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**Sinopsis**

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Ionic crystals are among the simplest structures in nature. They can be easily cleaved in air and in vacuum, and the resulting surfaces are atomically flat on areas hundreds of nanometers wide. With the development of scanning probe microscopy, these surfaces have become an ideal "playground" to investigate several phenomena occurring on the nanometer scale. This book focuses on the fundamental studies of atomically resolved imaging, nanopatterning, metal deposition, molecular self-assembling and nanotribological processes occurring on ionic crystal surfaces. Here, a significant variety of structures are created by nanolithography, annealing and irradiation by electrons, ions or photons, and are used to confine metal particles and organic molecules or to improve our basic understanding of friction and wear on the atomic scale. Metal oxides with wide band gap are also discussed. Altogether, the results obtained so far will have an undoubted impact on the future development of nanoelectronics and nanomechanics.

**Contents:**

Crystal Structures of Insulating Surfaces  
Preparation Techniques of Insulating Surfaces  
Scanning Probe Microscopy in Ultra High Vacuum  
Scanning Probe Microscopy on Bulk Insulating Surfaces  
Scanning Probe Microscopy on thin Insulating Films  
Interaction of Ions, Electrons and Photons with Halide Surfaces  
Surface Patterning with Electrons and Photons  
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