

1. Record Nr.	UNINA9910809297503321
Titolo	Low voltage electron microscopy : principles and applications / / edited by David C. Bell and Natasha Erdman
Pubbl/distr/stampa	Hoboken, : John Wiley & Sons Inc., 2013
ISBN	9781118498514 1118498518 9781118498484 1118498488 9781299188235 1299188230 9781118498507 111849850X
Edizione	[1st edition]
Descrizione fisica	1 online resource (257 p.)
Collana	Royal Microscopical Society-John Wiley series
Classificazione	SCI047000
Altri autori (Persone)	BellD. C (David C.) ErdmanNatasha
Disciplina	502.8/25
Soggetti	Electron microscopy - Technique
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Cover; Current and future titles in the Royal Microscopical Society- John Wiley Series; Title Page; Copyright; List of Contributors; Preface; Chapter 1: Introduction to the Theory and Advantages of Low Voltage Electron Microscopy; 1.1 Introduction; 1.2 Historical Perspective; 1.3 Beam Interaction with Specimen-Elastic and Inelastic Scattering; 1.4 Instrument Configuration; 1.5 Influence of Electron Optics Aberrations at Low Voltages; 1.6 SEM Imaging at Low Voltages; 1.7 TEM/STEM Imaging and Analysis at Low Voltages; 1.8 Conclusion; References Chapter 2: SEM Instrumentation Developments for Low kV Imaging and Microanalysis2.1 Introduction; 2.2 The Electron Source; 2.3 SEM Column Design Considerations; 2.4 Beam Deceleration; 2.5 Novel Detector Options and Energy Filters; 2.6 Low Voltage STEM in SEM; 2.7 Aberration Correction in SEM; 2.8 Conclusions; References; Chapter 3: Extreme High-Resolution (XHR) SEM Using a Beam Monochromator; 3.1 Introduction; 3.2 Limitations in Low Voltage SEM Performance; 3.3

Beam Monochromator Design and Implementation; 3.4 XHR Systems and Applications; 3.5 Conclusions; Acknowledgements; References Chapter 4: The Application of Low-Voltage SEM-From Nanotechnology to Biological Research4.1 Introduction; 4.2 Specimen Preparation Considerations; 4.3 Nanomaterials Applications; 4.4 Beam Sensitive Materials; 4.5 Semiconductor Materials; 4.6 Biological Specimens; 4.7 Low-Voltage Microanalysis; 4.8 Conclusions; References; Chapter 5: Low Voltage High-Resolution Transmission Electron Microscopy; 5.1 Introduction; 5.2 So How Low is Low?; 5.3 The Effect of Chromatic Aberration and Chromatic Aberration Correction; 5.4 The Electron Monochromator; 5.5 Theoretical Tradeoffs of Low kV Imaging 5.6 Our Experience at 40 keV LV-HREM5.7 Examples of LV-HREM Imaging; 5.8 Conclusions; References; Chapter 6: Gentle STEM of Single Atoms: Low keV Imaging and Analysis at Ultimate Detection Limits; 6.1 Introduction; 6.2 Optimizing STEM Resolution and Probe Current at Low Primary Energies; 6.3 STEM Image Formation; 6.4 Gentle STEM Applications; 6.5 Discussion; 6.6 Conclusion; Acknowledgements; References; Chapter 7: Low Voltage Scanning Transmission Electron Microscopy of Oxide Interfaces; 7.1 Introduction; 7.2 Methods and Instrumentation; 7.3 Low Voltage Imaging and Spectroscopy; 7.4 Summary AcknowledgementsReferences; Chapter 8: What's Next? The Future Directions in Low Voltage Electron Microscopy; 8.1 Introduction; 8.2 Unique Low Voltage SEM and TEM Instruments; 8.3 Cameras, Detectors, and Other Accessories; 8.4 Conclusions; References; Index

Sommario/riassunto

"Part of the Wiley-Royal Microscopical Society Series, this book discusses the rapidly developing cutting-edge field of low-voltage microscopy, a field that has only recently emerged due to the rapid developments in the electron optics design and image processing. It serves as a guide for current and new microscopists and materials scientists who are active in the field of nanotechnology, and presents applications in nanotechnology and research of surface-related phenomena, allowing researchers to observe materials as never before"

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