

1. Record Nr.	UNINA9910300548203321
Titolo	Kelvin Probe Force Microscopy : From Single Charge Detection to Device Characterization // edited by Sascha Sadewasser, Thilo Glatzel
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2018
ISBN	3-319-75687-7
Edizione	[1st ed. 2018.]
Descrizione fisica	1 online resource (530 pages)
Collana	Springer Series in Surface Sciences, , 0931-5195 ; ; 65
Disciplina	530.8
Soggetti	Spectrum analysis Microscopy Materials—Surfaces Thin films Nanotechnology Materials science Physical measurements Measurement Spectroscopy and Microscopy Surfaces and Interfaces, Thin Films Nanotechnology and Microengineering Characterization and Evaluation of Materials Measurement Science and Instrumentation
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Part I: Technical aspects -- Experimental technique and working modes -- Dissipation KPFM -- KPFM techniques for liquid environment -- Open-loop and excitation KPFM -- Quantitative KPFM on semiconductor devices -- KPFM with atomic resolution.- KPFM with atomic resolution -- Part II: Theoretical Aspects -- Local dipoles in atomic and Kelvin probe force microscopy -- Influence of the tip electrostatic field on high resolution KPFM measurements -- Modelling the electrostatic field of a cantilever -- Theory of open-loop KPFM -- KPFM in a SPM simulator -- Electrostatic interactions with dielectric

samples -- Part III: Applications -- Kelvin spectroscopy of single molecules -- KPFM for single molecule chemistry -- Optoelectronic properties of single molecules -- Quantitative KPFM of molecular self-assemblies -- Applications of KPFM in liquids -- KPFM of organic solar cell materials -- Correlation of optical and electrical nanoscale properties of organic devices -- KPFM for catalysis -- Quantitative electrical measurements of SiC devices.

Sommario/riassunto

This book provides a comprehensive introduction to the methods and variety of Kelvin probe force microscopy, including technical details. It also offers an overview of the recent developments and numerous applications, ranging from semiconductor materials, nanostructures and devices to sub-molecular and atomic scale electrostatics. In the last 25 years, Kelvin probe force microscopy has developed from a specialized technique applied by a few scanning probe microscopy experts into a tool used by numerous research and development groups around the globe. This sequel to the editors' previous volume "Kelvin Probe Force Microscopy: Measuring and Compensating Electrostatic Forces," presents new and complementary topics. It is intended for a broad readership, from undergraduate students to lab technicians and scanning probe microscopy experts who are new to the field.
