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Sommario/riassunto	This book describes plasma thermodynamics of one-temperature and multi-temperature ideal and non-ideal equilibrium plasmas, using concepts of classical and statistical thermodynamics. Worked examples are provided throughout, to help clarify fundamentals. "Fundamental Aspects of Plasma Chemical Physics: Thermodynamics" develops basic and advanced concepts of plasma thermodynamics from both classical and statistical points of view. After a refreshment of classical thermodynamics applied to the dissociation and ionization regimes, the book invites the reader to discover the role of electronic excitation in affecting the properties of plasmas, a topic often overlooked by the thermal plasma community. Particular attention is devoted to the problem of the divergence of the partition function of atomic species and the state-to-state approach for calculating the partition function of diatomic and polyatomic molecules. The limit of ideal gas approximation is also discussed, by introducing Debye-Huckel and virial corrections. Throughout the book, worked examples are given in order to clarify concepts and mathematical approaches. This book is a first of a series of three books to be published by the authors on fundamental aspects of plasma chemical physics. The next books will discuss transport and kinetics.