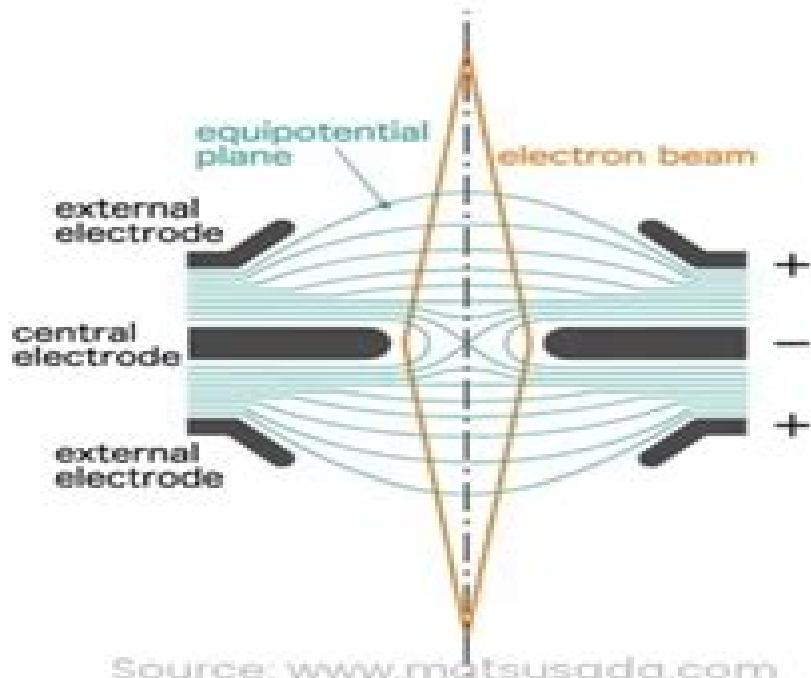
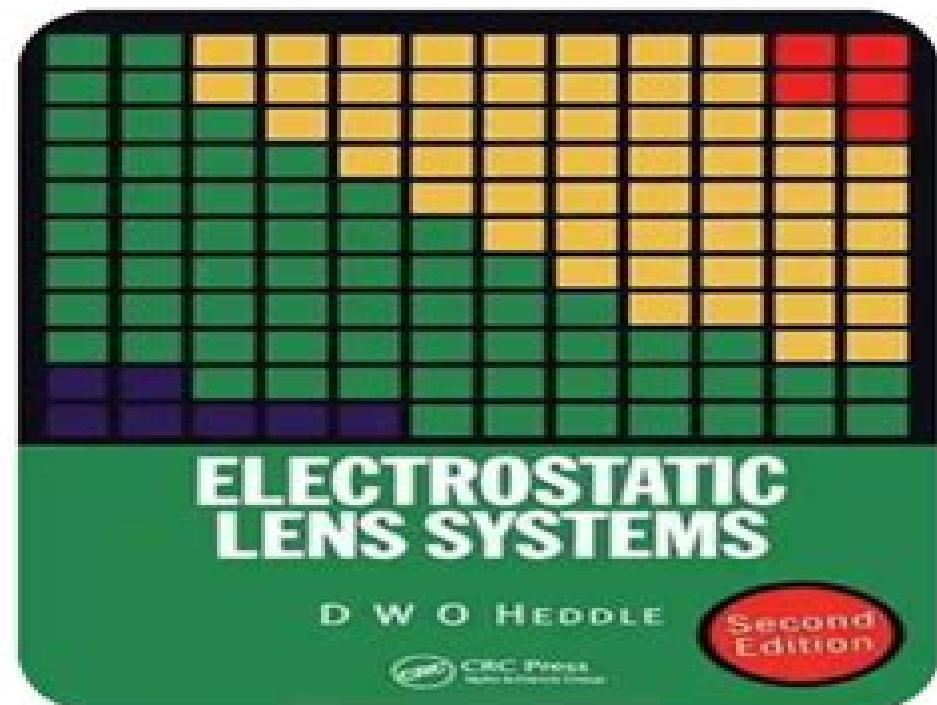


