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Nota di contenuto	Preface -- Introduction -- 1 Base Particle-Surface and Plasma Particle Effects -- 2 Atom and Electron Emission from the Metal Surface -- 3 Arc Spot as a Local Heat Source -- 4 The Transport Equations and Diffusion Phenomena in Multicomponent Plasma -- 5 Plasma Surface Transition at the Cathode of a Vacuum Arc -- 6 Vacuum Arc Emission -- 7 Arc and Cathode Spot -- 8 Electrode Erosion -- 9 Electrode Erosion and Macroparticle Generation -- 10 Electrode Energy Losses and Effective Voltage -- 11 Repulsive Effect and Force Phenomena Due to Plasma Jet Reaction -- 12 Cathode Spot Jets -- 13 Spot Motion in a Transverse and in Oblique Magnetic Field -- 14 Anode Phenomena in Electrical Arcs -- 15 Cathode Spot: Previous Theoretical Models -- 16 Cathode Spot Diffusion Model: Mathematically Closed Theory -- 17 Cathode Spot Kinetic Model: Physically Closed Theory -- 18 Spot Plasma and Plasma Jet -- 19 Cathode Spot Motion in Magnetic Fields -- 20 Short Arc: Vacuum Arc Spot Thruster -- 21 Vacuum Arcs with Refractory Anode -- 22 Laser Spot: Laser Plasma Generation -- 23 Effects of Current Carrying Wall in a Plasma Flow in a Magnetohydrodynamic Duct: Arcing Mode -- Conclusions -- Index.
Sommario/riassunto	This book is devoted to a thorough investigation of the physics and applications of the vacuum arc – a highly-ionized metallic plasma

source used in a number of applications – with emphasis on cathode spot phenomena and plasma formation. The goal is to understand the origins and behavior of various complex and sometimes mysterious phenomena involved in arc formation, such as cathode spots, electrode vaporization, and near-electrode plasma formation. The book takes the reader from a model of dense cathode plasma based on charge-exchange ion-atom collisions through a kinetic approach to cathode vaporization and on to metal thermophysical properties of cathodes. The picture is further enhanced by an in-depth study of cathode jets and plasma acceleration, the effects of magnetic fields on cathode spot behavior, and electrical characteristics of arcs and cathode spot dynamics. The book also describes applications to space propulsion, thin film deposition, laser plasma generation, and magnetohydrodynamics, making this comprehensive and up-to-date volume a valuable resource for researchers in academia and industry. .