

Kinetics and Spectroscopy of Low Temperature Plasmas

Kinetics and Spectroscopy of Low Temperature Plasmas is a comprehensive textbook designed for graduate and advanced undergraduate students. Both authors rely on more than 20 years of teaching experience in renowned Physics Engineering courses to write this book addressing the students' needs.

This book derives in a full self-consistent way the electron kinetic theory used to describe low temperature plasmas created in the laboratory with an electrical discharge, and presents the main optical spectroscopic diagnostics used to characterize such plasmas. The chapters with the theoretical contents make use of a deductive approach in which the electron kinetic theory applied to plasmas with basis on the electron Boltzmann equation is derived from the basic concepts of Statistical and Plasma Physics. On the other hand, the main optical spectroscopy diagnostics used to characterize experimentally such plasmas are presented and justified from the point of view of the Atomic and Molecular Physics.

Low temperature plasmas (LTP) are partially ionized gases with a broad use in many technological applications such as microelectronics, light sources, lasers, biology and medicine. LTPs lead to the production of atomic and molecular excited states, chemically reactive radicals, and activated surface sites, which are in the origin, among others, of the deposition of thin films, advanced nanotechnology products, solar cells, highly efficient combustion motors, and treatment of cancer cells.

Physics

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