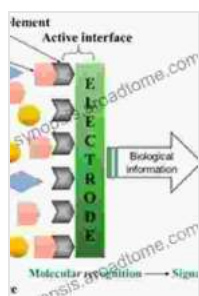


Environmental Analysis By Electrochemical Sensors And Biosensors

Electrochemical sensors and biosensors are powerful tools for environmental analysis. They are sensitive, selective, and can be used to measure a wide range of analytes. This book provides a comprehensive overview of the use of electrochemical sensors and biosensors for environmental analysis. It covers the principles of electrochemistry, the design and fabrication of electrochemical sensors and biosensors, and their applications in environmental monitoring.



Environmental Analysis by Electrochemical Sensors and Biosensors: Applications (Nanostructure Science and Technology) by Jean Braun

★★★★☆ 4.3 out of 5

Language : English
File size : 7718 KB
Text-to-Speech : Enabled
Enhanced typesetting : Enabled
Print length : 716 pages
Screen Reader : Supported



Principles of Electrochemistry

Electrochemistry is the study of the relationship between electrical energy and chemical change. Electrochemical sensors and biosensors use the principles of electrochemistry to detect and measure analytes.

The basic principle of electrochemistry is that when two electrodes are placed in a solution, an electrical potential difference can be created between them. This potential difference can be used to drive a chemical reaction.

In an electrochemical sensor, the analyte is oxidized or reduced at one of the electrodes. This reaction generates an electrical current that is proportional to the concentration of the analyte.

In a biosensor, the analyte is bound to a biological molecule, such as an enzyme or antibody. The biological molecule catalyzes a reaction that generates an electrical current. The current is proportional to the concentration of the analyte.

Design and Fabrication of Electrochemical Sensors and Biosensors

The design and fabrication of electrochemical sensors and biosensors is a complex process. It requires knowledge of electrochemistry, materials science, and microfabrication.

The first step in designing an electrochemical sensor or biosensor is to select the appropriate materials. The materials must be compatible with the analyte and must be able to withstand the harsh conditions of environmental monitoring.

The next step is to design the sensor or biosensor. The design must take into account the size, shape, and geometry of the sensor. It must also take into account the electrical properties of the materials.

Once the sensor or biosensor has been designed, it must be fabricated. The fabrication process can be complex and time-consuming. It may involve the use of specialized equipment and techniques.

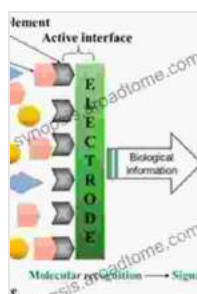
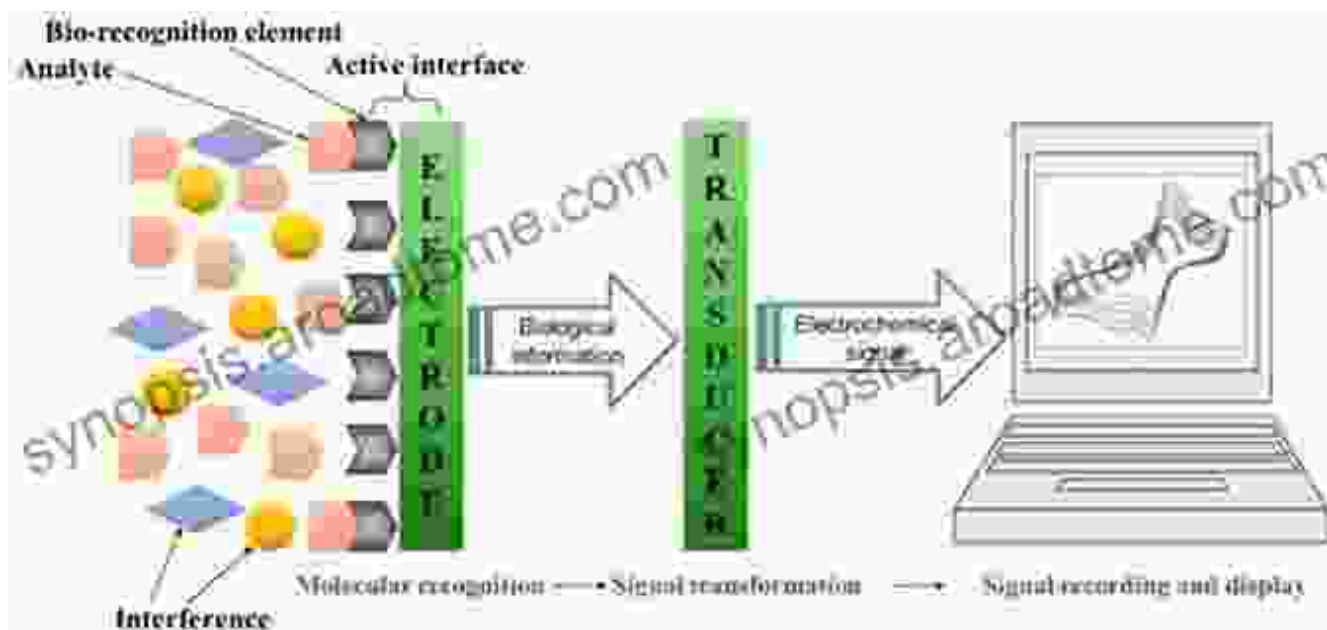
Applications of Electrochemical Sensors and Biosensors in Environmental Monitoring

Electrochemical sensors and biosensors are used in a wide range of environmental monitoring applications. These applications include:

* Water quality monitoring * Air quality monitoring * Soil quality monitoring *
Food safety monitoring * Medical diagnostics

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