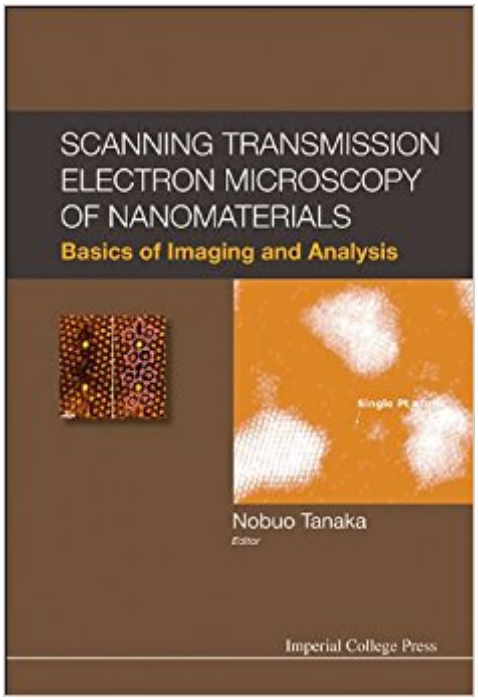
Scanning Transmission Electron Microscopy Of Nanomaterials : Basics Of Imaging And Analysis



Synopsis

The basics, present status and future prospects of high-resolution scanning transmission electron microscopy (STEM) are described in the form of a textbook for advanced undergraduates and graduate students. This volume covers recent achievements in the field of STEM obtained with advanced technologies such as spherical aberration correction, monochromator, high-sensitivity electron energy loss spectroscopy and the software of image mapping. The future prospects chapter also deals with z-slice imaging and confocal STEM for 3D analysis of nanostructured materials.Contents: Ã Â Introduction (N Tanaka) Historical Survey of the Development of STEM Instruments (N Tanaka) Basic Knowledge of STEM: Basics of STEM (N Tanaka and K Saitoh) Application of STEM to Nanomaterials and Biological Specimens (N Shibata, S D Findlay, Y Ikuhara and N Tanaka) Theories of STEM Imaging: Theory for HAADF-STEM and Its Image Simulation (K Watanabe) Theory for Annular Bright Field STEM Imaging (S D Findlay, N Shibata and Y Ikuhara) Electron Energy-Loss Spectroscopy in STEM and Its Imaging (K Kimoto) Density Functional Theory for ELNES in STEM-EELS (T Mizoguchi) Advanced Methods in STEM: Aberration Correction in STEM (H Sawada) Secondary Electron Microscopy in STEM (H Inada and Y Zhu) Scanning Confocal Electron Microscopy (K Mitsuishi and M Takeguchi) Electron Tomography in STEM (N Tanaka) Electron Holography and Lorentz Electron Microscopy in STEM (N Tanaka) Recent Topics and Future Prospects in STEM (N Tanaka) Readership: Graduate students and researchers in the field of nanomaterials and nanostructures.Key Features:Most advanced; befitting beginning graduate studentsVery convenient for advanced researchers who would like to use STEM and have a comprehensive understanding of the theory of image contrast and application detailsSpans from the basic theory to the applications of STEM

Book Information

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