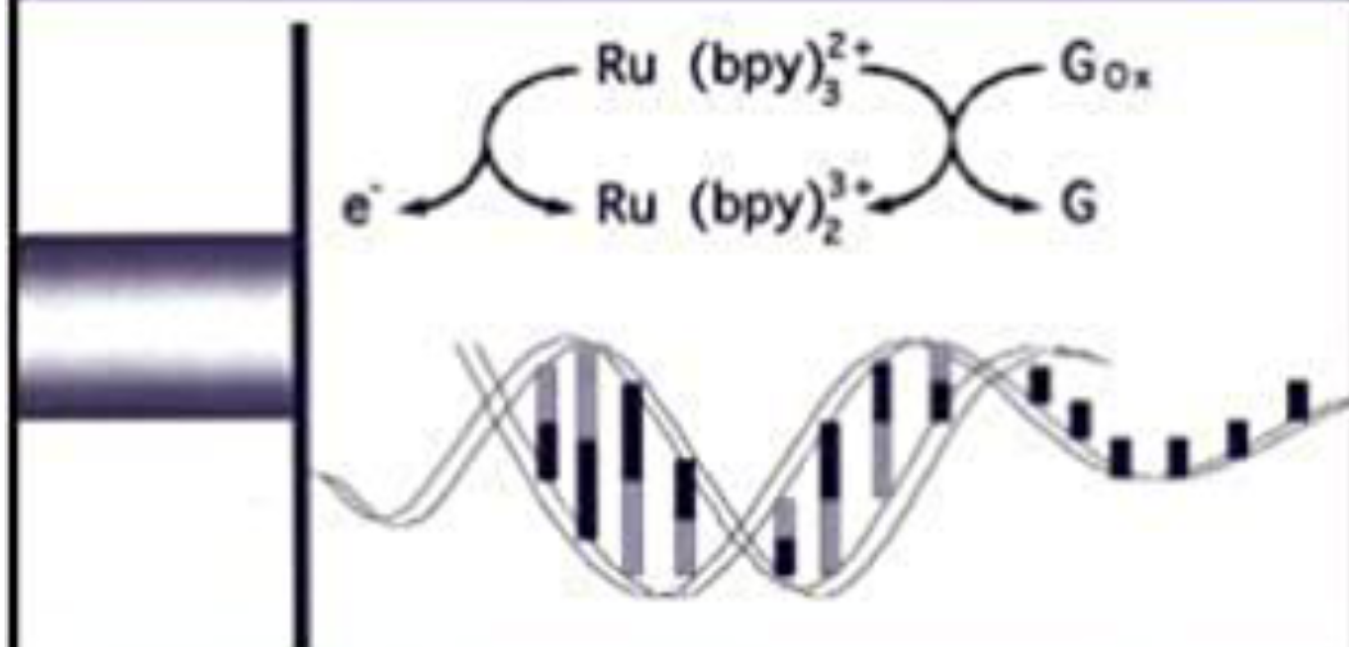


# ANALYTICAL ELECTROCHEMISTRY



THIRD EDITION

Joseph Wang

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Third Edition

**Joseph Wang**

 **WILEY-VCH**

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*Dedicated to the memory of my parents, Elka and Moshe Wang*

# CONTENTS

<b>Preface</b>	<b>xi</b>
<b>Abbreviations and Symbols</b>	<b>xiii</b>
<b>1 Fundamental Concepts</b>	<b>1</b>
1.1 Why Electroanalysis?, 1	
1.2 Faradaic Processes, 3	
1.2.1 Mass-Transport-Controlled Reactions, 4	
1.2.1.1 Potential-Step Experiment, 7	
1.2.1.2 Potential-Sweep Experiments, 9	
1.2.2 Reactions Controlled by the Rate of Electron Transfer, 12	
1.2.2.1 Activated Complex Theory, 16	
1.3 Electrical Double Layer, 19	
1.4 Electrocapillary Effect, 23	
1.5 Supplementary Reading, 25	
Problems, 27	
References, 28	
<b>2 Study of Electrode Reactions and Interfacial Properties</b>	<b>29</b>
2.1 Cyclic Voltammetry, 29	
2.1.1 Data Interpretation, 32	
2.1.1.1 Reversible Systems, 32	
2.1.1.2 Irreversible and Quasi-reversible Systems, 34	
2.1.2 Study of Reaction Mechanisms, 35	

