

1. Record Nr.	UNISA996201910203316
Autore	Wang Joseph
Titolo	Analytical Electrochemistry [[electronic resource]]
Pubbl/distr/stampa	New York, : Wiley, 2004
ISBN	9786610541775 0-471-22823-0
Edizione	[2nd ed.]
Descrizione fisica	1 online resource (228 p.)
Disciplina	541.37 543/.0871
Soggetti	Electrochemical analysis Electrochemistry
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di contenuto	<p>CONTENTS; PREFACE; ABBREVIATIONS AND SYMBOLS; 1 FUNDAMENTAL CONCEPTS; 1-1 Why Electroanalysis?; 1-2 Faradaic Processes; 1-2.1 Mass Transport-Controlled Reactions; 1-2.2 Reactions Controlled by the Rate of Electron Transfer; 1-3 The Electrical Double Layer; 1-4 Electrocapillary Effect; Supplementary Reading; References; Questions; 2 STUDY OF ELECTRODE REACTIONS; 2-1 Cyclic Voltammetry; 2-1.1 Data Interpretation; 2-1.2 Study of Reaction Mechanisms; 2-1.3 Study of Adsorption Processes; 2-1.4 Quantitative Applications; 2-2 Spectroelectrochemistry; 2-2.1 Experimental Arrangement 2-2.2 Principles and Applications 2-2.3 Other Spectroelectrochemical and Spectroscopic Techniques; 2-3 Scanning Probe Microscopy; 2-3.1 Scanning Tunneling Microscopy; 2-3.2 Atomic Force Microscopy; 2-3.3 Scanning Electrochemical Microscopy; 2-4 Electrochemical Quartz Crystal Microbalance; References; Examples; Questions; 3 CONTROLLED-POTENTIAL TECHNIQUES; 3-1 Chronoamperometry; 3-2 Polarography; 3-3 Pulse Voltammetry; 3-3.1 Normal-Pulse Voltammetry; 3-3.2 Differential-Pulse Voltammetry; 3-3.3 Square-Wave Voltammetry; 3-3.4 Staircase Voltammetry; 3-4 AC Voltammetry; 3-5 Stripping Analysis 3-5.1 Anodic Stripping Voltammetry 3-5.2 Potentiometric Stripping Analysis; 3-5.3 Adsorptive Stripping Voltammetry and Potentiometry;</p>

3-5.4 Cathodic Stripping Voltammetry; 3-5.5 Applications; 3-6 Flow Analysis; 3-6.1 Principles; 3-6.2 Cell Design; 3-6.3 Mass Transport and Current Response; 3-6.4 Detection Modes; References; Examples; Questions; 4 PRACTICAL CONSIDERATIONS; 4-1 Electrochemical Cells; 4-2 Solvents and Supporting Electrolytes; 4-3 Oxygen Removal; 4-4 Instrumentation; 4-5 Working Electrodes; 4-5.1 Mercury Electrodes; 4-5.2 Solid Electrodes; 4-5.3 Chemically Modified Electrodes; 4-5.4 Microelectrodes; References; Examples; Questions; 5 POTENTIOMETRY; 5-1 Principles of Potentiometric Measurements; 5-2 Ion-Selective Electrodes; 5-2.1 Glass Electrodes; 5-2.2 Liquid-Membrane Electrodes; 5-2.3 Solid-State Electrodes; 5-2.4 Coated-Wire Electrodes; 5-3 On-Line and In-Vivo Potentiometric Measurements; References; Examples; Questions; 6 ELECTROCHEMICAL SENSORS; 6-1 Electrochemical Biosensors; 6-1.1 Enzyme-Based Electrodes; 6-1.2 Affinity Biosensors; 6-2 Gas Sensors; 6-2.1 Carbon Dioxide Sensors; 6-2.2 Oxygen Electrodes; 6-3 Solid-State Devices; 6-3.1 Microfabrication of Solid-State Sensor Assemblies; 6-3.2 Microfabrication Techniques; 6-4 Sensor Arrays; References; Examples; Questions; INDEX; A; B; C; D; E; F; G; H; I; K; L; M; N; O; P; Q; R; S; T; U; V; W; X; Z

Sommario/riassunto

The critically acclaimed guide to the principles, techniques, and instruments of electroanalytical chemistry—now expanded and revised—Joseph Wang, internationally renowned authority on electroanalytical techniques, thoroughly revises his acclaimed book to reflect the rapid growth the field has experienced in recent years. He substantially expands the theoretical discussion while providing comprehensive coverage of the latest advances through late 1999, introducing such exciting new topics as self-assembled monolayers, DNA biosensors, lab-on-a-chip, detection for capillary electrophoresis.