxybenzylidene) toluenesulfonohydrazide, potentiometry, polymeric membrane electrode

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