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ELEKTRONENOPTIK

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# Elektronenoptik Volume 1 Grundzuge Der Theor

**Peter W. Hawkes,Erwin Kasper**

## **Elektronenoptik Volume 1 Grundzuge Der Theor:**

**Principles of Electron Optics, Volume 1** Peter W. Hawkes,Erwin Kasper,2017-10-29 Volume one of Principles of Electron Optics Basic Geometrical Optics Second Edition explores the geometrical optics needed to analyze an extremely wide range of instruments cathode ray tubes the family of electron microscopes including the fixed beam and scanning transmission instruments the scanning electron microscope and the emission microscope electron spectrometers and mass spectrograph image converters electron interferometers and diffraction devices electron welding machines and electron beam lithography devices The book provides a self contained detailed modern account of electron optics for anyone involved with particle beams of modest current density in the energy range up to a few mega electronvolts You will find all the basic equations with their derivations recent ideas concerning aberration studies extensive discussion of the numerical methods needed to calculate the properties of specific systems and guidance to the literature of all the topics covered A continuation of these topics can be found in volume two Principles of Electron Optics Applied Geometrical Optics The book is intended for postgraduate students and teachers in physics and electron optics as well as researchers and scientists in academia and industry working in the field of electron optics electron and ion microscopy and nanolithography Offers a fully revised and expanded new edition based on the latest research developments in electron optics Written by the top experts in the field Covers every significant advance in electron optics since the subject originated Contains exceptionally complete and carefully selected references and notes Serves both as a reference and text    Principles of Electron Optics Peter W. Hawkes,Erwin Kasper,1996-04-24

Principles of Electron Optics    Grundlagen der Elektronenoptik Walter Glaser,2013-07-29 Das vorliegende Buch beabsichtigt in lehrbuchm iger Darstellung die theo retischen Grundlagen der Elektronenoptik darzulegen Es sollen insbesondere die Methoden der theoretischen Elektronenoptik so auf hrlich dargestellt werden da der Leser die weitere Spezialliteratur kritisch verfolgen und selbst ndige Untersuchungen durchf hren kann Dem Techniker soll das Buch vor allem eine Hilfe bei der L sung von Dimensionierungsfragen bieten Besondere Vorkenntnisse werden weder aus der Elektronenphysik noch aus der geometrischen Optik vorausgesetzt Die Darstellung kann vielmehr auch dem Studenten zur Einf hrung in diese Fachgebiete dienen ja im dritten Teil auch einen ersten Zugang zur Wellenmechanik er ffnen Die Wellenmechanik wurde in m glichst anschaulicher Weise als eine nat rliche durch neue experimenter Erfahrungen geforderte Verallgemeinerung der klassischen Mechanik entwickelt Da an der jungen Wissenschaft der Elektronenoptik in gleicher Weise der Physiker Techniker Optiker und der Vertreter der angewandten Mathematik interessiert sind das Buch also zwischen verschiedenen Disziplinen eine gewisse Mittlerrolle zu spielen hat war es n tig bei der Entwicklung der Grundlagen manchmal etwas weiter auszuholen

**Electron Beam Technology** Siegfried Schiller,Ullrich Heisig,Siegfried Panzer,1982    **The Beginnings of Electron Microscopy - Part 1** Peter W. Hawkes,Martin H ytzsch,2021-10-13 The Beginnings of Electron Microscopy Part 1 Volume 220 in the Advances in Imaging and Electron Physics series highlights new

advances in the field with this new volume presenting interesting chapters on Electron optical Research at the AEG Forschungs Institut 1928 1940 On the History of Scanning Electron Microscopy of the Electron Microprobe and of Early Contributions to Transmission Electron Microscopy Random Recollections of the Early Days Early History of Electron Microscopy in Czechoslovakia Personal Reminiscences of Early Days in Electron Megavolt Electron Microscopy Cryo Electron Microscopy and Ultramicrotomy Reminiscences and Reflections and much more Provides the authority and expertise of leading contributors from an international board of authors Presents the latest release in Advances in Imaging and Electron Physics series   **Principles of Electron Optics, Volume 3** Peter W. Hawkes,Erwin Kasper,2022-02-21 Principles of Electron Optic Volume Three Wave Optics discusses this essential topic in microscopy to help readers understand the propagation of electrons from the source to the specimen and through the latter and from it to the image plane of the instrument In addition it also explains interference phenomena notably holography and informal coherence theory This third volume accompanies volumes one and two that cover new content on holography and interference improved and new modes of image formation aberration corrected imaging simulation and measurement 3D reconstruction and more The study of such beams forms the subject of electron optics which divides naturally into geometrical optics where effects due to wavelength are neglected with wave optics considered Includes authoritative coverage of the fundamental theory behind electron beams Describes the interaction of electrons with solids and the information that can be obtained from electron beam techniques Addresses recent relevant research topics including new content on holography and interference new modes of image formation 3D reconstruction and aberration corrected imaging simulation and measurement   **Electron Optics** Bohdan Paszkowski,1968

