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Nota di contenuto	Plasma Cathode Electron Sources; Contents; Preface; 1 Low-Pressure Discharges for Plasma Electron Sources; 1.1 Hollow-Cathode Discharge; 1.2 Discharges in Crossed Electric and Magnetic Fields; 1.3 Arc Discharges; 1.3.1 Vacuum-Arc Discharge; 1.3.2 Constricted Low-Pressure Arc Discharge; References; 2 Electron Emission from Plasma; 2.1 General Features of Electron Emission from Plasma; 2.1.1 Ion Extraction from Plasma; 2.1.2 Processes Associated with Electron Extraction from Plasma; 2.2 Control of Plasma Electron Emission Current; 2.2.1 Control of Steady-State Electron Current 2.2.2 Control of Electron Emission in Pulsed Mode2.3 Emission Characteristics of the Plasma of a Constricted Arc Discharge with an Extended Anode Section; 2.4 Electron Emission from Plasma at Fore-Vacuum Pressures; 2.5 Special Features of Electron Emission from Nonstationary Plasma; References; 3 Plasma Sources for Axially Symmetric Electron Beams; 3.1 Cylindrical Electron-Beam Sources Based on Hollow-Cathode Discharges; 3.2 Sources of Steady-State Focused Electron Beams; 3.3 Sources of Tubular Electron Beams; References; 4 Generation of Large-Cross-Section Beams in Plasma-Cathode Systems

4.1 Electron Sources with High Pulsed Energy Density4.2 Plasma Cathode Accelerators and Electron Sources with Microsecond Low-Pressure Arc Discharge; 4.3 Sub-Microsecond Pulsed Electron-Beam Sources; 4.4 Plasma-Cathode Large-Cross-Section Electron Sources Based on Hollow-Cathode Glow; 4.5 Pulsed Low-Energy Electron Sources; 4.6 Plasma-Cathode Electron Source for Ribbon Beam Production in the Fore-Vacuum Pressure Range; 4.6.1 Design of the Electron Source; 4.6.2 Characteristics of the Electron Source; 4.6.3 Parameters of the Plasma Sheet Generated by a Ribbon Electron Beam; References
5 Some Applications of Plasma-Cathode Electron Sources5.1 Electron-Beam Welding; 5.2 Electron-Beam Cladding of Wear-Resistant Materials; 5.3 Use of Low-Energy, High-Current Electron Beams for Surface Treatment; 5.4 Production of Carbon Coatings by Plasma Produced by a Ribbon Electron Beam at Fore-Vacuum Pressure; References; Conclusion; Subject Index

Sommario/riassunto

This book fills the gap for a textbook describing this kind of electron beam source in a systematic and thorough manner: from physical processes of electron emission to examples of real plasma electron sources and their applications.