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1.6 ConclusionsReferences; 2 Electrochemically Active Polyelectrolyte-Modified Electrodes; 2.1 Introduction; 2.1.1 Chemically Modified Electrodes; 2.1.2 Redox Hydrogels; 2.1.3 Redox Polyelectrolyte Monolayers; 2.1.4 Redox Polymer Brushes and Grafted DNA; 2.1.5 Layer-by-Layer Polyelectrolyte Multilayers; 2.2 Structure; 2.2.1 Polyelectrolye Interpenetration; 2.2.2 Compensation of Polyelectrolyte Charges; 2.2.3 Film Inner Structure; 2.2.4 Effect of the Assembly pH; 2.2.5 Theoretical Description; 2.3 Electrochemical Response; 2.3.1 Ideal Response; 2.3.2 Peak Position and Donnan Potential
2.3.3 Coupling Between the Acid-Base and Redox Equilibria2.3.4 Peak Width; 2.3.5 Nonreversible Electrochemistry: Charge Transport; 2.4 Dynamics of Solvent and Ion Exchange; 2.4.1 Ion Exchange; 2.4.2 Solvent Exchange; 2.4.3 Specific Ionic Effects; 2.4.4 Break-In; 2.5 Molecular Description of Redox Polyelectrolyte-Modified Electrodes; 2.5.1 Formulation of the Molecular Theory; 2.5.2 Comparison with Phenomenological Models, Advantages and Limitations; 2.6 Applications; 2.6.1 Amperometric Enzymatic Electrodes; 2.6.2 Electrochromic Devices; 2.7 Conclusions; References
3 Electrochemistry on Carbon-Nanotube-Modified Surfaces3.1 Introduction; 3.2 Structure and Properties of Carbon Nanotubes; 3.2.1 Structure and Electronic Properties; 3.2.2 Chemical Properties; 3.2.3 Electrochemical Properties; 3.3 Towards the Design of CNT-Modified Electrodes; 3.3.1 Synthesis of CNTs; 3.3.2 CNT Purification Methods; 3.3.3 Chemical and Biochemical Functionalization; 3.3.3.1 Covalent Modification; 3.3.3.2 Noncovalent Modification; 3.3.3.3 Chemical Modification for CNT Sorting; 3.3.3.4 Chemical Doping, Intercalation and Artificial Defects
3.3.4 CNT Deposition on Electrode Surfaces

Sommario/riassunto

With contributions from an international group of expert authors, this book includes the latest trends in tailoring interfacial properties electrochemically. The chapters cover various organic and inorganic compounds, with applications ranging from electrochemistry to nanotechnology and biology.Of interest to physical, surface and electrochemists, materials scientists and physicists.