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In-situ Stress Measurements at the Solid/Liquid Interface Using a Micromechanical Sensor; Surface Structure and Electrochemistry: New Insight by Scanning Tunneling Microscopy; Part III Surface Modification; STM and AFM Studies of the Electrified Solid-Liquid Interface: Monolayers, Multilayers, and Organic Transformations; Scanning Probe Microscopy Studies of Molecular Redox Films; New Aspects of Iodine-modified Single-crystal Electrodes; The Growth and the Surface Properties of Polypyrrole on Single Crystal Graphite Electrodes as Studied by in-situ Electrochemical Scanning Probe Microscopy; Part IV Nucleation and Electrodeposition; Nucleation and Growth at Metal Electrode Surfaces; STM Studies of Electrodeposition of Strained-Layer Metallic Superlattices; Part V Oxide Layers and Corrosion; STM Studies of Thin Anodic Oxide Layer; Local Probing of Electrochemical Interfaces in Corrosion Research; Morphology and Nucleation of Ni-TiO<sub>2</sub> LIGA Layers; SPM Investigations on Oxide-covered Titanium Surfaces: Problems and Possibilities; Part VI Semiconductors; Electrochemical Surface Processing of Semiconductors at the Atomic Level; In-situ Electrochemical AFM Study of Semiconductor Electrodes in Electrolyte Solutions; Part VII STM and Complementary Methods; In-situ STM and Electrochemical UHV Technique: Complementary, Noncompeting Techniques; Growth Morphology and Molecular Orientation of Additives in Electrocrystallization Studied by Surface-enhanced Raman spectroscopy; Instrumental Design and Prospects for NMR-Electrochemistry; List of Contributors; List of Abbreviations; Symbol List; Subject Index

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#### Sommario/riassunto

A new window to local studies of interface phenomena at solid state surfaces has been opened by the development of local probe techniques such as Scanning Tunneling Microscopy (STM) or Atomic Force Microscopy (AFM) and related methods during the past fifteen years. The in-situ application of local probe methods in different systems belongs to modern nanotechnology and has two aspects: an analytical aspect and a preparative aspect. The first aspect covers the application of the local probe methods to characterize thermodynamic, structural and dynamic properties of solid state surfaces a

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