Electrostatic Lens Systems

- Electrostatic lenses control and focus charged particles using electric fields
- They function like optical lenses but for charged particles
- Two main types are cylindrical, for simpler applications, and spherical, which correct aberrations
- They're crucial in electron microscopy, particle accelerators, and spectroscopy
- Advances continue despite challenges in precision and aberrations



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Electrostatic Lens Systems

Mingwu Jin

Electrostatic Lens Systems:

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Operando Research in Heterogeneous Catalysis Joost Frenken,Irene Groot,2016-12-26 This book is devoted to the emerging field of techniques for visualizing atomic scale properties of active catalysts under actual working conditions i.e. high gas pressures and high temperatures It explains how to understand these observations in terms of the surface structures and dynamics and their detailed interplay with the gas phase This provides an important new link between fundamental surface physics and chemistry and applied catalysis The book explains the motivation and the necessity of operando studies and positions these with respect to the more traditional low pressure investigations on the one hand and the reality of industrial catalysis on the other The last decade has witnessed a rapid development of new experimental and theoretical tools for operando studies of heterogeneous catalysis The book has a strong emphasis on the new techniques and illustrates how the challenges introduced by the harsh operando conditions are faced for each of these new tools Therefore one can also read this book as a collection of recipes for the development of operando instruments At present the number of scientific results obtained under operando conditions is still limited and mostly focused on a simple test reaction the catalytic oxidation of CO This reaction thus forms a natural binding element between the chapters linking the demonstrations of new techniques and also connecting the theoretical and experimental studies Some first results on other reactions are also presented If there is one thing that can be concluded already in this early stage it is that the catalytic conditions themselves can have dramatic effects on the structure and composition of the surfaces of catalysts which in turn can greatly affect the mechanisms the activity and the selectivity of the chemical reactions

that they catalyze **Principles of Electron Optics, Volume 2** Peter W. Hawkes,Erwin Kasper,2017-12-13 Principles of Electron Optics Applied Geometrical Optics Second Edition gives detailed information about the many optical elements that use the theory presented in Volume 1 electrostatic and magnetic lenses quadrupoles cathode lens based instruments including the new ultrafast microscopes low energy electron microscopes and photoemission electron microscopes and the mirrors found in their systems Wien filters and deflectors The chapter on aberration correction is largely new The long section on electron guns describes recent theories and covers multi column systems and carbon nanotube emitters Monochromators are included in the section on curved axis systems The lists of references include many articles that will enable the reader to go deeper into the subjects discussed in the text 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

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archaeology and materials science This clearly presented reference describes and compares the principles of the methods and the various source and detector types [ORNL](#) , **Ion Implantation Technology - 92** D.F. Downey,M. Farley,K.S. Jones,G. Ryding,2012-12-02 Ion implantation technology has made a major contribution to the dramatic advances in integrated circuit technology since the early 1970 s The ever present need for accurate models in ion implanted species will become absolutely vital in the future due to shrinking feature sizes Successful wide application of ion implantation as well as exploitation of newly identified opportunities will require the development of comprehensive implant models The 141 papers including 24 invited papers in this volume address the most recent developments in this field New structures and possible approaches are described The implications for ion implantation technology as well as additional observations of needs and opportunities are discussed The volume will be of value to all those who are interested in acquiring a more complete understanding of the current developments in ion implantation processes and comprehensive implant models

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House,2018-05-31 Physical Chemistry of Gas Liquid Interfaces the first volume in the Developments in Physical Theoretical Chemistry series addresses the physical chemistry of gas transport and reactions across liquid surfaces Gas liquid interfaces are all around us especially within atmospheric systems such as sea spray aerosols cloud droplets and the surface of the ocean Because the reaction environment at liquid surfaces is completely unlike bulk gas or bulk liquid chemists must readjust their conceptual framework when entering this field This book provides the necessary background in thermodynamics and computational and experimental techniques for scientists to obtain a thorough understanding of the physical chemistry of liquid surfaces in complex real world environments 2019 PROSE Awards Winner Category Chemistry and Physics Association of American Publishers Provides an interdisciplinary view of the chemical dynamics of liquid surfaces making the content of specific use to physical chemists and atmospheric scientists Features 100 figures and illustrations to underscore key concepts and aid in retention for young scientists in industry and graduate students in the classroom Helps scientists who are transitioning to this field by offering the appropriate thermodynamic background and surveying the current state of research

