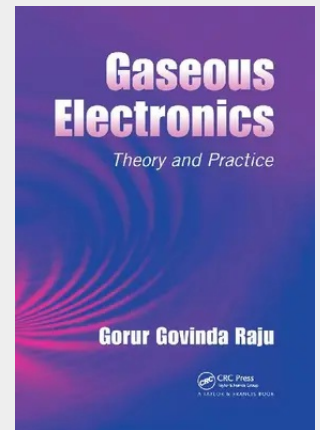


Gaseous Electronics

Theory and Practice

The research on gaseous electronics reaches back more than 100 years. With the growing importance of gas lasers in so many research and industrial applications as well as power systems generating, transmitting, and distributing huge blocks of electrical power, the body of literature on cross sections, drift and diffusion, and ionization phenomena continues to bloom. Searching through this vast expanse of data is a daunting and time-consuming task. With this in mind, eminent researcher Gorur Govinda Raju presents an authoritative survey of the ballooning literature on gaseous electrical discharge. Gaseous Electronics: Theory and Practice begins with an overview of the physics underlying the collisions involved in discharge, scattering, ion mobilities, and the various cross-sections and relations between them. A discussion follows on experimental techniques used to measure collision cross-sections, covering the techniques related to the data presented in later chapters. In an unprecedented collection of data and analysis, the author supplies comprehensive cross-sections for rare gases such as Argon, Helium, Krypton, and Xenon; various diatomics; and complex molecules and industrial gases including hydrocarbons. He further includes discussions and analyses on drift and diffusion of electrons, ionization coefficients, attachment coefficients, high-voltage phenomena, and high-frequency discharges. Based on more than 40 years of experience in the field, Gaseous Electronics: Theory and Practice places a comprehensive collection of data together with theory and modern practice in a single, concise reference.

This book begins with an overview of the physics underlying the collisions involved in discharge, scattering, ion mobilities, and the various cross-sections and relations between them. It then discusses experimental techniques used to measure collision cross-sections, covering the techniques related to the data presented in later chapters. In an unprecedented collection of data and analysis, the author supplies comprehensive cross-sections for rare gases, various diatomics, and complex molecules and industrial gases including hydrocarbons. He further explores drift and diffusion of electrons, ionization coefficients, attachment coefficients, high-voltage phenomena, and high-frequency discharges.



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