

1. Record Nr.	UNINA9910141447203321
Autore	Zhurin Viacheslav V.
Titolo	Industrial ion sources : broadbeam gridless ion source technology // Viacheslav V. Zhurin
Pubbl/distr/stampa	Weinheim : , : Wiley-VCH, , [2012] ©2012
ISBN	3-527-63573-4 3-527-63572-6 3-527-63574-2
Descrizione fisica	1 online resource (615 p.)
Disciplina	541.372
Soggetti	Ion sources Electronic books.
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; Title Page; Copyright; Related Titles; Preface; References; Chapter 1: Hall-Current Ion Sources; 1.1 Introduction; 1.2 Closed Drift Ion Sources; 1.3 End-Hall Ion Sources; 1.4 Electric Discharge and Ion Beam Volt-Ampere Characteristics; 1.5 Operating Parameters Characterizing Ion Source; Appendix 1.A: Web Addresses; References; Chapter 2: Ion Source and Vacuum Chamber. Influence of Various Effects on Ion Beam Parameters; 2.1 Introduction; 2.2 Mass Entrainment; 2.3 Charge-Exchange Influence on Ion Beam Flow; 2.4 Doubly Ionized Particles and Their Role 2.5 Influence of Vacuum Chamber Pumping Rate 2.6 Dielectric Depositions on an Anode During Operation with Reactive Gases; 2.7 Estimation of Returned Sputtered Particles to Ion Source; 2.8 Influence of Ion Source Heating on its Operation; 2.9 Negative Ions and their Role; 2.10 Conclusion; References; Chapter 3: Oscillations and Instabilities in Hall-Current Ion Sources; 3.1 Introduction; 3.2 Oscillations and Instabilities; 3.3 Types of Oscillations; 3.4 Conclusions and What to Do About Oscillations; References; Chapter 4: Optimum Operation of Hall-Current Ion Sources; 4.1 Introduction 4.2 Regime of Nonself-Sustained Discharge and Optimum Operation

Conditions of End-Hall Ion Source4.3 Operation of End-Hall Ion Source with Excessive Electron Emission; 4.4 Ion Beam Energy of End-Hall Ion Source; 4.5 End-Hall Ion Source Optimum Magnetic Field for Ion Beam Current; 4.6 Ion Beam Energy Distribution as a Function of Angle With Various Emission Currents; 4.7 Conclusion; References; Chapter 5: Cathode Neutralizers for Ion Sources; 5.1 Introduction; 5.2 Ion Beam and its Practical Neutralization; 5.3 Hot Filament Electron Source and Thermoelectron Emission; 5.4 Hollow Cathodes 5.5 Conclusions about Cathode Neutralizers5.6 Appendix 5.A: Web Addresses; References; Chapter 6: Industrial Gridless Broad-Beam Ion Source Producers, Problems and the Need for Their Standardization; 6.1 World Producers of Ion Sources; 6.2 Specific Designs of End-Hall Current Ion Sources for Thin Film Technology; 6.3 Nontraditional Broad Beam Ion Sources; 6.4 Linear Ion Sources; 6.5 Hall-Current Ion Sources Basic Operation Parameter Problems; 6.6 The Need for Standardization of Ion Sources; 6.7 Conclusions; 6.8 Appendix 6.A: Web Addresses; References Chapter 7: Operation of Industrial Ion Sources with Reactive Gases7.1 Introduction; 7.2 Low- and High-Temperature Oxidation; 7.3 Ion Source Operation with Dielectric and Insulating Depositions on an Anode; 7.4 End-Hall with Grooved Anode and Baffle; 7.5 End-Hall With Hidden Anode Area for Continuing Discharge Operation; 7.6 Practical Operation of Hall-Current Ion Sources with Reactive Gases; References; Chapter 8: Ion Beam and Radiation Impact on Substrate Heating; 8.1 Introduction; 8.2 Target-Substrate Heating By Radiation and Ion Beam 8.3 Experimental Measurements of Ion Beam and Radiation Impact on a Target-Substrate

---

## Sommario/riassunto

Due to the large number of uses of ion sources in academia and industry, those who utilize these sources need up to date and coherent information to keep themselves abreast of developments and options, and to chose ideal solutions for quality and cost-effectiveness. This book, written by an author with a strong industrial background and excellent standing, is the comprehensive guide users and developers of ion sources have been waiting for. Providing a thorough refresher on the physics involved, this resource systematically covers the source types, components, and the operational parameters.

---