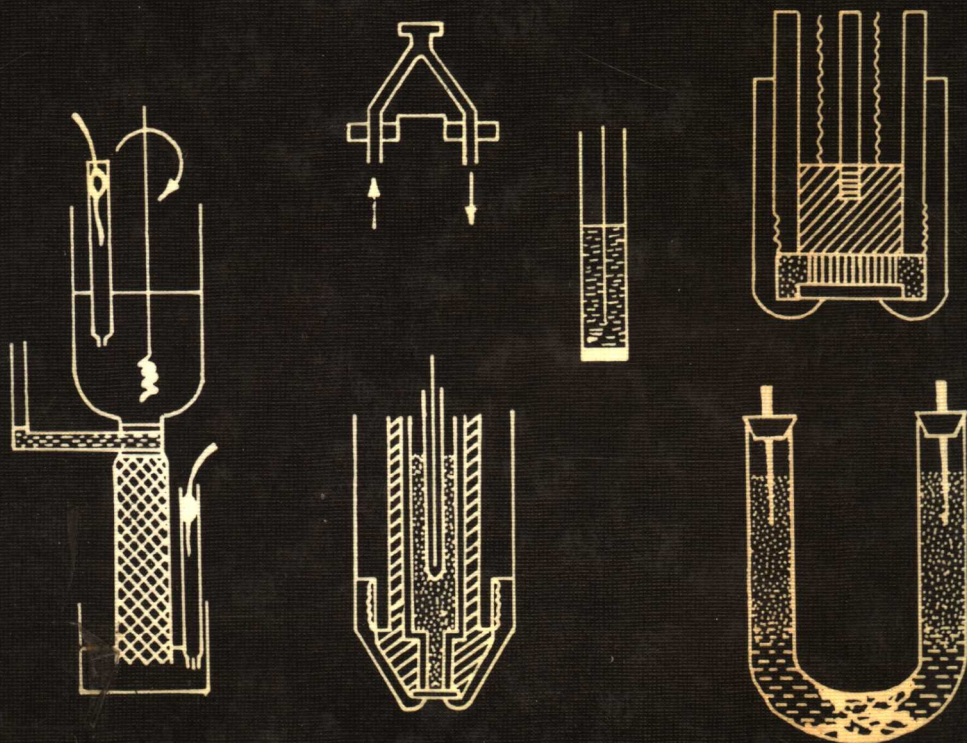


# MEMBRANE ELECTRODES IN DRUG-SUBSTANCES ANALYSIS

**Vasile V Cosofret**

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Translation Editor: **J D R Thomas**, UWIST, Cardiff



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# Membrane Electrodes in Drug-Substances Analysis

by

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## Foreword

Several books on the analytical control of drugs, especially chromatographic techniques, have been published in the last few years. This book by Dr. Vasile V. Coşofreţ is an important contribution in this area. Analytical methods using ion-selective membrane electrodes are very simple, quick and accurate and require just simple apparatus and appliances, usually found in any common laboratory.

This very new area of analytical chemistry is now widely practised and it is only in very few countries that the techniques of membrane electrodes are not used. The researches of Dr. Coşofreţ and many other specialists from various countries worldwide in the field of analytical drug control represent a valuable advance.

The first part of the book, is a short but especially useful guide to the analyst who intends to use a certain method for the analytical quality control of a given drug.

The subject area of the book is excellently presented. Thus, Dr. Coşofreţ has made a critical presentation of various analytical methods employing ion-selective membrane electrodes. The short description of the action of the analyzed drug is useful not only for the analyst but also for the physician, the biologist or the pharmacologist involved in the study of the drug.

The book is addressed to all the specialists engaged in drug research activities and especially for the analyst, for whom I consider it is bound to be very useful.

C. SÂRBU

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## Introduction

The development of ion-selective membrane electrodes has been quickly followed by applications not only in inorganic analysis but also in biomedical analysis and more recently in the pharmaceutical field. Development over the last 15 years have progressed from the discoveries of the lanthanum fluoride crystal membrane electrode (1) and of the liquid membrane electrode for calcium (2). Thus, membrane electrodes have been developed for most of the important inorganic ions and for several organic ions, many of which have complex structures.

The publishing by Pergamon Press, Oxford, U.K. of a special review journal (ION-SELECTIVE ELECTRODE REVIEWS) under the editorship of Dr. J.D.R. Thomas, - co-author of the first book dealing with the theoretical and practical aspects of the ion-selective membrane electrodes (3), emphasises the impact of ion-selective electrodes in science and technology. Also, two international journals (Analytical Chemistry and Analytica Chimica Acta) have periodically published reviews covering the progress made (4-12).

During the past few years several Symposia and Conferences on ion-selective electrodes have been held (13-21). Books have been devoted entirely to the principal theoretical and practical aspects of ion-selective membrane electrodes (22-34) and many others contain comprehensive chapters on the subject (35-40).

An important advantage of ion-selective membrane electrodes is that they can, in principle, be designed for any ionic species. From the analytical point of view they represent a favourable means of determining various ions owing to their ability to monitor selectively and continuously the activity of a particular ion in a solution. Hence, these electrochemical sensors have been used in a large number of applications by direct potentiometric determinations and by bipotentiometric or potentiometric titrations. They have been used in kinetic studies, resolution of reaction mechanisms, biochemical and biomedical research, flow injection analysis, etc. Applications in pharmaceutical analysis control are also feasible, for such electrodes placed at a suitable monitoring point can characterize the composition of a solution by means of the transmitted electrical signal. The information which is rapidly and continuously obtained may be used for controlling the characteristic parameters of the process (29, 41-43).

Drug quality control is an area of analytical chemistry with implications in public health, so that new reliable, quick and accurate methods for estimating the purity of the active principle are always welcome. Hence, in the last few years application of ion-selective membrane electrodes has been extended to controlling drug quality, but so far the methods have not been introduced into the Pharmacopoeias. Maybe this book will make for their early introduction.

This book has been made possible only as a result of the remarkable contributions by numerous researchers from all over the world. To all of them I express my gratitude and I also wish them continued success in their work.

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