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Nota di contenuto	Advances in Electrochemical Science and Engineering Volume 9 Diffraction and Spectroscopic Methods in Electrochemistry; Series Preface; Contents; Volume Preface; List of Contributors; 1 In-situ X-ray Diffraction Studies of the Electrode/Solution Interface; 1.1 Introduction; 1.2 Experimental; 1.3 Adsorbate-induced Restructuring of Metal Substrates; 1.3.1 Surface Relaxation; 1.3.1.1 Pt Monometallic and Bimetallic Surfaces; 1.3.1.2 Group IB Metals; 1.3.2 Surface Reconstruction; 1.4 Adlayer Structures; 1.4.1 Anion Structures; 1.4.2 CO Ordering on the Pt(111) Surface 1.4.3 Underpotential Deposition (UPD)1.5 Reactive Metals and Oxides; 1.6 Conclusions and Future Directions; Acknowledgments; References; 2 UV-visible Reflectance Spectroscopy of Thin Organic Films at Electrode Surfaces; 2.1 Introduction; 2.2 The Basis of UV-visible Reflection Measurement at an Electrode Surface; 2.3 Absolute Reflection Spectrum versus Modulated Reflection Spectrum; 2.4 Wavelength-modulated UV-visible Reflectance Spectroscopy; 2.5

Potential-modulated UV-visible Reflectance Spectroscopy; 2.6 Instrumentation of the Potential-modulated UV-visible Reflection Measurement

2.7 ER Measurements for Redox-active Thin Organic Films

2.8 Interpretation of the Reflection Spectrum; 2.9 Reflection Measurement at Special Electrode Configurations; 2.10 Estimation of the Molecular Orientation on the Electrode Surface; 2.10.1 Estimation of the Molecular Orientation on the Electrode Surface using the Redox ER Signal; 2.10.2 Estimation of the Molecular Orientation on the Electrode Surface using the Stark Effect ER Signal; 2.11 Measurement of Electron Transfer Rate using ER Measurement; 2.11.1 Redox ER Signal in Frequency Domain; 2.11.2 Examples of Electron Transfer Rate Measurement using ER Signal; 2.11.3 Improvement in Data Analysis; 2.11.4 Combined Analysis of Impedance and Modulation Spectroscopic Signals; 2.11.5 Upper Limit of Measurable Rate Constant; 2.11.6 Rate Constant Measurement using an ER Voltammogram; 2.12 ER Signal Originated from Non-Faradaic Processes - a Quick Overview; 2.13 ER Signal with Harmonics Higher than the Fundamental Modulation Frequency; 2.14 Distinguishing between Two Simultaneously Occurring Electrode Processes

2.15 Some Recent Examples of the Application of ER Measurement for a Functional Electrode

2.16 Scope for Future Development of UV-visible Reflection Measurements; 2.16.1 New Techniques in UV-visible Reflection Measurements; 2.16.2 Remarks on the Scope for Future Development of UV-visible Reflection Measurements;

Acknowledgments; References; 3 Epi-fluorescence Microscopy Studies of Potential Controlled Changes in Adsorbed Thin Organic Films at Electrode Surfaces; 3.1 Introduction; 3.2 Fluorescence Microscopy and Fluorescence Probes; 3.3 Fluorescence near Metal Surfaces

3.4 Description of a Fluorescence Microscope for Electrochemical Studies

Sommario/riassunto

This ninth volume in the series concentrates on in situ spectroscopic methods and combines a balanced mixture of theory and applications, making it highly readable for chemists and physicists, as well as for materials scientists and engineers. As with the previous volumes, all the chapters continue the high standards of this series, containing numerous references to further reading and the original literature, for easy access to this new field. The editors have succeeded in selecting highly topical areas of research and in presenting authors who are leaders in their fields, covering such diver