[Advances in Measurement Systems](#) Milind Sharma,2010-04-01 This book is a collection of 24 chapters concerning the developments within the Measurement Systems field of study The collection includes scholarly contributions by various authors and edited by a group of experts pertinent to Measurement Systems Each contribution comes as a separate chapter complete in itself but directly related to the book s topics and objectives The target audience comprises scholars and specialists in the field [In-situ Characterization of Heterogeneous Catalysts](#) José A. Rodriguez,Jonathan C. Hanson,Peter J. Chupas,2013-04-17 Helps researchers develop new catalysts for sustainable fueland chemical production Reviewing the latest developments in the field this bookexplores the in situ characterization of heterogeneous catalysts enabling readers to

take full advantage of the sophisticated techniques used to study heterogeneous catalysts and reaction mechanisms. In using these techniques readers can learn to improve the selectivity and the performance of catalysts and how to prepare catalysts as efficiently as possible with minimum waste. In situ Characterization of Heterogeneous Catalysts features contributions from leading experts in the field of catalysis. It begins with an introduction to the fundamentals and then covers Characterization of electronic and structural properties of catalysts using X-ray absorption fine structure spectroscopy Techniques for structural characterization based on X-ray diffraction, neutron scattering and pair distribution function analysis Microscopy and morphological studies Techniques for studying the interaction of adsorbates with catalyst surfaces including infrared spectroscopy, Raman spectroscopy, EPR and moderate pressure XPS. Integration of techniques that provide information on the structural properties of catalysts with techniques that facilitate the study of surface reactions. Throughout the book detailed examples illustrate how techniques for studying catalysts and reaction mechanisms can be applied to solve a broad range of problems in heterogeneous catalysis. Detailed figures help readers better understand how and why the techniques discussed in the book work. At the end of each chapter an extensive set of references leads to the primary literature in the field. By explaining step by step modern techniques for the in situ characterization of heterogeneous catalysts this book enables chemical scientists and engineers to better understand catalyst behavior and design new catalysts for green sustainable fuel and chemical production.

Atomic Physics with Positrons J.W. Humberston, E.A.G. Armour, 2012-12-06 The NATO Advanced Research Workshop on Atomic Physics with Positrons which was held at University College London during 15-18 July 1987 was the fourth meeting in a series devoted to the general theme of positron collisions in gases. Previous meetings have been held at York University Toronto 1981 Royal Holloway College Egham 1983 and Wayne State University Detroit 1985. Recent very significant improvements in positron beam currents due to the development of more efficient moderators and the use of more intense positron sources are making possible an increasingly sophisticated range of experiments in atomic collision physics. Whereas a few years ago only total scattering cross sections could be determined measurements can now be made of various partial and differential cross sections. Intense positron beams are also being used to produce positronium beams and already as reported here preliminary investigations have been made of collisions of positronium with several target systems. These experimental developments have stimulated and been stimulated by steady if somewhat less spectacular progress in associated theoretical studies. Both aspects of the field are well represented in these Proceedings.

Principles of Electron Optics Peter W. Hawkes, Erwin Kasper, 2012-12-02 This is a complete handbook and reference volume which covers everything that one needs to know about electron optics. It is a comprehensive coverage of theoretical background and modern computing methods. It contains a detailed and unique account of numerical methods and an extensive bibliography.

Atomic, Molecular, and Optical Physics: Charged Particles, 1995-11-29 With this volume Methods of Experimental Physics becomes Experimental Methods in the Physical Sciences a name change which reflects the

evolution of todays science This volume is the first of three which will provide a comprehensive treatment of the key experimental methods of atomic molecular and optical physics the three volumes as a set will form an excellent experimental handbook for the field The wide availability of tunable lasers in the pastseveral years has revolutionized the field and lead to the introduction of many new experimental methods that are covered in these volumes Traditional methods are also included to ensure that the volumes will be a complete reference source for the field

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