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High-Resolution Electron Microscopy (Paperback)

By John C. H. Spence

Oxford University Press, United Kingdom, 2017. Paperback. Condition: New. 4th Revised edition. Language: English . Brand New Book. This new fourth edition of the standard text on atomic-resolution transmission electron microscopy (TEM) retains previous material on the fundamentals of electron optics and aberration correction, linear imaging theory (including wave aberrations to fifth order) with partial coherence, and multiple-scattering theory. Also preserved are updated earlier sections on practical methods, with detailed step-by-step accounts of the procedures needed to obtain the highest quality images of atoms and molecules using a modern TEM or STEM electron microscope. Applications sections have been updated - these include the semiconductor industry, superconductor research, solid state chemistry and nanoscience, and metallurgy, mineralogy, condensed matter physics, materials science and material on cryo-electron microscopy for structural biology. New or expanded sections have been added on electron holography, aberration correction, field-emission guns, imaging filters, super-resolution methods, Ptychography, Ronchigrams, tomography, image quantification and simulation, radiation damage, the measurement of electron-optical parameters, and detectors (CCD cameras, Image plates and direct-injection solid state detectors). The theory of Scanning transmission electron microscopy (STEM) and Z-contrast are treated comprehensively. Chapters are devoted to associated techniques, such as energy-loss spectroscopy, Alchemi, nanodiffraction, environmental TEM, twistv beams...

Reviews

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