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Example of STS at the Solid/Liquid Interface; 2.4 Ultrahigh Vacuum versus Solid/Liquid Interface; 2.5 Probing -Coupling at the Single-Molecule Level by STS
2.6 Molecular Diodes and Prototypical Transistors2.7 Conclusions; Acknowledgements; References; 3 Molecular Repositioning to Study Mechanical and Electronic Properties of Large Molecules; 3.1 Introduction; 3.2 Specially Designed Molecules; 3.3 STM-Induced Manipulation; 3.3.1 Manipulation of Single Atoms; 3.3.2 Repositioning of Molecules at Room Temperature; 3.3.3 Manipulation in Constant Height Mode; 3.4 Mechanical Properties: Controlled Manipulation of Complex Molecules; 3.5 Inducing Conformational Changes: A Route to Molecular Switching; 3.6 The Role of the Substrate
3.7 Electronic Properties: Investigation of the Molecule-Metal Contact3.8 Perspectives; Acknowledgements; References; 4 Inelastic Electron Tunneling Microscopy and Spectroscopy of Single Molecules by STM; 4.1 Introduction; 4.1.1 Working Principle; 4.2 Experimental Results; 4.2.1 C(60) on Ag(110); 4.2.2 C(6)H(6) on Ag(110); 4.3 Theory; 4.3.1 Extension of Tersoff-Hamman Theory to IETS-STM; 4.3.2 Some Model Systems; 4.3.3 Acetylene Molecules on Cu(100); 4.3.4 Oxygen Molecules on Ag(110); 4.3.5 Ammonia Molecules on Cu(100); 4.4 Conclusion; References
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Sommario/riassunto

This first book to focus on the use of SPMs to actively manipulate molecules and nanostructures on surfaces goes way beyond conventional treatments of scanning microscopy merely for imaging purposes. It reviews recent progress in the use of SPMs on such soft materials as polymers, with a particular emphasis on chemical discrimination, mechanical properties, tip-induced reactions and manipulations, as well as their nanoscale electrical properties. Detailing the practical application potential of this hot topic, this book is of great interest to specialists of wide-ranging disciplines, including