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Nota di contenuto	Introduction -- The Theoretical Research Methods Involved in this Paper -- Structure and Growth Mechanism of Two-dimensional Ice on Hydrophobic Metal Surface -- Structure and Phase Transition of Water Coating on Hydrophilic Metal Surface -- Structure and Kinetics of Ion Hydrates At The Interface -- Summary and Prospect.
Sommario/riassunto	This thesis highlights the study into the structures and dynamics of interfacial water, which is a cutting edge issue in condensed matter physics. Using the first principles calculation, classical molecular dynamics simulation and the simulation of atomic force microscopy (AFM), combined with the experimental results of AFM, the book systematically studies interfacial water at the atomic scale, especially the structure and growth mechanism of two-dimensional ice on hydrophobic Au (111) surface, the structure and the interconversion of the Eigen/Zundel hydrated proton on the Au(111) and Pt(111) surfaces, the microstructure and the hydration effect of the diffusion of ion hydrates on NaCl surface. This book displays the atomic scale information about the interaction between water and surface, and achieves many innovative results. Furthermore, the research methods included in this book can be further extended to study the more

complex interfacial systems.