2.1.3 Study of Adsorption Processes, 37	
2.1.4 Quantitative Applications, 41	
2.2 Spectroelectrochemistry, 42	
2.2.1 Experimental Arrangement, 43	
2.2.2 Principles and Applications, 44	
2.2.3 Electrochemiluminescence, 47	
2.2.4 Optical Probing of Electrode–Solution Interfaces, 48	
2.3 Scanning Probe Microscopy, 49	
2.3.1 Scanning Tunneling Microscopy, 50	
2.3.2 Atomic Force Microscopy, 51	
2.3.3 Scanning Electrochemical Microscopy, 53	
2.4 Electrochemical Quartz Crystal Microbalance, 57	
2.5 Impedance Spectroscopy, 58	
Examples, 61	
Problems, 63	
References, 64	
<b>3 Controlled-Potential Techniques</b>	<b>67</b>
3.1 Chronoamperometry, 67	
3.2 Polarography, 69	
3.3 Pulse Voltammetry, 76	
3.3.1 Normal-Pulse Voltammetry, 76	
3.3.2 Differential-Pulse Voltammetry, 77	
3.3.3 Square-Wave Voltammetry, 80	
3.3.4 Staircase Voltammetry, 82	
3.4 AC Voltammetry, 84	
3.5 Stripping Analysis, 85	
3.5.1 Anodic Stripping Voltammetry, 86	
3.5.2 Potentiometric Stripping Analysis, 89	
3.5.3 Adsorptive Stripping Voltammetry and Potentiometry, 91	
3.5.4 Cathodic Stripping Voltammetry, 94	
3.5.5 Abrasive Stripping Voltammetry, 94	
3.5.6 Applications, 94	
3.6 Flow Analysis, 98	
3.6.1 Principles, 98	
3.6.2 Cell Design, 100	
3.6.3 Mass Transport and Current Response, 103	
3.6.4 Detection Modes, 105	
Examples, 108	
Problems, 111	
References, 112	
<b>4 Practical Considerations</b>	<b>115</b>
4.1 Electrochemical Cells, 115	
4.2 Solvents and Supporting Electrolytes, 117	

- 4.3 Oxygen Removal, 118
- 4.4 Instrumentation, 119
- 4.5 Working Electrodes, 123
  - 4.5.1 Mercury Electrodes, 123
  - 4.5.2 Solid Electrodes, 127
    - 4.5.2.1 Rotating Disk and Rotating Ring Disk Electrodes, 128
    - 4.5.2.2 Carbon Electrodes, 130
      - 4.5.2.2.1 Glassy Carbon Electrodes, 131
      - 4.5.2.2.2 Carbon Paste Electrodes, 131
      - 4.5.2.2.3 Carbon Fiber Electrodes, 133
      - 4.5.2.2.4 Diamond Electrodes, 133
    - 4.5.2.3 Metal Electrodes, 134
  - 4.5.3 Chemically Modified Electrodes, 136
    - 4.5.3.1 Self-Assembled Monolayers, 136
    - 4.5.3.2 Carbon-Nanotube-Modified Electrodes, 139
    - 4.5.3.3 Sol-gel Encapsulation of Reactive Species, 139
    - 4.5.3.4 Electrocatalytically Modified Electrodes, 140
    - 4.5.3.5 Preconcentrating Electrodes, 141
    - 4.5.3.6 Permselective Coatings, 143
    - 4.5.3.7 Conducting Polymers, 146
  - 4.5.4 Microelectrodes, 149
    - 4.5.4.1 Diffusion at Microelectrodes, 151
    - 4.5.4.2 Microelectrode Configurations, 152
    - 4.5.4.3 Composite Electrodes, 154
- Examples, 158
- Problems, 158
- References, 159