*Aberration-corrected Imaging In Transmission Electron Microscopy: An Introduction (2nd Edition)* Rolf Erni,2015-03-23 Aberration Corrected Imaging in Transmission Electron Microscopy provides an introduction to aberration corrected atomic resolution electron microscopy imaging in materials and physical sciences It covers both the broad beam transmission mode TEM transmission electron microscopy and the scanning transmission mode STEM scanning transmission electron microscopy The book is structured in three parts The first part introduces the basics of conventional atomic resolution electron microscopy imaging in TEM and STEM modes This part also describes limits of conventional electron microscopes and possible artefacts which are caused by the intrinsic lens aberrations that are unavoidable in such instruments The second part introduces fundamental electron optical concepts and thus provides a brief introduction to electron optics Based on the first and second parts of the book the third part focuses on aberration correction it describes the various aberrations in electron microscopy and introduces the concepts of spherical aberration correctors and advanced aberration correctors including correctors for chromatic aberration This part also provides guidelines on how to optimize the imaging conditions for atomic resolution STEM and TEM imaging This second edition has been completely revised and updated in order to incorporate the very recent technological and scientific achievements that have been realized since the

first edition appeared in 2010    [Electron Optics](#) P. Grivet,P. W. Hawkes,A. Septier,2013-10-22 Electron Optics Second English Edition Part I Optics is a 10 chapter book that begins by elucidating the fundamental features and basic techniques of electron optics as well as the distribution of potential and field in electrostatic lenses This book then explains the field distribution in magnetic lenses the optical properties of electrostatic and magnetic lenses and the similarities and differences between glass optics and electron optics Subsequent chapters focus on lens defects some electrostatic lenses and triode guns and magnetic lens models The strong focusing lenses and prism optics are also described This book will be useful to graduating students as well as to beginners who sometimes feel lost in the abundant specialized literature    **Houben-Weyl**

**Methods of Organic Chemistry Vol. XIV/2, 4th Edition** ,2014-05-14 Houben Weyl is the acclaimed reference series for preparative methods in organic chemistry in which all methods are organized according to the class of compound or functional group to be synthesized The Houben Weyl volumes contain 146 000 product specific experimental procedures 580 000 structures and 700 000 references The preparative significance of the methods for all classes of compounds is critically evaluated The series includes data from as far back as the early 1800s to 2003 The content of this e book was originally published in 1963    [Vacuum Electronics](#) Joseph A. Eichmeier,Manfred Thumm,2008-03-04 Nineteen experts from the electronics industry research institutes and universities have joined forces to prepare this book It does nothing less than provide a complete overview of the electrophysical fundamentals the present state of the art and applications as well as the future prospects of microwave tubes and systems The book does the same for optoelectronics vacuum devices electron and ion beam devices light and X ray emitters particle accelerators and vacuum interrupters

*Handbook of Charged Particle Optics* Jon Orloff,2017-12-19 With the growing proliferation of nanotechnologies powerful imaging technologies are being developed to operate at the sub nanometer scale The newest edition of a bestseller the Handbook of Charged Particle Optics Second Edition provides essential background information for the design and operation of high resolution focused probe instruments The book's unique approach covers both the theoretical and practical knowledge of high resolution probe forming instruments The second edition features new chapters on aberration correction and applications of gas phase field ionization sources With the inclusion of additional references to past and present work in the field this second edition offers perfectly calibrated coverage of the field's cutting edge technologies with added insight into how they work Written by the leading research scientists the second edition of the Handbook of Charged Particle Optics is a complete guide to understanding designing and using high resolution probe instrumentation

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volumes for that period    **Cataloge systematique des ouvrages** Commission of the European Communities Bibliothèque centrale scientifique et technique,1961    **Electron and Ion Optics** Miklos Szilagyi,2012-12-06 The field of electron and ion optics is based on the analogy between geometrical light optics and the motion of charged particles in electromagnetic fields The spectacular development of the electron microscope clearly shows the possibilities of image formation by charged particles of wavelength much shorter than that of visible light As new applications such as particle accelerators cathode ray tubes mass and energy spectrometers microwave tubes scanning type analytical instruments heavy beam technologies etc emerged the scope of particle beam optics has been extended to the formation of fine probes The goal is to concentrate as many particles as possible in as small a volume as possible Fabrication of microcircuits is a good example of the growing importance of this field The current trend is towards increased circuit complexity and pattern density Because of the diffraction limitation of processes using optical photons and the technological difficulties connected with x ray processes charged particle beams are becoming popular With them it is possible to write directly on a wafer under computer control without using a mask Focused ion beams offer especially great possibilities in the submicron region Therefore electron and ion beam technologies will most probably play a very important role in the next twenty years or so    **The American Journal of Science** ,1951    The Encyclopedia of Physics Robert Besancon,2013-11-11    Electron Optics: Optics Pierre Grivet,Michel Yves Bernard,1972

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