

1. Record Nr.	UNINA9911006688403321
Titolo	High density plasma sources : design, physics, and performance // edited by Oleg A. Popov
Pubbl/distr/stampa	Park Ridge, N.J., : Noyes Publications, c1995
ISBN	1-282-75508-0 9786612755088 1-282-25321-2 9786612253218 0-8155-1789-0 1-59124-063-8
Descrizione fisica	1 online resource (467 p.)
Collana	Materials science and process technology series
Altri autori (Persone)	PopovOleg A
Disciplina	621.044
Soggetti	Plasma density Plasma generators High temperature plasmas
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	Front Cover; High Density Plasma Sources: Design, Physics and Performance; Copyright Page; Contents; Chapter 1 Helicon Plasma Sources; 1.0 INTRODUCTION; 2.0 SUMMARY OF THEORY; 3.0 EXPERIMENTAL TESTS OF THEORY; 4.0 DESIGN OF HELICON SOURCES; 5.0 HELICON REACTORS FOR ETCHING AND DEPOSITION; ACKNOWLEDGMENTS; REFERENCES; Chapter 2 Planar Inductive Sources; 1.0 INTRODUCTION; 2.0 OPERATION; 3.0 POWER COUPLING; 4.0 FACTORS AFFECTING PROCESSING OF SUBSTRATES; 5.0 ETCHING APPLICATIONS OF PLANAR INDUCTIVELY COUPLED PLASMA SOURCES; REFERENCES Chapter 3 Electrostatically-Shielded Inductively-Coupled RF Plasma Sources1.0 INTRODUCTION; 2.0 SURVEY OF HIGH DENSITY PLASMA SOURCES; 3.0 ANATOMY OF AN INDUCTIVELY COUPLED PLASMA; 4.0 UNSHIELDED HELICAL PLASMA SOURCES; 5.0 ELECTROSTATIC SHIELDING; 6.0 ESRF PLASMA SOURCE APPLICATIONS; 7.0 CONCLUSIONS; REFERENCES; Chapter 4 Very High Frequency Capacitive

Plasma Sources; 1.0 INTRODUCTION; 2.0 STRUCTURE OF HIGH FREQUENCY CAPACITIVE PLASMAS; 3.0 ENERGY TRANSFER; 4.0 VHF PLASMA PARAMETERS; 5.0 VHF PROCESSING RESULTS; 6.0 SUMMARY; ACKNOWLEDGMENTS; REFERENCES; Chapter 5 Surface Wave Plasma Sources  
 1.0 INTRODUCTION 2.0 SUMMARY OF THE MAIN PROPERTIES OF SW SUSTAINED PLASMA COLUMNS; 3.0 ESSENTIAL ELEMENTS AND GENERAL FEATURES OF SW PLASMA SOURCES; 4.0 A FAMILY OF EFFICIENT SW LAUNCHERS FOR SUSTAINING PLASMA COLUMNS; 5.0 TYPICAL EXPERIMENTAL ARRANGEMENTS; 6.0 CONCLUSION; ACKNOWLEDGMENTS; REFERENCES; Chapter 6 Microwave Plasma Disk Processing Machines; 1.0 INTRODUCTION; 2.0 HISTORICAL DEVELOPMENT OF HIGH-DENSITY MICROWAVE PLASMA SOURCES AT MICHIGAN STATE UNIVERSITY; 3.0 THE GENERIC MICROWAVE PLASMA PROCESSING MACHINE; 4.0 SPECIFIC EXAMPLES OF MICROWAVE PLASMA PROCESSING MACHINES  
 5.0 MICROWAVE PLASMA MACHINE PROCESS VARIABLES, AND PERFORMANCE FIGURES OF MERIT 6.0 MULTIPOLAR ECR REACTOR PERFORMANCE IN ARGON GAS; 7.0 ECR REACTOR DESIGN CONSIDERATIONS; 8.0 PROCESS APPLICATIONS; 9.0 DISCUSSION; ACKNOWLEDGMENTS; REFERENCES; Chapter 7 Electron Cyclotron Resonance Plasma Sources; 1.0 INTRODUCTION; 2.0 PRINCIPLES OF ECR SOURCE OPERATION; 3.0 SPECIAL ECR CONFIGURATIONS AND APPLICATIONS; 4.0 OPEN ISSUES FOR ECR SOURCES; 5.0 SUMMARY; ACKNOWLEDGMENTS; REFERENCES; Chapter 8 Distributed ECR Plasma Sources; 1.0 INTRODUCTION  
 2.0 MULTIPOLAR MAGNETIC FIELD CONFINEMENT: FROM MULTIPOLAR DISCHARGES TO DECR PLASMAS 3.0 PLASMA UNIFORMITY IN MULTIPOLAR DISCHARGES: THEORETICAL AND EXPERIMENTAL ASPECTS; 4.0 CONFINEMENT AND TRAPPING OF FAST ELECTRONS IN MULTIPOLAR MAGNETIC FIELDS; 5.0 DISTRIBUTED ELECTRON CYCLOTRON RESONANCE PLASMAS (DECR PLASMAS); 6.0 FROM DECR TO UNIFORM DECR (UDECR) PLASMAS; 7.0 PLASMA PROCESSING IN DECR PLASMAS; 8.0 CONCLUSION; REFERENCES; Index

---

## Sommario/riassunto

This book describes the design, physics, and performance of high density plasma sources which have been extensively explored in low pressure plasma processing, such as plasma etching and planarization, plasma enhanced chemical vapor deposition of thin films, sputtered deposition of metals and dielectrics, epitaxial growth of silicon and GaAs, and many other applications. This is a comprehensive survey and a detailed description of most advanced high density plasma sources used in plasma processing. The book is a balanced presentation in that it gives both a theoretical treatment and pr

---