## 5 Potentiometry

165

- 5.1 Principles of Potentiometric Measurements, 165
- 5.2 Ion-Selective Electrodes, 173
  - 5.2.1 Glass Electrodes, 173
    - 5.2.1.1 pH Electrodes, 173
    - 5.2.1.2 Glass Electrodes for Other Cations, 177
  - 5.2.2 Liquid Membrane Electrodes, 177
    - 5.2.2.1 Ion Exchanger Electrodes, 179
    - 5.2.2.2 Neutral Carrier Electrodes, 182
  - 5.2.3 Solid-State Electrodes, 185
  - 5.2.4 Coated-Wire Electrodes and Solid-State Electrodes Without an Internal Filling Solution, 188
- 5.3 On-line, On-site, and In Vivo Potentiometric Measurements, 190
- Examples, 194
- Problems, 196
- References, 197



<b>6 Electrochemical Sensors</b>	<b>201</b>
6.1 Electrochemical Biosensors, 202	
6.1.1 Enzyme-Based Electrodes, 202	
6.1.1.1 Practical and Theoretical Considerations, 202	
6.1.1.2 Enzyme Electrodes of Analytical Significance, 208	
6.1.1.2.1 Glucose Sensors, 208	
6.1.1.2.2 Ethanol Electrodes, 212	
6.1.1.2.3 Urea Electrodes, 213	
6.1.1.2.4 Toxin (Enzyme Inhibition) Biosensors, 215	
6.1.1.3 Tissue and Bacteria Electrodes, 215	
6.1.2 Affinity Biosensors, 216	
6.1.2.1 Immunosensors, 216	
6.1.2.2 DNA Hybridization Biosensors, 218	
6.1.2.2.1 Background and Principles, 218	
6.1.2.2.2 Electrical Transduction of DNA Hybridization, 219	
6.1.2.2.3 Other Electrochemical DNA Biosensors, 221	
6.1.2.3 Receptor-Based Sensors, 222	
6.1.2.4 Electrochemical Sensors Based on Molecularly Imprinted Polymers, 224	
6.2 Gas Sensors, 224	
6.2.1 Carbon Dioxide Sensors, 225	
6.2.2 Oxygen Electrodes, 226	
6.3 Solid-State Devices, 227	
6.3.1 Ion-Selective Field Effect Transistors, 227	
6.3.2 Microfabrication of Solid-State Sensor Assemblies, 229	
6.3.3 Microfabrication Techniques, 229	
6.3.4 Micromachined Analytical Microsystems, 232	
6.4 Sensor Arrays, 234	
Examples, 237	
Problems, 238	
References, 239	
<b>Index</b>	<b>245</b>

## PREFACE

The goal of this textbook is to cover the full scope of modern electroanalytical techniques and devices. The main emphasis is on electroanalysis, rather than physical electrochemistry. The objective is to provide a sound understanding of the fundamentals of electrode reactions and the principles of electrochemical methods, and to demonstrate their potential for solving real-life analytical problems. The high performance, small size, and low cost of electrochemical devices has led to many important detection systems. Given the impressive progress in electroanalytical chemistry and its growing impact on analytical chemistry, this work offers also an up-to-date, easy-to-read presentation of more recent advances, including new methodologies, sensors, detectors, and microsystems. The book is suitable for a graduate-level course in electroanalytical chemistry or as a supplement to a high-level undergraduate course in instrumental analysis. It should also be very useful to those considering the use of electroanalysis in their laboratories.

The material is presented in six roughly equal chapters. The first chapter is devoted to fundamental aspects of electrode reactions and the structure of the interfacial region. Chapter 2 discusses the study of electrode reactions and high-resolution surface characterization. Chapter 3 gives an overview of finite-current-controlled potential techniques. Chapter 4 describes the electrochemical instrumentation and electrode materials (including new and modified microelectrodes). Chapter 5 deals with the principles of potentiometric measurements and various classes of ion-selective electrodes, while Chapter 6 is devoted to the growing field of chemical sensors (including modern biosensors, gas sensors, microchip devices, and sensor arrays). Numerous up-to-date references, covering the latest literature, are given at the end of each chapter.