

Contents

1	Introduction	1
	References	3
2	Theoretical Background of Electrochemical Analysis	5
2.1	Electrode Substrates	5
2.1.1	Metal Electrodes	6
2.1.2	Mercury Electrodes	6
2.1.3	Carbon Electrodes	7
2.2	Chemically Modified Electrodes	7
2.2.1	Conducting Polymer-Modified Electrodes	8
2.2.2	Self-Assembly Monolayers	8
2.2.3	Nanomaterial-Modified Electrodes	9
2.2.4	Mediator-Modified Electrodes	10
2.2.5	Sol-Gel Technology	11
2.3	Electrochemical Cell	11
2.4	Electrochemical Measuring Techniques	12
2.4.1	Cyclic Voltammetry	12
2.4.2	Differential Pulse Voltammetry	13
2.4.3	Electrochemical Impedance Spectroscopy	14
2.4.4	Chronocoulometry	14
	References	15
3	Electrochemical Analysis of Proteins	19
3.1	Protein-Film Voltammetry	19
3.2	Electrochemical Immunosensors	23
3.3	Aptamer-Based Electrochemical Analysis of Proteins	25
3.4	Electrochemical Analysis Based on Enzyme Catalysis	30
3.5	Nanomaterials-Based Electrochemical Analysis of Proteins	34
	References	38
4	Electrochemical Analysis of Cells	43
4.1	Electrochemical Analysis of Cell Membrane and the Inner Part	44

4.2	Electrochemical Analysis of Cell Apoptosis	49
4.3	Electrochemical Cytosensors	53
4.4	Electrochemical Identification and Quantification of Cancer Cells	55
4.5	Nanomaterials-Based Electrochemical Analysis of Cancer Cells	59
	References	65

Electrochemical Analysis of Proteins and Cells

Li, G.; Miao, P.

2013, IX, 69 p. 42 illus., 17 illus. in color., Softcover

ISBN: 978-3-642-34251-6