

Impedance behavior of poly(vinyl chloride) matrix membrane ion-selective electrodes.
Ahmad-Bitar, R.; Abdul-Gader, M. M.; Zihlif, A. M.; Jaber, A. M. Y.. Fac. Sci., Univ. Jordan, Amman, Jordan. Journal of Electroanalytical Chemistry and Interfacial Electrochemistry (1983), 143(1-2), 121-33. CODEN: JEIEBC ISSN: 0022-0728. Journal written in English. CAN 98:115655 AN 1983:115655 CAPLUS (Copyright (C) 2008 ACS on SciFinder (R))

Abstract

The impedance behavior of some liq. ion-exchangers (for a Ba ion-selective electrode based on neutral carrier complexes, and for the Orion Ca²⁺ and Cl⁻ selective electrodes) incorporated in poly(vinyl chloride) (PVC) matrix membranes is described. The patterns of behavior are compared with those of previous work on liq. and glass analogs. All the membrane tested showed, in the complex plane plots, an almost complete semicircle in a high-frequency range and the beginning of another arc at a lower frequency limit. The processes contributing to the behavior of ion-selective electrodes based on PVC matrix membranes are mainly related to membrane bulk, and to Warburg diffusion. The surface mechanism might be affected by aging the PVC-membrane electrode. Effective bulk parameters, e.g., elec. relaxation time, the resistive component of impedance, d.c. resistance, and the geometric capacitance, were also estd.