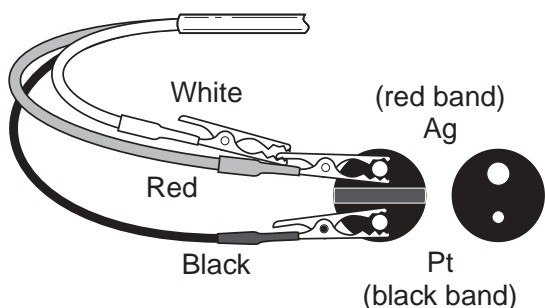


Figure 3. Cell lead connection to the oxygen electrode.



C.If you are using a BASi 100B/W or CV-50W, select the time-base mode (TB). Apply an appropriate potential (-650 mV) to the oxygen electrode. Allow a few minutes for the current response to come to a steady state.

D.Deoxygenate the solution via a gas (N₂, He, Ar) purge or chemical oxygen scavenger. Measure the difference between the limiting currents for air-saturated solution and deoxygenated solution.

Warranty

The Oxygen Electrode Kit is warranted for a period of 60 days after the initial shipping date by BASi against defects in material or workmanship. BASi is liable only to the extent of replacement of defective items for claims registered within 30 days of the shipping date. BASi will not be liable for any personal injury, property damage, or consequential damages of any kind whatsoever arising from the use of the kit. The foregoing warranty is in lieu of all other warranties expressed or implied but not limited to the implied warranties of merchantability and fitness for a particular purpose.

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Oxygen Electrode Kit

User's Guide

11/07/03

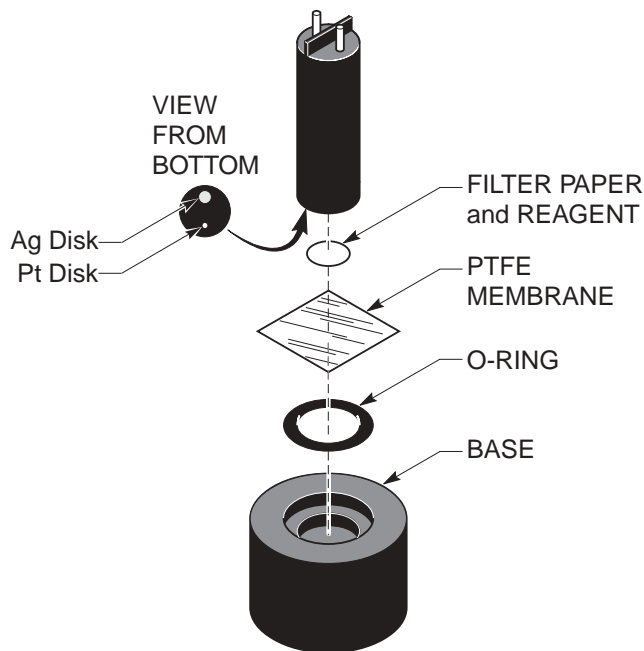
A-1855

Introduction

Bioanalytical Systems, Inc. (BASi) presents the Oxygen Electrode Kit for teachers and lab instructors wishing to introduce concepts in electroanalytical chemistry at the high school and undergraduate levels.

The detector is a membrane-covered two-electrode system, which allows for the detection of atmospheric and dissolved oxygen. A 1.6-mm platinum working electrode and a 3-mm Ag/AgCl counter electrode are covered by a thin layer of electrolyte (0.1 M KCl) supported by a small circle of nitrocellulose filter membrane. An oxygen-permeable membrane encloses the electrodes and electrolytes and excludes many other species, which may interfere with the current response obtained from the four-electron reduction of oxygen at the platinum working electrode.

Figure 1. Exploded view of MF-2100 Oxygen Electrode Kit.



