

Fabrication of a highly selective and sensitive CrO₄ sensor based on a N,N'Bis(salicylidene)ethylenediaminocobalt(II)hydrate.

ABSTRACT

In this work a membrane was prepared by use of N,N'Bis(salicylidene) ethylenediamino cobalt(II) hydrate (Co(SALEN)₂) as an ion carrier, polyvinylchloride (PVC) as matrix, and 2-nitrophenyl octyl ether (2NPOE) as a plasticizer for an ion-selective electrode used in the measurement of CrO₄²⁻-anions in solution. The amounts of (Co(SALEN)₂) and PVC were optimized in the preparation of the membrane. The response of the electrode was Nernstian within the concentration range 1.0×10^{-6} to 1.0×10^{-1} M. This sensor displays a drift in Nernstian response for this anion changes with the amount of ionophore and PVC. The effects of various parameters such as pH, different anion interferences, the amounts of ionophore and PVC and time on response of the coated ion-selective electrode were investigated. The response of the fabricated electrode at concentration range from 1.0×10^{-6} to 1.0×10^{-1} M is linear with a Nernstian slope of -28.33 mV.

Keyword: Ion-selective electrode; Chromate (II) anion; N,N'Bis(salicylidene) ethylenediamino cobalt(II) hydrate.