Studies on lead ion-selective electrodes based on polyalkoxylates. Jaber, A. M. Y.; Moody, G. J.; Thomas, J. D. R. Chem. Dep., King Fahd Univ. Pet. Min., Dhahran, Saudi Arabia. Analyst (Cambridge, United Kingdom) (1988), 113(9), 1409-13. CODEN: ANALAO ISSN: 0003-2654. Journal written in English. CAN 109:203943 AN 1988:603943 CAPLUS (Copyright (C) 2008 ACS on SciFinder (R))

Abstract

The performance of the tetraphenylborate (TPB) salts of lead complexes with nonionic surfactant polyalkoxylates, namely polyethylene glycol 1540 (PEG 1540), Antarox CO-880 and polypropylene glycol 425 (PPG 425) as the active sensors for Pb2+ ions in poly(vinyl chloride) (PVC) membrane electrode systems has been assessed using 2-nitrophenyl Ph ether (NPPE), dioctyl phenylphosphonate (DOPP), or dipentyl pentylphosphonate (DPPP) and their mixts. as plasticizing solvent mediators. The PVC electrode based on Pb.Antarox CO-880.TPB-NPPE showed a higher selectivity towards Pb2+ in the presence of a large no. of interfering metal ions and had a nearly Nernstian response between 10-5 and 10-1 mol dm-3 of Pb2+. In terms of range, the next best electrode was that based on Pb.PPG-425.TPB-DOPP, but this suffered from more interferences than the Pb.PPg-425.TPB-NPPE analog and was short range (down to 10-4 mol dm-3). The three electrodes, Pb.Antarox CO-880.TPB-NPPE, Pb.PPG-425.TPB-DOPP and Pb.PPG-425.TPB-20%DOPP+80%NPPE, showed good end point breaks in the potentiometric titrn. of sulfate in 80% ethanolic solns. with lead perchlorate, the best being the electrode based on P.PPG-425.TPB-DOPP. However, the lead(II) titrant system is susceptible to the interference by hydrogen peroxide that can occur in some analytes.