Applications

The MF-2100 Oxygen Electrode Kit is ideal for illustrating a wide variety of basic concepts in chemistry, including redox reactions, titrations, mass transport, partial pressure, and limiting current. The kit also illustrates the function of some biologically important molecules such as H₂O₂, ascorbic acid, and glucose. Additionally, BASi will be happy to provide teachers with additional application notes (called Capsules) and references covering a wide range of topics on the measurement of dissolved oxygen in environmental, industrial, and clinical situations.

Contents

The MF-2100 Oxygen electrode kit includes:

<u>Part Number</u>	<u>Description</u>	<u>Quantity</u>
MW-1080	Oxygen Electrode	1
MR-1190	Assembly Base	1
CF-2200	Coating Solution	1
CF-1300	Supporting Electrolyte	1
MR-1253	Rubber O-rings	2
MF-1045	PTFE membranes (100/pkg.)	1
MF-5685	NC membranes (100/pkg.)	1

Assembly

Figure 1 provides an exploded view of the MF-2100 oxygen electrode.

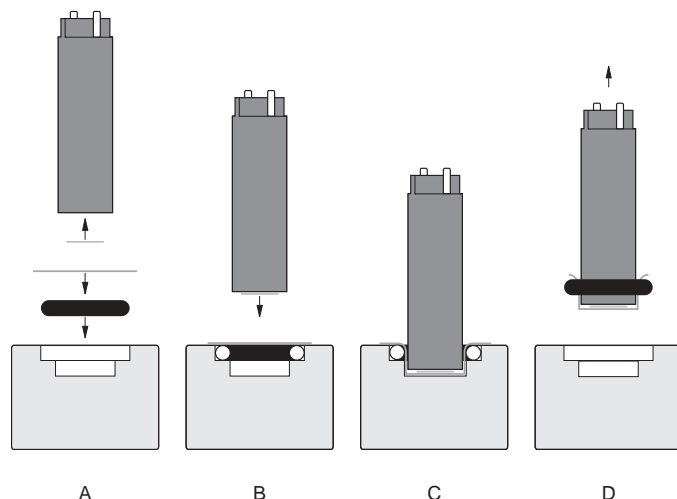
Place a drop of coating solution (CF-2200) on the silver electrode (See warning on bottle). Allow the solution to react with the silver for at least 10 minutes to ensure complete formation and coverage of the AgCl layer. Excess coating solution should be removed by blotting with a clean disposable towel.

Soak one nitrocellulose (NC) filter paper in a few drops of supporting electrolyte solution. Make sure that the paper is completely wetted on both sides.

The assembly of the oxygen electrode is illustrated in Figure 2 (A-D).

- Transfer the wet filter paper with tweezers to the face of the oxygen electrode. Position the disk so the platinum working electrode is completely covered and the majority of the Ag/AgCl counter electrode is covered.
- Place one O-ring in the assembly base. Center one PTFE membrane over the assembly base and O-ring. Be careful not to stretch or tear the

Figure 2. Assembly of oxygen electrode with assembly base.



membrane. Center the oxygen electrode over the PTFE membrane and O-ring in the assembly base.

C. Gently push the electrode body down through the O-ring until the electrode touches the bottom of the assembly base. Avoid twisting the electrode while pushing, as this may tear the PTFE membrane.

D. Carefully pull the assembled oxygen electrode from the assembly base.

Maintenance

The counter electrode may be restored periodically by recoating with the supplied coating solution (CF-2200). The electrode may be polished with a separate PK-4 polishing kit (MF-2060) available from BASi.

Operation

The oxygen electrode is comprised of two electrodes: a platinum working electrode and a Ag/AgCl counter electrode. To connect a BASi three electrode cell lead, please use the following directions and refer to Figure 3. Cell leads with alligator-clips are recommended.

- Connect the working (black) lead to the pin with a small black band. Connect the reference (white) and auxiliary (red) leads to the pin marked with a small red band (This can be accomplished by connecting one clip to the pin and the second to the first clip).
- Place the electrode in a stirred or flowing solution.